MILAN 2024

Camaraderie Cohesion Collaboration

MILAN TECH EXPO 24

FEBRUARY 21 - 23, 2024
NAVAL DOCKYARD, VISAKHAPATNAM

MADE IN INDIA

DEFENCE EQUIPMENT CATALOGUE



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FOREWORD

Admiral R Hari Kumar
PVSM, AVSM, VSM, ADC
Chief of the Naval Staff



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नौसेना मुख्यालय
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Ministry of Defence
Naval Headquarters
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FOREWORD

1. *Bharat* has set itself a clear goal - that of being a developed nation by the 100th anniversary of our Independence. Reaffirming its resolution to enable this aspirational trajectory, *Bhartiya Nausena* has made an unequivocal commitment to be a fully *Aatmanirbhar* force by 2047 that is 'Combat-Ready, Credible, Cohesive, and Future-Proof' in service of the Nation.

2. One of the key pillars of this *Aatmanirbharta* is a self-reliant Indian Defence Industry. While it has commercial and fiscal undertones, we must remain cognisant that *Atmanirbharta* in Defence is now no longer, merely, an economic imperative, but a strategic necessity. Towards this, *Bhartiya Nausena*, ably supported by the Indian Industry, has made significant progress. For instance, the indigenous content onboard our warships has consistently increased since the first indigenous capital warship - INS *Nilgiri* - more than five decades ago, to reach nearly 75% onboard India's first indigenous Aircraft Carrier *Vikrant*, state-of-the-art Visakhapatnam class stealth destroyers, as well as the *Nilgiri* class frigates in their new avatar, presently under construction.

3. These developments stand as a beacon of self-sufficiency, showcasing the prowess of our nation's technological landscape. The Indian defence ecosystem today has a very large and talented pool of technically qualified human resource, world class technology institutes, our own R&D organisation focused dedicatedly on defence, a thriving start-up environment, and a globally competitive industrial base. Towards harnessing this potential, the Navy has established a three tier organisation under Naval Innovation and Indigenisation Organisation to syncronise our collaboration with the industry. As part of this endeavor, we have launched SPRINT, or 'Supporting Pole-Vaulting in R&D through iDEX, NIIO and TDAC' challenges. The aim is to seamlessly merge the elements of 'innovation' 'indigenisation' and 'self-reliance'.

4. The Technical Exposition MTEX 24, on the sidelines of MILAN 24, serves to showcase the advancements in Indian defence technology and innovation. It underscores our commitment to foster cooperation, interoperability and trust among friends and partners, guided by the theme of 'Camaraderie, Cohesion, Collaboration'. The exchange of ideas, collaboration in research and development, and the pursuit of shared goals, that will be enabled here, will serve as a foundation for stronger ties and a more secure maritime environment.

5. I am confident that this Technical Exposition will catalyse greater collaboration, innovation, and exchange of best practices. Let us seize the opportunities presented by this gathering to strengthen the bonds that unite us in the pursuit of safe, secure and stable global commons.

Jai Bharat! Sam No Varunah.

(R Hari Kumar)
Admiral

Dated: 16 Feb 24

FOREWORD

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विशाखापट्टणम ५३० ०१४
Headquarters
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1. The movement towards 'Atmanirbhar Bharat' has gained significant momentum in recent years with the Indian industry surging ahead to realise this goal. The Indian Navy, which has been focused on indigenous development, has further intensified these efforts in close liaison with the industry partners. It is indeed heartening to see the many positive results of this *IN*-Indian Industry collaboration. Such indigenous products for maritime use, also have the potential to be used by maritime agencies across the world. The *IN* is therefore happy to be collaborating with FICCI to provide a stage on which our Indian industry partners can showcase their products and potential to the Navies of the world during MILAN – 24.

2. MILAN 24 is an opportunity to share knowledge, strengthen the bonds of friendship, understanding and cooperation among participating units. The Indian defence manufacturing industry has witnessed remarkable growth, and this expo stands as a living embodiment of the strides we have made in developing cutting-edge technologies and solutions. Our indigenous capabilities, spanning shipbuilding, maritime surveillance, electronic warfare, and beyond, underscore our commitment to self-reliance and strategic autonomy. Through MTEX - 24, we also aim to facilitate the exchange of ideas, promote joint research and development initiatives and explore avenues for mutual growth.

3. I extend my heartfelt gratitude to all industry representatives and attendees for their presence and active participation in this significant event. Together, let us embark on a journey of shared knowledge, technological excellence, and a collective commitment to maritime security and Indigenisation requirements of the Indian Navy.

रियर एडमिरल आर विजय शेखर, ए वी एस एम, एन एम
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1. It is heartening that MTEX 24 has been included as a part of the twelfth edition of MILAN. The technical exposition brings together a diverse array of participants, including shipbuilding Public Sector Undertakings (PSUs) such as GRSE, GSL, CSL and MDL. Their contributions underscore the indigenous prowess and self-reliance that define our maritime defence capabilities.

2. As part of MTEX 24, *IN* in coordination with FICCI is releasing a document bringing out the products and their features from leading industry partners including Bharat Dynamics, Bharat Electronics, Zen Technologies, Larsen and Toubro etc, each playing a crucial role in advancing defence technologies. Additionally, the participation of numerous smaller companies specialising in drones, defence electronics, mechanical components and radar technologies including many other adds a dynamic dimension to the expo. These enterprises, often the unsung heroes of innovation, bring agility and niche expertise contributing significantly to the diversification, modernisation of naval capabilities and paving the path for a 'Viksit Bharat'.

3. I am sure that this congregation of Indian Industry will present a unique opportunity for participating nations to explore joint ventures, exchange best practices and foster alliances that extend beyond borders.

4. May the MTEX 24 serve as a bridge for collaboration, knowledge exchange and the establishment of enduring partnerships that contribute to the growth of naval capabilities and fructify the dream of an 'Atmanirbhar Bharat'.



FOREWORD

FICCI is privileged to play an active role to facilitate the development of a robust defence industrial base in the country through various initiatives with our stakeholders including Ministry of Defence, Armed Forces, Industry Members and Defence Public Sector Undertakings (DPSUs). Mahatma Gandhi addressed our 4th Annual General Meeting in 1931, and with our legacy, we look forward to a vibrant future for all of us.

We at FICCI are delighted to partner with Indian Navy in organising MILAN 24 Technical Exposition (MTEX 24) at Vizag on February 21-23, 2024. With Naval officials from around 50 friendly countries participating, MTEX 24 is set to provide opportunities to leading defence industry players, DPSUs, DRDO, MSMEs and Start-ups to showcase their products and solutions for meeting the requirements of Indian Navy and the naval forces from across the world. We are confident that MTEX 24 will lead to tangible business outcomes.

This catalogue is a ready reckoner for our distinguished visitors in their procurement decisions from India. I take this opportunity to acknowledge the guidance and support extended by Naval Dockyard, Visakhapatnam, Indian Navy in organizing MTEX – 2024.

S K Pathak
Secretary General
FICCI

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MILAN 2024

MILAN TECH EXPO 24

FEBRUARY 21 - 23, 2024 | NAVAL DOCKYARD, VISAKHAPATNAM

MADE IN INDIA

DEFENCE EQUIPMENT CATALOGUE



EXHIBITOR & EQUIPMENT PROFILES

ADISAN SYSTEMS LLP

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Organisation Profile

Adisan Systems LLP was incorporated to take on the challenges provided by the rapid Modernization of the Defense, Energy sector and the industry in general and strives towards providing niche solutions in challenging domains of Fire Safety, Explosive Safety, CBRN Defense, Marine Operations.

Our team has a rich experience in the areas of Marine Operation, CBRNE defense, Fire and life safety, Engineered Systems and e-Security. We also have the requisite experience and domain knowledge to undertake retro fitment, Engineering Solutions and Consultancy in the above-mentioned niche areas.

Adisan System has been accorded the Start-up status by the Department of Promotion of Industry and Internal Trade, Ministry of Commerce & Industry, Govt of India in addition to being registered as a MSME by Ministry of Micro, Small and Medium Enterprise, Govt of India

AVM3RCAF



Capacity	125 Litres
Weight	Loaded 275 kg/ Empty 175 Kgs
Dimensions (H*W)	1.7m*0.78m
Endurance	3 Minutes
Foam Used	Indopene
Solution Tank	SS 316 L/20 Bar/ PESO Approved
Hose	15 meters Booster Hose
Gas Used	Nitrogen/ Compresse4d Air on board charging feasible
Throw off	In excess of 12 meters in nil wind conditions
Hose Reel	SS 316 L/ Manual Rewind
Pistol Valve	Squeeze Gun Barrel design
Operation	One Man 3 step quick deployment
Class of fire	Class A&B. Suitable against electrical fire after switching off the power supply
CBRN Mode	Can be also deployed in CBRN Mode

Product Description

AVM3RCAF is a Hand-Held Hose System which is self-contained & pre-assembled. Compressed Air Foam has extremely effective extinguishing mechanism for flammable and combustible liquids, both miscible and non-miscible. The unique physical properties and texture of CAF which allows it to form a stable and uniform foam blanket on top the liquid surface.

Characteristics of Equipment

- Sea water compatible in emergency situations
- Firesafe system
- EN-1877 Compliant
- GOST compliant
- Burst proof design
- Compatible with on board LPS system
- Standalone system - can be exploited in total power failure scenario
- Ergonomic one-man operation

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ADVANCED WEAPONS & EQUIPMENT INDIA LTD

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Organisation Profile

Advanced Weapons & Equipment India Ltd. (AW&EIL) is one of the seven (7) new Defence PSUs formed by converting the Ordnance Factory Board into fully Government owned Enterprises. AW&EIL has been incorporated under the Companies Act 2013 on 14th August, 2021 however, its commencement of business took place on 1st October 2021 notified by DDP. It comprises of the following production and non- production units:

Rifle Factory Ishapore, Small Arms Factory, Kanpur, Gun & Shell Factory, Cossipore, Ordnance Factory Tiruchirapalli, Ordnance Factory, Kanpur, Field Gun Factory, Kanpur, Gun Carriage Factory, Jabalpur, and Ordnance Factory Project Korwa and non- production units at Ordnance Factories Institute of Learning Ishapore and Regional Controllerate of Safety, Kanpur

DHANUSH



Product Description

Dhanush is a state of the art gun system that has proved to be one of the best in class you can engage stationary and moving targets both day and night, based on a unified cycling system it can strike targets in the range of 38 kilometres & best of all 85% of business part it is a true make in India effort. With Dhanush, India has developed the capability manufacturing 155mm caliber Gun

Characteristics of Equipment

Caliber:	155 mm / 45 Cal
Range:	38 km max (with ERFB BB)
Muzzle Velocity:	881 m/s (for BMCS zone 6)
Rate of Fire:	(a) Burst – 3 rds in 30 seconds
	(b) Intense – 12 rds in 3 min
	(c) Sustained – 42 rds in 60 min
Weight of Equipment :	12700 kg
Type of Ammunition :	Compatible with all NATO 155mm Ammunition System, ERFB BT / BB, HEER, HE M107, HE 77B, SMOKE (ER), ILLUMINATING (ER)
Charge System:	Bi-Modular Charge System (BMCS), Bag Charge System
Accuracy:	≤ 1.0%
Max Speed	(a)Towed: 70 Kmph
	(b)Self Propelled: 5 Kmph
Life of Barrel (EFCs) :	1500

LIGHT WEIGHT RECOIL LESS LAUNCHER 84mm



Product Description

This is a shoulder fired recoil less rocket launcher. It is breech loaded and laterally percussion fired type weapon. The Barrel consists internally of a thin Steel liner. Around thin Liner (0.4mm thick), a laminate of epoxy, glass and Carbon fibre is wound making it a low weight weapon which can be fired, transported or air dropped easily.

Characteristics of Equipment

Caliber : 84mm

Max Range:	700 m (for HEAT Ammunition)
	1000 m (for HE Ammunition)
	2000 m (for Illuminating Ammunition)
Muzzle Velocity:	305 m/s (for HEAT Ammunition)
	240 m/s (for HE Ammunition)
Rate of Fire:	6 rds/min
Weight:	10 kg
Armor Penetration:	400 mm
Length of Gun: 1	070mm
Types of Ammunition:	HE, HEAT, TP, TPT, SMOKE, ILLUMINATING

TRICA CARBINE



Characteristics of Equipment

Caliber:	7.62 X 39 mm
Maximum Effective Range :	150 m – 175 m
Mode of Fire :	Single & Auto
Muzzle Velocity :	620 – 650 m/s
Weight with Empty Magazine :	3kg
Length of Barrel :	212 mm
No. of Grooves :	4
Feeding :	Curved Magazine
Breech Bolt :	Rotating Type

BELT FED LMG



Characteristics of Equipment

Caliber:	7.62 X 51 mm
Range :	800 mm
Rate of Fire :	600 rds/min
Mode of Fire :	Single & Auto
Muzzle Velocity :	800 m/s
Operation :	Gas operated tilting bolt
Weight :	9.7 kg (without magazine)
Length :	1200 mm
Bipod :	Folding and Adjustable
Picatinny Rail :	MIL – STD 1913
Ammunition :	7.62 mm Belted M80

SHARANG



Characteristics of Equipment

Caliber :	155 / 45 Cal
Range :	38 km max (ERFB-BB)
Muzzle Velocity :	878 m/s (for BMCS Zone-6)
Rate of Fire :	(a) Intense – Minimum 3 rds/min in High Zone for 3 min
	(b) Sustained – Minimum 42 rds in 60 min
Weight :	8450 kg
Bore Dia :	155 mm
Barrel Length :	7035 mm
Rifling :	Right Handed
Type of Ammunition :	Compatible with all NATO Ammunition System, HE ERFB BT / BB SMOKE, ILLUMINATING
Charge System :	Bi-modular Charge System (BMCS), Bag Charge System
Life of Barrel (EFCs) :	1500

AK-630 M NAVAL GUN 30MM



Product Description

The AK-630M, Six Barrel Naval Gun, indigenously developed by AWEIL is a 30mm Automatic Close in Weapon System (CIWS) with high rate of fire & accuracy and is remotely controlled from the Radar Fire Control System (FCS).

Characteristics of Equipment

Nomenclature : 30 mm Six Barrel Naval Gun

Feeding of Automatic Gun with Cartridges : Continuous, Belt

Ammunition Allowance Located in Magazine on Gun Mount : 2000 Cartridges

Ammunition Allowance stored in feed bin of Gun Mount : 1000 Cartridges

Automatic Gun rate of fire : 4000 to 5000 rds per minute

Maximum Angle of Traverse Reflection : ± 180° - 5°

Maximum Angle of Elevation :

(a) Angle of Elevation : +88° (+2° to -1°)

(b) Angle of Depression : -12° ± 2°

KAVACH



Product Description

KAVACH is a fast response anti-missile naval decoy system back to back self defence against radar guided enemy missiles using tactical chat it is available in two versions for long and short distance deployment and its wholly made in India.

Characteristics of Equipment

Weight:	1680 kg
Height:	2690 mm
Width :	1300 mm (dia)
Length :	1300 mm (dia)
Mode of Operation :	Power and Manual
Bore of Barrel :	105.6 + 0.4 mm

ASSAULT RIFLE 7.62 X 51 MM



Product Description

Assault rifle 7.62 mm X51. It is highly lethal weapon that can engage targets beyond 400 meters. Versatile by design, the weapon can be fitted with telescopic sight and reflex. Specifically developed for the Indian army and paramilitary forces, this product is 100% Indian in origin.

Characteristics of Equipment

Caliber:	7.62 X 51 mm
Range :	500 mm
Rate of Fire :	600 – 650 rds/min
Mode of Fire :	Single Shot & Auto
Operation :	Gas Operated
Weight :	4 kg (without magazine)
Length of weapon :	700 mm (Butt folded)
	925 mm (Butt extended)
Magazine capacity :	20 rds
Safety :	Mechanical & Applied

ASHANI 0.32" NPB 10 ROUNDS PISTOL



Product Description

Ashani 0.32" Mk-III 10 Round Pistol is the latest offering of Gun & Shell Factory, Cossipore in 0.32" Bore Civilian use Pistol category. The magazine of this pistol is having the unique feature of 10 Rounds capacity as compared to 8 Rounds in earlier GSF make pistols. The length of the barrel has also been increased by 5mm resulting in longer range (22 m) of fire. Combined with safety and reliability which GSF has been providing in it's pistols for the last two decades Ashani 0.32" Mk-III 10 Round Pistol gives a complete new look with protruded barrel design, modified receiver design, prominent fixed sights and ergonomic wooden grip.

Characteristics of Equipment

Caliber :	0.32"
Magazine Capacity :	10
Barrel Length :	96.44 mm
Chamber :	Suitable for 0.32" ACP Rimmed Cartridge
Weight of Pistol :	720 gms
Sight :	Fixed
Safety :	3 types of safety
Trigger Pull :	2.2 kg to 3 kg
Rifling :	6 grooves spiral 1 in 16 RH
Range :	22m
Action :	Semi-automatic, Blow-back
Grip :	Wooden grip
Magazine Release :	Push Button Type

SHELL HEAT TANK AMMUNITION 125MM



Characteristics of Equipment

Mass of Complete Round :	29 kg
Muzzle Velocity at +15°C :	905 m/s
Maximum Range :	4000 m
Point Blank Range :	960 m
Armour Thickness defeated at	(a) Normal attack : 500 mm
	(b) 60° Angle of attack : 220 mm

ADVANCE TECH CONTROLS PVT LTD

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Organisation Profile

Advance Tech Controls Pvt. Ltd. plays a pivotal role in the Indian defense industry, thriving under the Make in India initiative. With over 100 man-years of expertise in embedded technology products and services, we proudly serve more than 2000+ satisfied customers, establishing ourselves as pioneers in various technological realms and a provider of comprehensive application-oriented support and solution programs.

Our team, comprised of highly skilled and qualified professionals, is dedicated to ensuring that our customers stay ahead in the fast-paced technological race. As exclusive authorized distributors for globally renowned OEMs like North Atlantic Industries, Elma Electronic Inc., and Atronics Ballard Technology, we have also expanded our reach by manufacturing systems in India.

Since 1995, we have been at the forefront of providing exceptional repair and calibration support. Our 10,000 Sq. Ft. manufacturing and test facility, staffed by a team of adept engineers, specializes in the Testing and Calibration of diverse System Integrations.

At our Bengaluru Excellence Center, we are particularly proud of our innovative work in designing Rugged VME VPX solutions and high-density I/O boards, tailor-made for the Indian Navy's requirements in ships and submarines. This center, bolstered by a design team expert in retrofitting and software teams proficient in real-time systems like VxWorks, Linux, embedded systems, and FPGA based design and validation a hub of cutting-edge technological development.

Our Mumbai Excellence Centre is a nucleus of Nuclear Technology expertise, servicing the research, defense, and nuclear power sectors. In Vadodara, Gujarat, our facility excels in System Integration for control automation.

All our facilities are modern, equipped with the latest technology, and integrated with ERP digital factories, ensuring efficiency and traceability. At Advance Tech Controls Pvt. Ltd., our commitment to quality, innovation, and customer satisfaction drives us to continually enhance the nation's defense capabilities through our technological contributions.

COSA-CONFIGURABLE OPEN SYSTEM ARCHITECTURE



Product Description

COSA Modules, Boards and Systems – Over 70 high-density, COSA smart modules are available for placement on intelligent I/O Boards, which can operate as standalone systems. The breadth of available, off-the-shelf functions makes it likely that we can meet your I/O requirements, no matter how intense or precise, better than any other COTS systems supplier and without NRE. Further, our OpenVPX, VME, cPCI and PCIe boards can be placed into Rugged COSA Systems that range from a single module to high-density systems supporting up to 10 motherboards and 60 smart modules (and virtually everything between).

- Smart IO Boards
- Single Board Computers
- Rugged COTS Systems
- Rugged Power Supplies/Power Monitors
- Rugged Ethernet Switches
- Synchro / Resolver / LVDT / RVDT Boards
- Synchro/ARINC 429/Fuel Flow Modules

SINGLE BOARD COMPUTERS (SBC), GPU, SERVERS, ETHERNET SWITCH



Product Description

Single Board Computers (SBCs) support the latest Intel® or NXP (formerly Freescale) processors, and offer a wide variety of I/O op-tions, including 10 Gigabit Ethernet, Gigabit Ethernet, USB, SATA, se-rial, graphics, and more

- 3U VPX SBC
- 3U Open VPX SBC with IO
- 6U VPX SBC
- 6U VME SBC with IO
- 3U cPCI SBC with IO
- 3U & 6U cPCI SBC
- Comexpress Processor Boards
- PMC/XMC Processor Boards
- RackMount Servers
- Storage Modules
- Ethernet Switches/Routers

AVIONICS DATA-BUS INTERFACE SOLUTIONS



Product Description

MIL-STD-1553, MIL-STD-1760, ARINC 429, ARINC 717, ARINC 708, Time Triggered Ethernet: Interface solution for aircraft, UAVs, and ground mobile platforms etc. Combine these interfaces with CoPilot, our intuitive graphical software program, to easily monitor, record, replay, analyze, and simulate avionics bus data.

- Compact USB to 1553/ARINC/MULTI PROTOCOL
- PCI/PCIe/cPCI/PXI/OpenVPX/VME/ Ethernet for MIL-STD-1553, ARINC/Serial/Discrete I/O
- Embedded Avionics Interfaces PMC/XMC/MiniPCIe/PC104
- AVIONICS Interface Rugged Computers, Processor Boards
- Avionics Interface Software CoPilot
- DATA LOADERS ARINC 615-3 and ARINC 603

RUGGED DISPLAYS/ MONITOR AND PANEL PC, RUGGED KEYBOARD & TRACKBALL



Product Description

Rugged Displays solution from 8" to 65" size ranges for defense, marine, industrial and air traffic control markets. Rugged Displays and Panel PC are designed for use in the most demanding and Harsh Environments. Display options include touchscreen, Special and Propriety bonding and screens are environmentally sealed to withstand the barrage of particles, dust, moisture, heat, salt and fog.

- Military Grade Displays/Panel PCs 10" to 65"
- Marine Grade Displays and Panel PC
- Industrial Grade Displays and Panel PC
- Air Traffic Control Flat Panel LCD Displays
- Military Keyboards & Trackballs

SENSING AND SWITCHING SOLUTIONS



Product Description

Sensors, Transducers, Switches, Flow meters – Rugged Miniature solutions for Mission Critical Application areas for Aircraft, Missiles , Launchers and UAV, Satellite, Rockets, Military Vehicles.

- Switches for Pressure, Flow, Level and Temperaure
- Sensors and Transducers
- Flow Meters
- Signal Conditioning

MOTION SIMULATION SYSTEMS



Product Description

Motion systems solution to support the development, testing and evaluation of inertial navigation devices and guidance systems required by the commercial and defense industries. Position and rate table systems provide angular position, rate and acceleration motions for development and production testing of inertial components and systems. Flight motion simulation systems include real-time Hardware-in-the-Loop (HWIL) motion control instrumentation, high-dynamic electric and hydraulic flight motion systems, and target motion systems. These advanced systems are used to test infrared, laser and RF guided weapon systems such as missiles and smart amunitions

- Single Axis Rate And Positioning Tables
- Two Axis Rate And Positioning Tables
- Three Axis Rate And Positioning Tables
- Three and Five Axis Electric /Hydraulic Flight Motion Simulators /HWILSystems
- X-Y Target Motion Simulator
- Manual Positioning Tables for Testing Aircraft Instruments
- Scorsby Motion Tables
- Tachometer Testers
- Non-Magnetic Rate And Positioning Tables
- Centrifuges

TEST AND MEASUREMENT INSTRUMENTS



Product Description

Benchtop Instruments for motion simulation and measurement instruments specifically designed for defense, commercial aerospace and industrial applications. Typical applications include design; simulation; production test; and calibration of airborne, ground-based, and shipboard systems such as navigation control, signal retransmission, fire control, LVDT/RVDT simulation, and test.

Bus analysis tools, embedded test tools, and the industry's broadest line of JTAG/boundary-scan software and hardware products for Functional Test, Manufacturing Test, InSystem Programming and for Development and Debug

- Angle Position Indicator
- Phase Angle Voltmeters
- Synchro/Resolver Simulator
- JTAG Boundary Scan
- Bus Analyzers & Exercisers
- High Speed DAQ ADC/Digital IO/Digitizer
- Scalers/Counters/MultiScalers
- PCI/PCIe/cPCI Interface Boards
- USB Data Acquisition

CHASSIS, COMPONENTS AND POWER SUPPLIES



Product Description

Product line encompasses well over 16,000 parts, including system packaging and boards, enclosures, backplanes, cabinets, and other electro-mechanical components designed to be superior in quality, reliability, performance, and innovation products based on VITA (VME, VPX, and VXS), PICMG standard architectures (CPCI, ATCA and MicroTCA) and rugged COTS based solutions.

- Backplanes
- Rotary Switches
- Rugged and Industrial Chassis and 19 inch Enclosures
- Power Supply – VPX, AC/DC. DC/AC, DC/DC, Brick power supplies
- DC Power Line Conditioners- Hold Up Time

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Organisation Profile

Aeromobix Systems Pvt Ltd was founded in 2018 and specializes in portable hydraulic power units, custom material handling solutions, motion control, import substitution products specially for applications in Land, Sea & Air.

PHMC POWER UNIT P700EX



Product Description

Portable Hydraulic Metal Cutter is a highly compact man-portable battery operated metal hydraulically operated metal cutter used for search and rescue operations to breach metal doors and hatches on board Naval ships in the event of Fire , Flooding or action damage control to rescue and/or evacuate Navy Personnel.

Characteristics of Equipment

A Man-Portable

B Highly Compact and Ergonomically designed

C Compatible to a variety of Tools

D Long Endurance re-chargeable Lithium Ion Battery

E Universal applications for search & rescue

F Spplied as a complete system in a ruggedized storage case.

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Organisation Profile

Anadrone Systems Private Limited stands as a premier manufacturer and supplier of aerial and surface target systems, serving as a key contributor to the Indian Defence Forces, DRDO and weapon developers. With a rich history since its incorporation in 2004, the company's research and manufacturing facilities for aerial and surface target systems, Ground Control Station Carriers, Launcher, Ground Support Equipment & other Accessories, are strategically located in Gurugram and Odisha.

As a foremost service provider to the Indian Armed Forces, Anadrone has delivered over 1000 target drones, facilitating both firing exercises and individual missions. With our extensive technological expertise, honed through years of experience and R&D, we are now bringing Multi-Role Capabilities in the form of Combat UAVs enabling us to offer tailored solutions and specialized payloads to meet diverse requirements of the Defence Forces.

SHIKRA JET 80+



(Aerial Target System)

Pioneering Progress, Redefining Boundaries in the Sky!

Product Description

Anadrone Systems Private Limited stands as a comprehensive IDDM manufacturer & solution provider for Aerial Target Drones, uniquely positioned to fulfill all Indian and global requirements. Anadrone proudly holds the distinction of being the first company secure a contract in the Defence Scheme under "Make in India, Make II" category. The available target systems cater to diverse needs, extending the expertise from Shikra Propeller to Shikra Jet40+ (Uno jet) and culminates in Shikra Jet80+ (Twin Jet). The Shikra Jet80+ is launched from Pneumatic Launcher possessing enhanced capabilities like Return-to-Home, Interoperability, High Speed & Power along with increased Altitude & Operating Range.

Characteristics of Equipment

- Wingspan – 2.49m
- Length – 2.96m, dependent upon configuration
- Maximum Altitude – 9000m (~30,000ft)
- Power Plants – 2 off 44kg thrust gas turbine
- Typical Endurance - >45min (at economical cruise)
- Speed Range (TAS)@ISA – (80-180) m/sec (clean configuration)

VAMANA



(Surface Target System)
Charting Seas, Defining Dominance with Every Wave!

Product Description

Anadrone stands out as the principal Indian manufacturer specializing in advanced unmanned surface targets and complementary tow targets. At sea, our offerings include remotely controlled boats ranging from simple inflatables with outboard motors to larger rigid hull inflatables powered by diesel engines.

These versatile vessels serve dual purposes, functioning both as direct kill targets and as tugs for towing inflatable and rigid hull sub-targets. Anadrone provides turnkey systems tailored for basic, intermediate, and advanced live-fire naval training, addressing scenarios such as Piracy and Fast Inshore Attack Craft.

Characteristics of Equipment

- Propulsion - Outboard engine of 20 to >100 bhp or Inboard Diesel engine with outdrive unit dependent on hull specification and user requirements
- Endurance - In excess of 5 hours depending upon specification and user requirements
- Length – 4.5 m to 7m
- Speed - 10-20 knots
- Freeboard >0.6 m; Draught 0.5 to 1 m

ABHAY



(Multi-role Combat UAV)

Unleashing Versatility, Dominating with Precision and Power!

Product Description

In an ever-evolving world, our clientele seeks a spectrum of capabilities to gain a decisive edge across diverse conflict scenarios. Anadrone is responding to this imperative with unmatched agility, supplying an autonomous power that aligns with the unfolding pace of advancement. ABHAY is a game-changing combat UAS that stands as a beacon of cost-efficiency and high performance.

Engineered for resilience to traverse diverse operational landscapes, the flexible payload bay serves as a gateway to swift capability enhancement, ensuring adaptability to dynamic operational demands.

Crafted and manufactured in India, the ABHAY, an epitome of Anadrone's UAS expertise, is poised to make its mark on the global stage.

Characteristics of Equipment

- Endurance increasing 90mins; Speed excessing 200m/s
- Altitude soaring beyond 30000ft; Payload capacity 30kg
- Modular design allowing easy configuration
- Capability – Strategic ISR technology & Anti-jamming communication link integrated with INS-BLOS capability integrated in ABHAY is paramount for defence forces in advanced warfare scenarios. Equipped with stealthy destroyer and EW technologies, ABHAY empower the user to achieve dominance in the electromagnetic spectrum, ensuring operational success and enhancing force protection in modern battlefield

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Organisation Profile

ApexPlus Technologies is the pioneering Indian firm that excels in designing and manufacturing Microwave, RF, and FPGA-based RADAR signal processing systems for Defense labs, DPSUs, and Armed Forces. We have a proven track record of delivering top-notch solutions since 2012.

We are proud that we are also a part of many prestigious missile and RADAR projects. Our dedication to innovation and quality has made us the go-to choice for the country's most critical defense needs.

PORTABLE RADAR PERFORMANCE TEST SYSTEM



(Multi-role Combat UAV)

Unleashing Versatility, Dominating with Precision and Power!

Product Description

ApexPlus Technologie's 'Portable RADAR Performance Test System can be used to test a diverse range of RADARs such as Ground to Air Surveillance and Track RADARs, Airborne RADARs. It is capable of operating at frequencies ranging between 200 MHz - 96 GHz (UHF, VHF, L, S, C, X, Ku, Ka, and W bands) with a user-friendly GUI to create, load, and save scenarios from simple predefined profiles to the complex user-defined trajectories.

Simulation of Doppler and RCS (both fixed and Swerling models) along with Sum, Azimuth, and Elevation for Monopulse signals. Configurable profiles for target speed, path loss, and Doppler with resolutions of 1m/s, 0.1dB and <10Hz allow accurate modeling of targets for weather effects, propagation losses, clutter, and Doppler shifts. Multi-target scenarios with up to 30 targets can be simulated while supporting frequency, pulse width, and PRI agility.

Characteristics of Equipment

- ApexPlus Technologie's 'Portable RADAR Performance Test System can be used to test a diverse range of RADARs
- It is capable of operating at frequencies ranging between 200 MHz - 96 GHz (UHF, VHF, L, S, C, X, Ku, Ka, and W bands)
- It comes with a user-friendly GUI to create, load, and save scenarios from simple predefined profiles to complex user-defined trajectories.
- The system is portable and lightweight with a world-class design.

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ARMOURED VEHICLES NIGAM LTD

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Organisation Profile

AVNL is a Public Sector Undertaking under Department of Defence Production, Ministry of Defence, Government of India (carved out of erstwhile Ordnance Factory Board) and possesses modern infrastructure and capability of designing and building sophisticated Armoured Fighting Vehicles viz Tanks, Infantry Combat Vehicle, Mine Protected Vehicles (MPV), Logistic Vehicles etc.

AVNL has complete wherewithal for manufacturing of T-72 Tank, T-90 Tank, MBT Arjun, Bridge Layer Tank, Trawl, BMP-II & its variants, MPV 4x4, MPV 6x6, Stallion 5/7.5 T, LPTA 2.5 T, Close Range Naval Gun (CRN-91), Naval Decoy Launcher Kavach, High Power Engines & Transmission Assemblies for all these vehicles.

UPGRADED MINE PROTECTED VEHICLE 4X4



Product Description

This MPV is upgraded version of erstwhile MPV 4X4. Major Upgradation includes Mobility, HVAC, Rear View Camera, Self-Recovery Winch, Rotating Search Lights and Power Operated Rear View Mirror.

MINE PROTECTED VEHICLE – 6X6



Product Description

This vehicle is designed to provide unmatched protection to the soldiers in the battlefield. The superior blast and ballistic protection coupled with high powered mobility makes this vehicle a true combat armoured vehicle for soldiers.

MBT- ARJUN



Product Description

The MBT ARJUN is equipped with accurate & superior firepower, all-terrain mobility and an invincible multi layered protection provided by an array of advanced technology systems. It can take on the enemy during day & night conditions and in both static & dynamic modes. By virtue of these capabilities, this indigenous MBT proves to be at par with any contemporary main battle tank across the globe. This tank is particularly configured and designed for Indian conditions and hence it is suitable for deployment to protect the frontiers in an effective manner.

T-90 BHISHMA



Product Description

The T-90S main battle tank (MBT) is an advanced version of the T-series of tanks, offering increased firepower, mobility and protection. It is manufactured by HVF, an original equipment manufacturer, in Chennai. In February 2001, the Indian Army signed a contract for 310 T-90S tanks; 124 were completed in Russia, and the rest were delivered in 'knocked down' form for final assembly in India. The T-90S armament includes one 125mm 2A46M smooth bore gun that is stabilized in two axes and fitted with a thermal sleeve.

AJEYA TANK T-72



Product Description

The T-72 has greater mobility as its 780 hp engine appears to be remarkably smoke-free and smooth-running, having eliminated the excessive vibration. The T-72 has better armor protection due to the use of layered armor. The tank is fitted with a 125mm D-81 smoothbore gun, a 7.62mm co-axial machine gun and a 12.7mm air defence machine gun mounted on the commander's cupola. The T-72 carries 44 rounds of 125mm ammunition, 22 rounds of which are carried on an automatic loading carousel.

BRIDGE LAYER TANK (BLT) T-72



Product Description

Bridge Layer Tank (BLT) provides capabilities to negotiate natural and man-made anti-tank obstacles to an advancing tank column. It can lay its bridge instantly and recover the same from the far bank, after the entire tank column has crossed over. Capability exists to base it on any other tank of West of East European origin. The BLT can lay two types of bridge, i.e. a 20m scissors bridge with an MLC 60 load classification and a 22m scissors bridge, with an MLC 70 load classification.

BMP – II SARATH



Product Description

BMP-II Powered by a powerful mobile engine which meets all tactical requirements of mobility in a battlefield, travels at an incredible speed of 65kmph, with easy steering ability in cross country terrain. SARATH is truly amphibious vehicle which can travel at 7 kmph on water and can overcome slopes up to 35 and can cross obstacles of 0.7m. Sarath can be easily transported by air due to its low weight. Protected with armoured plates all around, it ensures a high degree of protection. It offers a chameleon like camouflage with the help of Smoke grenades.

CRN-91 GUN



Product Description

The Close Range Naval-91 is a naval version of the Medak 30mm automatic gun installed on a ship. It is manufactured by the Ordnance Factory Medak. The CRN-91 Naval gun is a gyro stabilized and is directed by electro-optic fire-control system (FCS) for day and night use, mounted on an improvised cupola. IT can also be remotely operated.

UTD-20



Product Description

UTD -20 Engine is used for Infantry Combat Vehicles (BMP-2), Armoured Personnel Carriers. It is a 300 HP, 6-cylinder naturally aspirated, four stroke, water cooled engine.

46-6 S



Product Description

V46-6 Engine is used for Tank T-72, TRAWL, ARV. It is a 780 HP, multi fuel, 12-cylinder super charged, four stroke, water cooled engine.

V92S2



Product Description

V92S2 Engine is used for Tank T-90. It is a 1000 HP, multi fuel, 12-Cylinder Turbo Charged four stroke, water cooled engine.

FUZE



Product Description

Electronic Fuze is one of the diversified products of AVNL. The new generation, modular and m ulti function/ multi option electronic fuzes using State-of-the-Art technologies have been developed at AVNL. Electronic Fuze so developed is having flexible design to adopt futuristic requirements and also provides double layer safety (Electrical and Mechanical). The Electronic Fuzes are manufactured for various artillery ammunitions, meeting international standards MIL-STD-1316 & 331 and STANAG-4187.

CHAFF DECOY LAUNCHER – KAVACH



Product Description

KAVACH system is designed to counter the threats of various anti-ship missiles by using Chaff Decoys for optimum anti-missile defence technique. The system provides soft kill defence in three layered defence scheme.

Contact Person

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Organisation Profile

Avantel offers innovative, customized network centric solutions through products that comply with MIL standards for defence platforms including Ships / Submarines / Aircraft / Helicopters.

We facilitate highly secured, seamless, long range communications over satellite and the HF medium for net centric operations of Defence Forces on the main land & high seas

SOFTWARE DEFINED RADIO (SDR), SCA 4.1 ARCHITECTURE COMPLIANT



Product Description

The Static HF Transreceiver System is a software defined Transreceiver with Software Communication Architecture (SCA) with rated output power of 1 KW for communication in the short wave (HF) frequency band of (2 to 29.999) MHz. The equipment is designed for voice and data applications. The Static HF Transreceiver System consists of HF Radio, Power Amplifier (PA), Filter Switching Module (FSM), Remote Control Unit (RCU), HF Interface Unit (HFIU), Power Supply Unit (PSU), Ethernet Switch, Antenna Tuning Unit (ATU), Antennas with suitable Mast and Online UPS.

Dimension: 19"(W) X 19U(H) X 800 mm(D)

Weight: < 200 kg

Capabilities:

- SCA 4.1 compliant Software Defined Radio (SDR)
- Supports modulation standards AM, SSB, ISB, FSK & PSK
- ALE: 2G / 3G
- 1 kW PEP/CW output power
- Solid-state linear design with broadband multi octave frequency
- Semi duplex / Simplex Transceiver
- Remote operation through RCU over Ethernet
- Highly reliable and rugged design complying with MIL-Standards viz. JSS 55555, MIL-STD 810F/G, MIL-STD 461E/F

MSS TX-RX TERMINAL M-II



Product Description

MSS Tx-Rx Terminal M-II supports higher Data Rate& Voice, with higher operational efficiency. The main feature of this new is Digital Beam Former (DBF). This new feature facilitates both Voice and Data Communication, between Terminal to Terminal, Terminals to Hub.. The Terminal can be operated from any location of Indian Mainland region and also high seas.

Terminal Size: 430(L) X 330 (W) X 180 (H) mm max

Terminal Weight: <17Kg

RIU Size: 250(L)x200(D)x84(H) mm max.

RIU Weight: <3Kg

Capabilities:

- Supports Voice / Data communication
- FEC and LDPC Channel coding
- Supports DAMA (Demand Assigned Multiple Access)/PAMA (Pre-Assigned Multiple Access) modes
- Data communication between Terminal to Terminal or Terminal to HUB with 2400 bps data rate
- High level signal strength is achieved with Digital Beam Forming techniques on a moving platform to achieve high data rate

- Voice call between Terminal to Terminal, Terminal to hub and PSTN and Terminal with 3600 bps data rate
- User-friendly remote operation using RIU and MMI loaded into PC
- Ethernet interface between RIU/MMI and Terminal
- Compatibility with existing MSS Network thru Hub
- Health status monitoring

UHF SATCOM SYSTEM-AIRBORNE



Product Description

UHF Satcom System on aircrafts provides voice communication through Indian Satellite (GSAT-7). NMS at Hub controls the total communication network in UHFXC & CXUHF links. The UHF Satcom System-Airborne consists of UHF Satcom Terminal, Remote Control Unit and UHF Satcom Antenna. UHF Satcom Terminal is accessed and controlled from the Remote Control Unit.

Terminal:

- Size: 210(W) X220(H) X520(D) mm max
- Weight: 20Kg

RCU:

- Size:115(W) X80(H) X120(D) mm max. (With connectors)
- Weight: 3kg max.

Antenna:

- Size:490(L) X 440(W) X 130(H) mm max.
- Weight:7kg max.

Capabilities:

- Voice/Data Communications on SATCOM & LOS
- Simultaneous Operations of LOS & SATCOM Modes
- Satcom mode operates in DAMA/PAMA mode
- RS232/Ethernet Interface for Data
- Built in GPS Receiver
- BITE for Fault Diagnostics
- Rugged & Compact Indigenously Designed Unit

SATELLITE MOBILE RADIO (SMR)



Product Description

The Satellite Mobile Radio is a MSS system for GSAT-6, which is the latest version of the MSS Trans-Receiver Equipment developed by M/S Avantel Limited. The Satellite Mobile Radio works with MSS transponder of GSAT-6 for Voice and data communication at a data rate of 3.6Kbps. It can be used from any location of Indian mainland region within the Satellite footprint. It operates in ALOHA/TDMA/ mode for Data communication and DAMA/PAMA for Voice and Data communication.

Portable, Light weight. Size: 200(L) X 200(W) X 73(H) mm -2.5 kg

Capabilities:

- Secured Voice & Data communication
- DAMA (Demand Assigned Multiple Access) & PAMA (Pre-Assigned Multiple Access) modes
- Datarate and Voice depends on the satellite.
- Works with Omni DirectionalAntenna (No Alignment & Tracking required)
- Remote operation through Rugged device over WiFi
- Built in Battery @ 2hours talk time & @200 messages
- External Encryption Interface
- Live Tracking of Assets
- Health Status Monitoring
- Geo Fencing Alerts

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Organisation Profile

BEML Limited is a Public Sector Undertaking, Ministry of Defence, Govt. of India. The Company operates under three major Business verticals viz., Mining & Construction, Defence & Aerosapce and Rail & Metro. Being India's leading defence equipment manufacturer, BEML Limited manufacture state-of-the-art military equipment for Indian defence forces. The company manufactures assault bridges and mine clearance equipment and armoured recovery vehicle in addition to powerpack, transmission and major aggregate for armoured vehicles.

BEML: 15M SARVATRA BRIDGING SYSTEM



Product Description

Scaled down static model of this equipment will be displayed at BEML stall

Characteristics of Equipment

SPAN 15M, mounted over BEML HMV 8X8

BEML: ARJUN ARRV



Product Description

Scaled down static model of this equipment will be displayed at BEML stall

Characteristics of Equipment

Arjun Armoured Recovery and Repair Vehicle

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Organisation Profile

Headquartered in Hyderabad, Bharat Dynamics Limited (BDL), was incorporated on 16 July,1970 as Public Sector Undertaking under Ministry of Defence, Government of India.

Over the years, BDL has evolved as one among few industries in world having state-of-the-art facilities for manufacture and supply of Guided Missiles, Underwater Weapons, Air-borne products and allied defence equipment for Indian Armed Forces. BDL also offers Product Life Cycle Support and Refurbishment / Life Extension of vintage Missiles. While fulfilling its basic role as guided weapon system manufacturer, BDL has built-up in-house R&D capabilities primarily focused on Design & Engineering activities.

BDL has forayed into international market by offering its products to foreign countries. BDL is currently executing export order of Torpedoes and is geared up to take up export orders of Akash Weapon System. Thrust is being given to explore tie-ups with OEMs for new missiles and underwater weapons for potential Transfer of Technology.

NAG – ATGM (ANTI TANK GUIDED MISSILE)



Product Description

NAG is a third generation (Fire and Forget) mechanized infantry ATGM, to destroy armored vehicle equipped with Explosive Reactive Armour, moving and stationary targets.

Features

- Lock on before launch, Image Infrared (IIR) technology
- Can defeat armoured targets fitted with ERA
- Launched from NAMICA
- Equipped with tandem warhead
- High hit and kill probability
- Top attack
- Length : 1900 mm
- Caliber : 150 mm
- Range : 4000 m
- Flight time : 19 sec
- Armour Penetration : 800 mm behind ERA
- Weight : 45 kg

KONKURS – M ATGM (ANTI TANK GUIDED MISSILE)



Product Description

KONKURS - M is a Second Generation, mechanized infantry ATGM, to destroy armored vehicle equipped with Explosive Reactive Armour, moving and stationary targets. A higher homologue of Konkurs missile with improved warhead penetration.

Features

- Can defeat armoured targets fitted with ERA
- Can be launched either from BMP-II or from ground launcher
- Equipped with tandem warhead
- High hit and kill probability.
- Length : 1260mm
- Caliber : 135mm
- Range : 4000m
- Flight time : 19 s
- Armour Penetration : 800 mm behind ERA
- Weight : 16.5 kg

INVAR – ATGM (ANTI TANK GUIDED MISSILE)



Product Description

INVAR (3 UBK 20) ATGM is a mechanized infantry weapon fired from the gun barrel of T90 tank to destroy armoured vehicles equipped with Explosive Reactive Armour.

Features

- The missile is of semi-automatic control system, laser beam riding and jamming immune
- Equipped with tandem warhead.
- Can destroy stationary and moving target with speed up to 70 kmph
- Has a high hit and kill probability.
- Length : 695 mm (missile)
- 395 mm (throwing device)
- Caliber : 125 mm
- Range : 5000 m
- Flight time : 17.6 sec
- Armour penetration : 700 mm (behind ERA)
- Weight : 17.2kg (missile)
- 1kg (throwing device)

AKASH WEAPON SYSTEMS (SURFACE TO AIR MISSILE)



Product Description

AKASH is a medium range surface to air missile system having a range of 25 km and designed for Air Defence of Vulnerable areas/points. A troop of AWS consists of a Long Range Surveillance Radar, a Target and Missile Tracking Radar, Troop Control Centre and Launchers

Features

- Effective range : 3-25 km
- Speed range : 1.8 - 2.5 Mach
- Altitude of operation : 100 m - 20 Km
- Propulsion system : Integral Ramjet Rocket
- Length : 5.87 m
- Diameter : 350 mm
- Weight : 710 kg
- Warhead type : High explosive, pre-fragmented with RF proximity fuse
- Guidance system : Command Guidance Single Shot Kill
- Probability (SSKP) : Better than 88%
- Target types : Helicopters, Fighter AC, UAV etc.

- Each troop is capable of tracking 64 targets in the background and launch 8 missiles against 4 targets simultaneously.
- Fully automatic with quick response time from target detection to kill.
- Open system architecture ensures adaptability to existing and futuristic Air Defence environments.
- High immunity against active and passive jamming.
- Secured mode of communication between combat elements.
- Self-sufficient in electrical power with in-built power sources.
- Road and rail transportable with quick mobilization and deployment capabilities.
- In-built safety features with IFF.

VLSRSAM (SURFACE TO AIR MISSILE)



Product Description

Vertically Launched -Short-Range Surface to Air Missile (VL - SR SAM) is a quick reaction point defence system for use against supersonic sea skimming targets including aircrafts, UAVs, munitions etc.

Considered to be the next-generation, ship-based, all-weather, air defence weapon system VL-SRSAM can provide complete protection against all known and projected air targets and can be developed in two variants for Air Force and Navy.

Features

The canisters are designed to launch missiles in hot-mode, i.e. ignition within the canister itself and the Vertical Launch Unit is designed to launch SAMs in quick succession in case there are multiple incoming projectiles.

Each Vertical Launch Unit houses 8 heavily modified quick reaction SAMs to engage incoming supersonic projectiles

ASTRA WEAPON SYSTEM (AIR TO AIR MISSILE)



Product Description

ASTRA is an indigenously developed Air - to - Air Beyond Visual Range missile comprising of Astra Missile and Launcher.

Features

- Range : 80 -110 km
- Altitude : up to 20 km
- Length : 3840 mm
- Diameter : 178 mm
- Flight Duration : 100 – 200 Sec
- Warhead : HE Pre Fragmented
- Max Speed : Mach 4.5
- Propulsion Detonation : Solid Rocket Motor
- Mechanism : Radar proximity Fuse.
- Guidance : Inertial, mid-course update and terminal active radar homing
- Launch platform : Su-30 MKI

SMART ANTI AIRFIELD WEAPON (SAAW) SYSTEM



Product Description

Smart Anti - Airfield Weapon (SAAW) is long range, standoff, precision air-to-surface weapon.

Features

- Capable of engaging ground targets for launch from Jaguar & Su-30 MKI aircrafts
- Mass: 125 kg and Length: 1.85 m
- Accuracy < 7m with (IN-GPS) & < 3m with Seeker
- Range : upto 90 - 100 km based on release conditions.

HEAVY WEIGHT TORPEDO (VARUNASTRA)



Product Description

VARUNASTRA is an advanced state-of-the-art, ship launched heavy weight, anti-submarine Torpedo capable of, targeting submarines operating in shallow / deep waters.

Features

- Length : 7.780 m
- Diameter : 533.4 mm
- Speed : 27 & 40 knots
- Operating depth : 8 to 600 m
- Propulsion : contrarotating propellers
- Weight of the torpedo : 1605 ± 10 kgs(exercise version)

  : 1850 ± 10 kgs(combat version)
- Long range with multi maneuvering capabilities.
- Acoustic homing with wide look angle capable of tracking silent targets.
- Accm features and multiple signal tracking system.
- Autonomous advanced guidance algorithms.
- Low drift navigational systems over long endurance.

ADVANCED LIGHT WEIGHT TORPEDO (TAL)



Product Description

Light Weight Torpedo is a state-of - art underwater weapon which can be launched from a ship and/or a Helicopter.

Features

- Length : 2752 mm
- Weight : 197.5 kg (exercise version) 220 kg (war shot version)
- Diameter : 324 mm
- Displacement : 190.7 kg
- Explosive weight : 40 kg
- Tactical characteristics : -
- Role : Anti submarine
- Launch platform : Ship / helicopter / fixed wing aircraft
- Speed : 33 knots(max)
- Endurance : 6 min
- Depth of operation : 10 mtrs (min) 450 mtrs (max)
- Propulsion : Electrical

COUNTER MEASURES DISPENSING SYSTEMS (CMDS)



Product Description

COUNTER MEASURES DISPENSING SYSTE (CMDS) is a state of the art Flare and Chaff Dispensing System. CMDS is an airborne defensive system providing self-protection to the aircraft against Radar guided & IR seeking missiles by dispensing Chaffs and Flares.

Features

- Auto / Semi auto mode firing of flare and/or chaff payloads.
- Stand – alone CMDS / Operation through EW Suite or MFD
- Mixed payload Dispensers
- Direction specific Dispensation of Payloads based on the PFM or by EW Suite
- PFM Data loading through Various methods as per users choice (through MIL 1553 or Directly through PDA/DFL)
- Any combination of payloads can be fired at any interval in any direction from any Magazine
- Programmable critical quantity
- NVG compatible display
- User friendly firing program data base generation and programming software
- MIL STD 1553 B / RS-422 full duplex communication for external interface with EW Suite.
- Doubling of flares firing during “After Burner” stage.
- Simultaneous firing of payloads
- Training mode
- Stopping of currently executed firing program
- No direction specific loading of payloads
- Automatic recognition of Master and its presence
- It can also dispense ECM decoys, Optical Obscurants & AAEDs if size & firing current is same as NATO STD Cartridges
- Mapping of firing pin – payload as per Firing Program (PFM)
- In service on Jaguar, ALH, LCA, AEW&C and MIRAGE, Development under progress for SU-30 MKI, MLH, LCH, C295 and HAWK.
- Auto dispensation at specific way points.

UAV LAUNCHED PRECISION GUIDED MISSILE (ULPGM)



Features

- UAV Launched Precision Guided Missiles
- Propulsion: Dual Thrust Double Base Solid propulsion (smokeless)
- Warhead (2Kg): PF(Anti-personnel), PCB(6 " concrete), AA (Tanks)
- Guidance: Passive Homing with Day / Night Imaging Seeker for fire & forget (Optional Post launch update)
- Drone: Range 15-20Km (40 mins), 2Km AGL, Integrated Drone & Missile fire control
- Length: 890mm
- Diameter: 100 mm
- Weight: < 10 Kg
- Launch Altitude: Upto 2 Km
- Ground Range: Upto 4 Km

DRONE DELIVERED MUNITIONS AND GUIDED MISSILES



Features

GUIDED MISSILES	
CHARACTERISTICS	**SPECIFICATION**
Guidance	SAL Homing
Range	1500 m
Trajectory	Top Attack
Target Engagement Missile	Line of Sight (LOS) Targets
Missile Parameters	Length – 680 mm, Weight – 4.5 Kgs
Targets	Troop Concentrations & Soft Skinned Vehicles
Warhead	Anti Personnel & Anti Material Multi Purpose

BOMBS		
CHARACTERISTICS	**1 Kg CLASS**	**3.5 Kg CLASS**
Length	325 mm	463 mm
Weight	1100 gr	3500 gr
Warhead Weight	HEF Fragmentation	
War Head	730 gr	2800 gr
Activation	Impact & G Switch	
Targets	Troop Concentrations & Soft Skinned Vehicles	
Warheard	Anti Personnel & Anti Material Multi Purpose	

DRONE	
CHARACTERISTICS	**SPECIFICATION**
Drone Configuration	Hexa – Rotor UAV
Dimensions	2000 m
Service Ceiling	1500 m AMSL
Operational Altitude	500 M AGL
Range Endurance	2.5 Hours, 45 Km One way
MTOW	40 Kg
Max Payload	Upto 8 Kg

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Organisation Profile

Bharat Electronics Limited is a Government of India enterprise under Ministry of Defence, set up in Bengaluru in the year 1954. It is the premier electronics company for the development and manufacture of professional-grade electronic equipment, systems and components. The company has achieved progressive self-reliance in the areas of design and manufacture of equipment for Defence Communications, Electronic Warfare Systems, Radars & Sonars, Opto-Electronics, C4I Systems, Turnkey Solutions, Tank Electronics, Meteorology, Space Electronics, Civil Aviation, Medicare, Solar Photovoltaic based Systems and the Electronic Components.

The products are of state-of-the-art technology serving the customer through Quality, Technology and Innovation. Bharat Electronics has grown into a multi-product, multi-unit company comprising nine integrated ISO 9001/9002 certified manufacturing units in India. To have a focused approach on different business segments, the mother unit in Bengaluru has reoriented itself into seven Strategic Business Unit (SBU): Viz., Military Radar, Military Communication, Naval Systems, Electronic Warfare and Avionics, Export Manufacturing, Telecom & Broadcasting Systems and Electronic Components. The eight units outside Bengaluru are also independent SBUs which cater to a specialized segment of product development, manufacturing and sales and service support.

Besides 9 units, BEL has two Central Research Laboratories (CRL) one at Bengaluru and other at Ghaziabad, which caters to futuristic development of technology and modules required for integrating into products from various units.

BEL also has overseas offices at Oman, Myanmar, New York, Singapore, Sri Lanka and Vietnam to address the export business opportunity.

DUAL MULTI-FUNCTION CONSOLE (DMFC)



Product Description

The purpose of the DMFC (Dual Multi-function Console) is to provide representation of the air/surface/sub-surface scenarios, own ship and other track information, weapons and other sensors information, RADAR videos, Camera input and Maps information. Each console comprises of a primary display and a secondary display and has processor capable of locally generating and controlling the screen presentations. All consoles communicate with other Combat Management System (CMS) segments depending on requirements.

Features:

- Man-machine interface for communicating operators' inputs to other CMS segment.
- DMFC console is provided with a Touch Input Device (TID), track ball assembly, multi-function keyboard and Fixed Action Buttons (FAB). CMS functions in various modes shall be initiated by invocation of a combination of FABs and TID controls.
- Display of video from digital cameras can be displayed on secondary display.
- Provide on-line and off-line diagnostics.
- Provide on-line and off-line operator help and off-line maintenance help.
- Display of tactical information in an area of maximum radius 5000 NM in graphic form in a 1920 X 1200 pixels on primary screen.

COMBINED INTERROGATOR & TRANSPONDER (CIT)



Product Description

BEL In-house designed CIT is a new generation MKXIIA/S CIT, designed in 1 Short ATR Rack for Air, Naval & Ground Long Range Air Defense Systems with static or mobile platform. CIT has civilian/ military modes including encrypted modes 4 & 5. SSR in civilian modes with Mode S level 2 Elementary or Enhanced surveillance with built-in IFF tracker to provide autonomously to the system, an accurate picture of the Air Traffic

Features

- State of the art Design
- In built GPS-SBAS Receiver
- Fully Remote Operation: Interactive GUI for windows based computer
- Built-In-Self Test and fault indication
- Direct RF sampling using JESD B Interface
- High Accuracy & Refresh Rate
- Range Coverage : 150 NM (278KM)

MAN-PACK HF SDR



Product Description

The HF SDR radio is advanced software defined radio in compliance with SCA 4.1 architecture. The radio is lightweight 20 W transmit capable radio. It provides a complete solution to the short-range communication requirements in the crowded HF band and long range communications beyond line of sight. The radio provides Voice, Data, Flash message communication in Clear, Secure and Frequency hopping modes.

Features

- Frequency of operation : 1.5 MHz to 30 MHz
- Modulations : AM, CW, USB, LSB, ISB
- Programmable BW : up to 24kHz
- Modes : Clear, Secure, FH
- Freq Management : Single, Dual, 2G/3G-ALE
- Voice & Data encryption : Pluggable crypto module
- Clear Data rate : up to 4800 bps
- Secure Data rate : up to 4800 bps
- FH Data rate : up to 1200 bps
- Squelch : Digital Tone Based
- Power Source : 12 V DC (High Capacity Li-ion Bat)
- GPS System : In-built with polling, INSS and GAGAN
- Architecture : SDR in line with SCA 4.1 (Red and Black separation)
- Built-in automatic antenna tuning: Tunes 3.1mt, 5mt Whip and Dipole
- Interfaces : Ethernet, USB

EOIR SWIR REV III: MULTI-SPECTRAL ELECTRO-OPTICAL PAYLOAD FOR MARITIME MISSIONS



Product Description

EOIR SWIR REV III is a leap forward in complex intelligence, surveillance, today's operational complexity, the multi extended range surveillance. EOIR SWIR REV III integrates a wide range of spectral observation capabilities and enabling optical channels into one, significantly improving. EOIR SWIR REV III, an ITAR free system, can be easily integrated on various platforms, including fixed and rotary wing aircraft, naval vessels and armored vehicles.

Features

- Spectral Smart FUSION capability
- AI capabilities enhance mission effectiveness by enabling the operator to focus on the mission and fight.AI technology to automatically detect and classify targets in real-time. The system reduces human error in mission execution and enables advanced operational insights through an innovative and unique video analytics suite.
- A smart blending mechanism that allows “multi-spectral” images from sensors.
- Quadrant detector LST (Laser Spot Tracker).
- Eye-safe Laser Range Finder capable of high pulse repetition rate
- Near Infrared Laser illuminator and pointer compatible with NVG (Night Vision Goggles).
- Superior optics: Combines multiple cameras Short Wave Infrared (SWIR) channel: Improved haze and dust.

LYNX U2 GFCS (LONG RANGE GUN FIRE CONTROL SYSTEMS)



Product Description

LYNX U2 GFCS is for Short/Medium/Long Range defence against Air/Surface/Shore targets .Measurement of fall of shot and corrections in AA, SU & NGS Firings. It is Simple, but effective Casualty mode of Weapon control for redundancy, using manually operated panoramic sight

Features

- Open and scalable system architecture , permitting simple and flexible implementations for any class of ships
- Quick reaction, Multi-sensor, Multiple weapon Gun Fire Control System
- Radar and EO based tracking sensors with Day/Night capability
- Up mast compact Radar housed on a unique 3-Axis Tracker Mount
- Autonomous Pan and Sector Search modes with automatic target detection

THE EOFCS (EON51)



Product Description

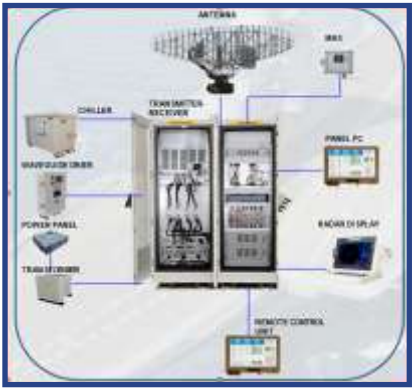
The EOFCS (EON51) is a compact, 2 axes stabilized, fully navalised, high performance Electro Optical Fire Control System for Medium Range Gun Mounts.

- 360° detection, identification and gun engagement of all surface and air targets, such as anti-ship sea-skimming missiles, High Speed missile boats and Fast Incoming Attack Craft (FIAC).
- Provides efficient and comprehensive control of small (630mm) and medium caliber guns (57mm to 76mm) in anti-air, surface and naval gunfire support engagements.

Features

- Day & Night operation. Efficient & cost effective solution for Self protection against conventional and asymmetrical threats
- As a target indicator for other combat management and weapon systems onboard
- Support for maritime safety and security such as anti smuggling, Search and Rescue etc.Autonomous Search & Target Acquisition
- Surveillance & Threat Evaluation
- Navigation and Situational Awareness
- Recording for archiving and debriefing
- Interface to Maritime charts or other data sources on-board for identification

RAWL 02 MK II A 2D AIR SURVEILLANCE RADAR



Product Description

RAWL-02 MK II A is an indigenous, state-of-the-art, solid state, coherent, L-band Radar providing a detection volume space up to 260 Kms in range and 40° coverage in elevation. The Radar is suitable for installation onboard large, medium Naval Ships and onshore establishments.

Features

- Medium range air surveillance
- Better Target resolution
- Solid state Transmitter
- Low noise receiver
- Wide receiver dynamic range
- Digital pulse compression
- Advanced Digital signal processing
- High ECM resistance
- Sector transmission

3D E/F BAND NAVAL MISSILE DETECTION RADAR (NMDR)



Product Description

E/F Band Naval Missile Detection Radar (NMDR) is a semi distributed state-of-the art Active phased array Radar developed for installation on board Naval Ships. This Missile Detection Radar provides air/surface surveillance and detection of missiles at substantially longer ranges for target designation to Fire Control Systems.

Features:

- Light weight Antenna (less than 2 tons)
- Multi-beam Elevation processing
- Electronic stabilization
- War time and Peace time frequencies of operation
- Pulse compression and Pulse Doppler processing
- Low power mode of operation
- Low jammed frequency detection for frequency management
- Graceful degradation
- BIT for online and offline monitoring of system parameters

SHAKTI – SHIP-BORNE ESM



Product Description

SHAKTI is an Electronic Warfare (EW) suite consisting of both Electronic Support (ES/ESM) and Electronic Attack (EA/ECM) systems. The Electronic Support (ES) System covering frequency band from A to K has broadband and narrowband operations to meet the tactical and strategic needs of navy. Broadband operation is achieved by employing a wide-open receiver and has 100% probability of interception

Features

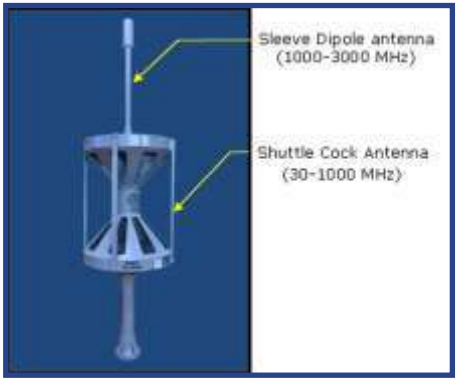
ES Subsystem

- Tuned Receiver with TDOA based DF Receiver E
- Wide open Rx based BLI DF Receiver& Narrow Band Rx based on Quad Digital Receiver J
- Wide open Rx with TDOA based DF Receiver

EA Subsystem

- Multi-Beam Servo driven jammer
- Enhanced Jamming Techniques using DRFM

NAYAN COMINT SYSTEM





Product Description

NAYAN System is an indigenously designed and developed COMINT system for installation on minor and major war vessels of Indian Navy.

Features

- Provides intelligence by intercepting and demodulating voice/data transmissions.
- Provides fast signal acquisition capability including measurement of signal technical parameters, Direction Finding as well as digital signal demodulation.
- Provides signal analysis capability on the intercepted signal.
- Provides radio activity gathering as well as monitoring capability.
- Provides simultaneous search, monitoring and recording capabilities. The recorded signal is available for offline analysis.
- Provides capability to interface with CMS, GPS, Gyro and printer.
- For better appreciation and situational awareness the system displays the DOA of the intercept on the Map underlay as well.

SARANG AIR-BORNE ESM SYSTEM



Product Description

The proposed 'SARANG' system operates in the band of 0.4-40 GHz employs various state-of-art technologies like Quad Superheat Receiver, Digital Receiver, Homodyne Receiver, etc. and features in-built Radar Finger Printing System and Moving Map Display. The system has adequate broadband and narrowband sensitivities to cater to the current / futuristic operational requirements of Navy.

Features:

- Frequency of operation : 0.4 – 40 GHz
- DF Accuracy: $<5^0$ (0.4 - 2.2 GHz)
  $<2^0$ (2.2 - 18 GHz)
  $<5^0$ (18 - 40 GHz)
- Pulse width Range: 50nSec – 1mSec
- PRF Range:50Hz – 500KHz
- RFPS:Built-in (Inter and intra pulse analysis)
- Sensitivity : -60±5 dBm (0.4 - 2.2 GHz)
  -75±5 dBm (2.2 - 18 GHz)
  -55±5 dBm (18 - 40 GHz)

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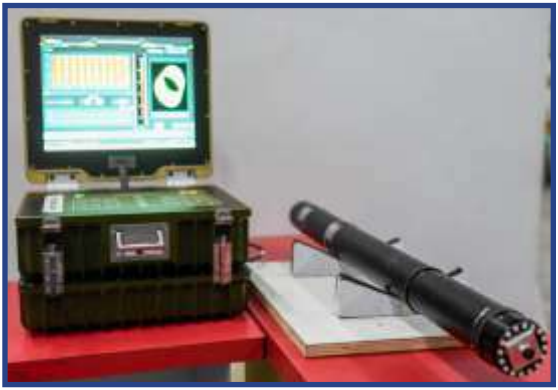
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Organisation Profile

Bit Mapper Integration Technologies (BMIT), a distinguished name in embedded and defence electronics design, has solidified its position as leading electronics and defence solutions provider in India. As a proud member of The Phoenix Group™ since 2021, BMIT has continuously strived for innovation and technological advancements to contribute to the progress and security of the nation. With a core philosophy encapsulated in the motto "Innovations Serving Motherland," BMIT focuses on Indigenously designed, developed, and manufactured (IDDM) platforms specifically engineered for Intelligence, Surveillance, and Reconnaissance (ISR) applications. These platforms integrate cutting-edge AI algorithms, advanced Edge Computing devices, and Electro-Optical devices to systematically collect, analyze, and utilize data. This commitment to excellence has positioned BMIT as a key player in the defence electronics sector.

LASER INSPECTION ROBOT



Product Description

The Laser Inspection Robot is a reliable and automated solution for inspecting the health of an armament barrel. The robot is designed to automatically crawl and inspect 76mm gun barrels, IRL, and submarine torpedo tubes.

The Robot is a modular system equipped with cutting-edge technology, incorporating an onboard camera and an advanced LASER system. Through its meticulous examination, it generates comprehensive analytical reports, providing you with an in-depth assessment of the barrel's health and serviceability.

Characteristics of Equipment

- Fully Automated Operation
- Inspection data with micron-level precision.
- AI-powered Inspection
- Supports smooth and rifled barrels
- Manual & Automatic Modes of Operation

AUTOMATED GUN BARREL INSPECTION AND CLEANING ROBOT



Product Description

AI-powered Vision-based Robotic Solution for Modern Day 155mm, 130mm, 125mm, 105mm and 76.2mm Artillery Systems. The Automated Gun Barrel Cleaning and Inspection Robot is a novel cleaning and inspection system designed, developed, and manufactured in India. The system can automatically crawl, clean, and inspect large caliber gun barrels. This modular cleaning system provides superior cleaning quickly, eliminating manual cleaning efforts. The robotic gun cleaning system removes carbon deposits, copper fouling, and post-combustion residues. ABCR also lubricates the barrel surface to safeguard it from corrosion. In the fully automated mode, it inspects and localizes uncleaned patches inside the barrel using its AI-powered camera and automatically cleans it, ensuring thorough cleaning. The system is suitable for both smooth and rifled gun barrels.

Characteristics of Equipment

- Fully Automated Operation
- Effortless Cleaning
- AI-powered Vision Inspection
- Compact Design

BARRELEYE 4K



Product Description

The Bit Mapper Barreleye 4K is a state-of the-art mast system designed to offer powerful vision to submersible ships and watercraft without the restrictions of a traditional periscope. The mast installs on any submarine and offers 4K vision on the display in the control room with live streaming.

Loaded with powerful sensors boasting SWIR, MWIR capability and laser range finder for visibility in all weather and water conditions, the 4K mast is the perfect addition for every submarine, offering critical data for rapid decisions at all times. The mast also offers real-time image enhancement providing an intuitive Human-Machine Interface (HMI) with integrated automation functions to enhance situational awareness, especially when operating at periscope depth.

Characteristics of Equipment

- High-Class Thermal Imager
- Laser Rangefinder
- Laser Designator
- Laser Pointers and Illuminator
- Mil-Spec Compliant
- Compact Design

ELECTRO-OPTICAL INFRARED GIMBAL



Product Description

The EO/IR Gimbal by Bit Mapper is a robust camera designed to deliver seamless aerial imaging with exceptional detail. Perfect for inspection, surveillance, search, and rescue operations, this camera offers thermal and IR imaging capabilities for enhanced vision and the ability to uncover hidden details.

Up to 30x optical and 12x digital zoom enables smooth video streaming and high-quality photography even from a distance. The EO/IR Gimbal is the ultimate imaging device for all drone-based applications, operating flawlessly even in low-light conditions.

Characteristics of Equipment

- Ruggedized Design
- 3-Axis Stabilisation
- Eye-Safe Laser Rangefinder
- Auto-Object Tracking
- 360° Yaw Rotation
- High-Detail Thermal Imaging

GIMBAL-BASED SURVEILLANCE SOLUTION



Product Description

The Gimbal-Based Surveillance Solution (GSS) is an integrated security and surveillance system designed for high-accuracy detection and tracking of targets; with various sensory inputs, GSS can be triggered for activation. This AI-based technology can detect patterns, unusual activity, or any other actionable event in its field of view to alert personnel in real time for immediate action.

Characteristics of Equipment

- Ruggedized Design
- AI Vision-based Object Detection
- Target-based Image Enhancement
- Auto-Object Tracking
- Sensor Fusion-based Design

UNDERWATER CAMERA



Product Description

The Underwater Camera is made for capturing high-definition images and videos during submerged operations. The camera's high strength alloy housing allows safe camera working at depths of up to 2000m. Its fully motorized lens with zoom, focus, and iris with integrated autonomous focusing feature works in tandem with the sapphire glass window to offer crisp and clear underwater images. The camera has high resolution of FHD 1080p to 4K Ultra HD to capture videos at frame rates up to 60 fps.

Characteristics of Equipment

- High-Definition Picture Quality
- H.264 Dual Stream Compression
- Viewing Angle
- High Strength Alloy Housing
- Waterproof Camera

TETHERED DRONE SYSTEM



Product Description

The tethered VTOL-capable drone system is designed by Bit Mapper Integration Technologies for day-night video surveillance in high-altitude regions.

Characteristics of Equipment

- VTOL capability with a quadcopter design for easy flights in areas as small as 5m x 5m
- Rapid deployment time: <10min
- Lightweight Design: The system has an all-up weight of less than 20 Kg
- Smooth integration with Bit Mapper's Electro-Optical Infrared Gimbal for
- aerial imaging with high details
- Multiple operation modes for a high degree of operational ease

Contact Person

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Organisation Profile

Burckhardt Compression is recognized as the global technology leader in the reciprocating compressor world. As an OEM with over 175+ years of in-house experience in developing, engineering and manufacturing compressors, we are committed to highest reliability and best quality.

Burckhardt Compression India, (BCIN) an ISO 9001: 2015, ISO 14001:2015 and ISO 450001:2018 certified company, is the center of competence for trunk piston compressors with more than 25 years of manufacturing experience. Further, BCIN is the only GreenCo "Gold rated" compressor company, by CII in India.

In House Expertise

Burckhardt Compression India has a dedicated and Experienced engineering team for sizing and selection of the compressor to meet the desired operating conditions.

- ✓ Completely Indigenous Design, Engineering, Manufacturing Capability of High Pressure Compressors (Present Indigeneous content more than 95%+ for bare compressor)
- ✓ Special Expertise in Noise and Vibration analysis - Expert for Pulsation and Vibration Studies
- ✓ Test facilities for measurement of vibration in 1/3rd Octave band from 10 Hz to 10 KHz
- ✓ Modelling software like Medusa, Unigraphics
- ✓ In-house Finite Element Analysis on Ansys software
- ✓ Guarantee longest MTBO (Mean Time Between Overhaul)

Burckhardt Compression India has its own valve repair shop to cater to the valve service requirements of the end-users.

WATER COOLED COMPRESSORS





upto 420 bar discharge pressure

COMPLYING To NSS AND NES STANDARDS

Product Description

Burckhardt Compression's water-cooled compressors are specially designed for marine as well as breathing air applications. These compressors are available up to 5 stages with 'V' type cylinder configuration and are supplied to combat and support ships, Frigates, Destroyers, Aircraft Carriers, Survey ships, Submarine and Dockyard utility.

Compressor Specifications

Type	Max. Speed [rpm]	Rated Power [kW]	W x H x L [mm]	Package Weight* [kg]
SW	1500	93	1050 X 1425 X 1960	2000
HW	3000	30	1100 X 1100 X 1600	900
CW	1500	15	800 X 800 X 1400	575

*Compressor with electric motor

Features	Your Benefits
✓ High reliability	✓ Operators safety
✓ Shock compliant as per NSS & NES standards	✓ Fast bottle filling
✓ Noise and vibrations for stealth requirements	✓ Easy maintainability
✓ Direct coupled	✓ Lower maintenance cost

AIR COOLED COMPRESSORS





upto 500 bar discharge pressure

Product Description

Burckhardt Compressions air-cooled compressors are specially designed mainly for land-based applications and are available as stationary compressors, truck mounted or trolley mounted compressors. These compressors are available up to 6 stages and are designed for all Defense sector.

Compressor Specifications

Type	Max. Speed [rpm]	Rated Power [kW]	W x L x H [mm]	Package Weight* [kg]
CC	1365	45	1250 X 1900 X 1420	1750
CU	1230	90	1200 X 2600 X 1430	2400
CT	1045	180	2000 X 4000 X 2000	6000

*Compressor with electric motor

Features

- ✓ Air-cooled design
- ✓ Belt driven
- ✓ Skid mounted with AVMs
- ✓ Electric motor/ Diesel engine driven
- ✓ Safety interlocks
- ✓ With or without acoustic canopy

Your Benefits

- ✓ Ease of maintenance
- ✓ Easy installation & start up
- ✓ Low pressure ratio per stage for higher efficiency
- ✓ Low life cycle cost

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Organisation Profile

Caltech Engineering Company Private Limited, founded in 1985 by Mr. V. K. Panday, specializes in the design, development, and manufacture of control systems primarily for the Indian Navy, Aerospace, and related Defense industries. Initially established as a proprietary concern, it was later incorporated as Caltech Engg. Co. (P) Ltd. in 1988. With over 35 years of experience, Caltech has been a key provider of engineering solutions, particularly in the development and manufacture of high-pressure hydraulic and pneumatic valves, as well as control system components.

The company's product range includes various specialized items such as valves, couplings, filters, and hydraulic components, catering to different defense organizations and projects like the Prithvi Missile, submarines, and propellant transfer vehicles. Notably, Caltech has received acknowledgment for its Electro-Hydraulic Steering Gear Control unit for Defense Machinery Development Establishment (DMDE), Secunderabad.

Over the past decade, Caltech has focused extensively on indigenization efforts, particularly for submarines, resulting in successful collaborations with various defense organizations and subcontracting for prominent firms like Larson & Toubro, Godrej & Boyce, and Kirloskar Brothers Ltd. The company's entrepreneurial culture, led by its three directors, Mr. V.K. Panday, Mrs. Manju Panday, and Mr. Chaitanya Panday, emphasizes flexibility, agility, and relationship-building.

Mr. V.K. Panday, with over 55 years of experience, serves as the Managing Director and chief designer, spearheading strategic planning and overseeing operations. Mrs. Manju Panday contributes to strategic decision-making and financial management, ensuring compliance and fostering a productive organizational culture. Mr. Chaitanya Panday, the Technical Director, brings expertise in aerospace engineering and oversees technical operations and innovation.

Caltech has been recognized for its excellence in product innovation, receiving awards like the "Best New Product Development Award-2003" and the "Excellence in Product Innovation (SSI)" award. Strategically located in the Patancheru Industrial Area, Telangana, the company boasts a well-equipped manufacturing facility with high-end CNC machines and comprehensive testing equipment, ensuring quality and reliability in its products.

With a workforce of about 50 highly skilled personnel, Caltech remains committed to serving the Indian defense industry while also exploring opportunities in the global market. The company aligns with the government's "Make in India" campaign aiming to strengthen its position as a premier valve manufacturing company and a leading innovator in the years ahead.

TANK SIDE BLOW VALVE



Characteristics of Equipment

- Max Working Pressure: 400 Bar
- Hydro Test Pressure: 800 Bar
- Material of Construction: Nickel Aluminium Bronze Gr. CA-104
- O' Ring Material: Nitrile Rubber
- End Use: Main Ballast Tank for EKM Submarines

HYDRAULIC MANIPULATOR



Characteristics of Equipment

- Max Working Pressure: 100-160 Bar
- Hydro Test Pressure: 240 Bar
- Material of Construction: Aluminium Alloy
- O' Ring Material: Nitrile Rubber
- Coil Voltage: 24 +/- 3 Volts (DC)
- End Use: Surface Ship Hydraulic System

CENTRALIZED LUBRICATION DEVICE



Characteristics of Equipment

- Max Working Pressure: 160 Bar
- Hydro Test Pressure: 240 Bar
- Material of Construction: Aluminium Alloy
- O' Ring Material: Nitrile Rubber
- End Use: Grease Distribution System for EKM Submarines

SANITARY DUPLEX REDUCER



Characteristics of Equipment

- Max Working Pressure: 60 Bar
- Reduction Pressure: 2 Bar
- Hydro Test Pressure: 120 Bar
- Material of Construction: Titanium Alloy
- O' Ring & Diaphragm Material: Nitrile Rubber
- End Use: Garbage Ejector System for Submarines

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CAPTRONIC SYSTEMS PVT LTD

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Organisation Profile

Established in 1999, Captronic Systems Pvt. Ltd. is pioneer in Automation and Test Equipment and specialized in design and development of custom Solutions. Since 31 July 2022 Captronic Systems is now part of Safran Data Systems. With this acquisition Captronic Systems offers wide range of products and solutions in the field of Telemetry for ground and onboard requirements. Captronics will play key role in Make in India initiative for these products. The teams here offer a range of sophisticated forms of custom automated test, control and acquisition systems for R&D, design validation and production testing.

Captronic Systems has established a reputation as one of the leading System Integrators Servicing needs of Aerospace and Defence market.

Captronic Systems Private Limited [CSPL] is an ISO 9001:2015, AS 9100(D). CSPL is a Department of Scientific & Industrial Research (DSIR), Govt. Of India recognized R&D Lab and a Platinum Alliance Partner with National Instruments.

Equipped with 25+ years of experience, the team at Captronic Systems is led by engineers who are deft with analysing needs, conceptualizing designs, building systems that are customized for specific requirements observed across various sectors. Offering end to end solutions, the Captronic Systems team extends services such as delivery, installation, training while maintaining continual support through all phases of the project.

The major services that the organisation provides are Automated Test Equipment Development (ATE), Validation and Testing in the field of Radio Frequency (RF), Hardware in Loop Simulation Systems, Control Systems, Data Acquisition Systems, Check-Out-Systems, End of Line Testers, MIL-1553, ARINC, CAN, LIN and other protocol based testing, System Integration, Software Design and Development services, Custom Protocol Implementation, Test Rig

Upgradation, Reverse Engineering for non-functional Test-Rigs, Built-To-Print Embedded System Development, Control Panel Assembly, Wiring and Cable Harnessing as per IPC-620B/WHMA standards, , Offshore Outsourcing, , EMI/EMC and MIL qualified tests, Instrument set up and calibration, Annual Maintenance Contracts, Independent Verification and Validation (IV&V).

With an Employee strength of Over 150 Engineers and having More than 500 man-years of Software, Hardware & System Integration Expertise Captronic Systems endeavours to provide Clients with the right Virtual Instrumentation solutions by combining latest innovative technology products from world leaders with in-house technical expertise and PMP Certified Project Managers. Captronic Systems has successfully delivered more than 1500+ systems across various domains.

Captronic Systems operated with its, Headquartered in Bangalore and Branch Offices in - Chennai, Pune & Trivandrum in India.

GMDR - GROUND MODULAR DATA RECORDER



Product Description

GMDR is rugged data acquisition system suitable for Ships and Submarines with telemetry PCM output. The highly flexible modular GMDR system is a versatile and future-proof solution for acquisition, recording, dissemination and replay of test instrumentation data in ground station applications. With its high integration, incomparable range of supported video interfaces and full compatibility with global leading MDR products, the GMDR integrates seamlessly into customers' existing test centre topologies.

- Highly Flexible Modular Design
- Real-time Data Access
- Most Advanced IRIG 106-17 Chapter 7 Telemetry Ground Station

CMA



Product Description

CMA is extremely compact Data Acquisition System with telemetry capabilities which can be installed on missiles and torpedo, with its small and highly ruggedized design. It is by far the best fit for remote data acquisition in harsh environments and small space areas, whether it is to test aircraft, missile, torpedo EVTOL or helicopters.

Characteristics of Equipment

- Ultra Compact & Generic: Generic analog module, 2x3" / 51x76 mm, from 1 to 16 modules per stack
- Easy to Configure: eZ software suite, XML schema (MDL)
- Telemetry Capability: Send data to ground stations via reliable telemetry link.

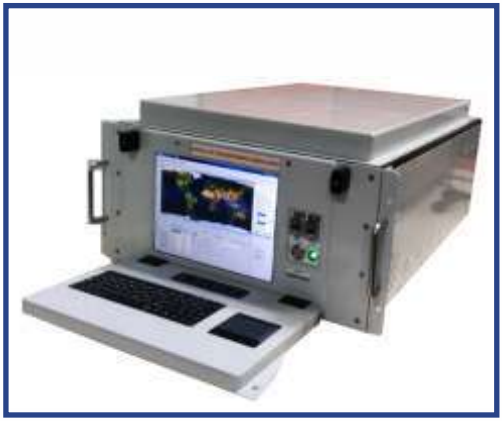
RTR – RADIO TELEMETRY RECEIVER



Product Description

RTR is most advanced telemetry receiver for S,C and L band. Cortex RTR is a proven worldwide COTS telemetry receiver. The latest release strengthens its position as the most advanced digital telemetry receiver on the market, while keeping the well-recognized RF performance and signal processing capability. Based on Cortex architecture, the 4U chassis-based RTR can support up to four channels providing complete scalability and capability and addressing the needs of flight test centres (easy-to- use, intuitive GUI and embedded 8.4" screen). Not only does the Cortex RTR provide an extensive set of features for different frequency bands, modulations, decoders and output formats, but the user can easily upgrade the equipment in the field to access additional and new features.

CHANNEL EMULATOR



Product Description

Channel emulator is a state-of-the-art simulation product which can simulate different environmental impairments in RF communication with missiles, aircraft or satellite. It can emulate specific impairments like Phase Noise: LO instability, Noise density, Offset frequency and non-linearity: Amplifier Saturation level, AM/AM Characteristic, AM/PM Characteristic also, AGWN, Multipath, Attenuation, Delay, Phase Shift, Digital Impairment, and Multitone Interference. This can be used to validate performance of communication link of missiles, torpedo, aircraft or any other article.

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Website : https://chakr.in/

Organisation Profile

Chakr Innovation is a company formed by graduates from IIT Delhi. At Chakr Innovation we are passionate about technology and a sustainable planet. We strongly believe in the power of technology and data and want to leverage these to make a meaningful contribution toward a sustainable planet. We have developed a solution to control the polluting emissions from diesel generators. The device can capture ~90% of particulate matter being emitted from diesel generators which have been verified by IIT Delhi and labs accredited by IS/ISO/IEC and NABL. Chakr Innovation has been recognized and given grants by the Department of Science and Technology (DST), Government of India, and Federation of Indian Chambers of Commerce & Industry (FICCI) and was also awarded and recognized as the most innovative hardware company by American Society of Mechanical Engineers (ASME) and are one of the winners chosen by University of Chicago for a grant by Delhi Government. We have also received the Champions of Earth award by the United Nations, Forbes Global30 under 30 as well as Echoing Green Fellowship. We have also raised 2 rounds of funding to date from investors based out of California, Singapore, and India.

CHAKR SHIELD



Product Description

India's 1st type approved Retrofit Emission control device that reduces Particulate Matter, Carbon monoxide and Hydrocarbons emissions by over 70%. Built on catalyst-based positive filtration technology with no negative impact on DG set, the remarkable Chakr Shield efficiently prevents the release of harmful particulate matter into the atmosphere thus enhancing air quality and overall health. Moreover, Chakr Shield significantly reduces the carbon footprint and ensures compliance with increasingly stringent emission regulations.

Characteristics of Equipment

1. India's first Type Approved RECD
2. Fully compliant with government norms
3. Maximum Pollutants reduced
4. Longest product life offered in the market
5. Negligible maintenance requirements
6. No added back-pressure
7. Minimum electricity requirement
8. No by-products

Contact Person

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COCHIN SHIPYARD LTD

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Organisation Profile

Cochin Shipyard Limited was incorporated in the year 1972 as a fully owned Government of India company. In the last three decades the company has emerged as a forerunner in the Indian Shipbuilding & Ship repair industry. This yard can build and repair the largest vessels in India. Cochin shipyard is one of the leading shipbuilding & repair yard in India, which has an infrastructure that combines economy, scale, and flexibility, and has ISO 9001 accreditation. CSL also has an exclusive area set for offshore construction and future expansion. As one of the India's top 10 public sector undertakings, CSL has been rated excellent by the Government of India, four times in a row for achieving the targets set for the yard under the MOU system With specialised industry knowledge and superior resources, CSL has constantly unfolded new levels of excellence in shipbuilding and ship repair. As a technology leader in India, CSL has adopted the Japanese Integrated Hull Outfitting and Painting system (IHOP) for its new construction, which gives a clear edge to CSL in the field of Ship Building in India.

INDIGENOUS AIRCRAFT CARRIER 'VIKRANT'



Product Description

Indigenous Aircraft Carrier 'VIKRANT' (P71 - IAC) is the first indigenously designed and built Indigenous Aircraft Carrier and is named after her illustrious predecessor which played vital role in 1971 war. It is also the most complex and largest warship to have ever been built in the nation's maritime history. With ship's delivery on 28 Jul 22, India has entered into select band of nations having niche capability to indigenously design and build an Aircraft Carrier.

The construction of the ship is a truly pan Indian effort with active participation of private and public enterprises. Nearly 1,200 works, oil day in, day out to realize the ambitious dream of operationalizing a potent home grown carrier. Being a complex multidisciplinary engineering activity involving integration of multitude of equipment and systems, building Vikrant required significantly higher shipyard effort and dependence on a large number of agencies/OEMs.

Characteristics of Equipment

- Length Overall - 262.5 m
- Breadth(Max) - 62.4 m
- Depth - 25.6 m
- Deep Displacement - 40000 Tons
- Deep Draft - 8.8 m
- Max. Speed - 28 Knots
- Cruising Speed - 18 Knots

- No of Compliments - 1614 (171Officers & 1443 Sailors)
- Gas Turbine : 4 x 22 MW
- Generator : 8 x 3 MW
- Propulsion System : 2 x CPPs
- Flight Deck Area : 12,500 sqm
- Flight Landing Runway
  : Length – 191 m
  : Breadth – 18 m
- Ship's Aviation Complement
  : Mix of 30 Aircrafts & Helicopters
- Number of Decks : 15
- Length Of Electrical Cables : Approx. 2500 km
- Ammunition Lifts : 5 x 2000 kg
- Deck Edge Lifts : 2 x 30 t

FLOATING BORDER OUTPOSTS (FBOP)



Product Description

Floating Border Outposts (FBOP) is the in-house designed vessel by Cochin Shipyard Limited classed by Indian Register of Shipping. Each FBOP vessels are designed with stowage arrangements for four fast patrol boats, which can be launched and hoisted using its own davit system

These are Floating Border Outposts designed to meet the operational requirements of Border Security Force for deployment in Inland waters of India, specifically in creek area of Kutch (Gujarat) and Sunderbans of West Bengal. All the FBOP vessels were successfully delivered to the Border Security force.

Characteristics of Equipment

- Principal Dimensions: Length overall – 46 m
- Breadth - 12 m
- Depth - 3.4 m
- Tank Capacities: Diesel - 25 T
- Fresh Water - 100 T
- Petrol - 15 T
- Accommodation: 1 VIP + 1 Captain
- 2 X 3 Sos
- 1 X 30 Jawans

ANTI-SUBMARINE WARFARE SHALLOW WATER CRAFT (ASW SWC)



Product Description

Anti-Submarine Warfare Shallow Water Craft (ASW SWC) is the indigenously designed and constructed naval vessel by CSL. CSL is building a total of eight (8) nos. of ASW SWC vessels for Indian Navy. The ASW SWC's are propelled with three (3) nos Water jets capable of achieving maximum speed of 25 knots, with total installed propulsion power of about 12 MW. The electric power generation capability of vessel is of about 1.40 MW, with highly redundant configuration. The vessel design and construction is also meeting to the DNV Class notation requirements for Naval vessels, in addition to the stipulated Naval requirements.

The primary role of shallow water craft is to conduct Anti-submarine operations in coastal waters, Low Intensity Maritime Operations (LIMO) and Mine laying operations. The craft is also capable of full-scale Sub Surface Surveillance of Coastal Waters, Coordinated ASW operations with Aircraft, and Carry out Search and Rescue by day and night in coastal areas.

These ships are equipped with Anti-submarine suite comprising of Light Weight Torpedoes, ASW Rockets and Mines, Close-in Weapon System (30mm gun) and 12.7, Stabilized Remote-Control Guns. The ships are designed to fit, highly advanced, state of the art indigenously built, Hull Mounted Sonar and Low Frequency Variable Depth Sonar, for under water surveillance.

Characteristics of Equipment

- Length - 78.00 m
- Breadth - 11.36 m
- Draught - 2.70 m
- Displacement (Full load) - 896 tonne
- Maximum Speed - 25 Knots
- Compliments - 57
- Endurance - 1800 nautical miles at economical speed

Contact Person

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COMINT SYSTEMS AND SOLUTIONS PVT LTD

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Organisation Profile

We Comint Systems and Solutions Pvt Ltd are a 'leading professional strategic Electronics & IT company', based in Hyderabad, India, incorporated in 2004, having pan India presence. We are the leading distributor, System Integrator in partnership with leading global OEM companies, providing niche technology solutions in Lawful Interception, Network Visibility/Security, Cyber Security, Defence Electronics, and other high end niche technology solutions.

Our success lies in our expertise to provide end to end solutions. We work closely with our customers providing Presales services, like requirement gathering, system design, customization, integration and complete post sales services like installation/commissioning, training, within warranty and post warranty AMC services.

CSSPL is backed by excellent infrastructure. CSSPL has established own Manufacturing facility and R&D setup, in line with Govt of India's "Make In India" policy. We are well established with huge customer base and have strong market presence in following product lines.

Network /Cyber Security Division

- Network Security & Access Monitoring
- Lawful Interception and Monitoring solutions.
- Network/Application Testing and Performance Monitoring
- Network Vulnerability Management solutions
- Cyber Security Solutions / Services / Training
- IT/Network Infrastructure solutions (Servers, Storage, Networking, Server Racks etc.,)

Defence Electronics

- Microwave Receivers up to 26.GHz , Front End Modules
- High Performance Wideband Disk Recorders
- Direction Finding (DF) Systems
- Radio Monitoring for COMINT/SIGINT
- Avionics and Industrial Data buses- MIL std 1553, ARINC429, ARINC717, ARINC 615, AFDX, CAN, RS485 and ADL-PDL Adapter
- Counter Drone Solution
- Surveillance and Monitoring system
- Virtual Reality (VR) Maintenance Trainers /Task Trainers
- Tactical Datalinks
- MIL/Rugged Embedded Computing Solutions
- Data Acquisition Systems
- Ground Telemetry Systems

Indigenous Design, Development & Manufacturing

- Power Amplifiers up to 6GHz
- Frequency Synthesizers (L/S/C/X Bands)
- Low Noise Amplifiers upto 18 GHz
- Power Splitter/Combiner (2,4,8,16,32 way) upto 8 GHz
- RF Switches upto 18 GHz
- Band Pass filters upto C Band
- RF Attenuators
- RF over Fiber (RFoF modules)
- RF Front End
- Directional Couplers
- Broadband Wireless Terminals
- GSM/GPS/WiFi ComboAntenna , 4 G Antenna
- DC-DC Converts , AC-DC Converters
- Rugged Displays

OPTICAL TAPS (TEST ACCESS POINTS)



Product Description

CSSPL is indigenously manufacturing Optical Fiber Splitter TAPs that when deployed in network provide permanent connection to passively monitor network traffic. CSSPL offers various Fiber Splitter taps supporting speeds up to 400G. CSSPL TAPs are manufactured meeting to international standards. CSSPL Fiber Splitter TAPs and Rack mount kits are fully Make in India (MII) complaint.

Characteristics of Equipment

- Singlemode and Multimode taps, support 1 – 400Gbps speeds and Split Ratios 50:50, 60:40, 70:30, 80:20 , 90:10.
- Singlemode and Multimode BiDi Taps supporting 40G/100G speeds.
- Multicopy taps, with 2 & 3 outputs having split ratio 33:33:33 & 25:25:25:25, that provide traffic from 1 link to 2 & 3 Monitoring devices at the same time.
- Singlemode and Multimode MTP/MPO Fiber splitter Taps with various split ratios.

POWER AMPLIFIERS



Product Description

CSSPL Power Amplifiers are optimized for Broadband performance and deliver 50dB power output with VSWR < 3:1 .

Characteristics of Equipment

- Wideband performance
- Frequency Bands 20-60MHz, 60 -100MHz , 100-250 MHz ,136 - 174 MHz , 250-500 MHz, 500-750MHz, 750-1000MHz , 860-960MHz, 2.1-2.17GHz
- 100 Watts
- VSWR <3:1
- Class AB
- 3U Rackmount System
- 24VDC Operation
- Ideally suited for EW and Communication Systems

LOW NOISE AMPLIFIERS



Characteristics of Equipment

- Wideband performance
- Frequency Range 0.1 – 12 GHz (in bands)
- Noise Figure 1.6 dB
- High Gain
- Connectors SMA F / N Type

POWER DIVIDERS



Product Description

CSSPL offers Power Divider/Combiner solutions for both low and high power signal applications. The module delivers high port-to-port isolation , best phase and amplitude unbalance.

Characteristics of Equipment

- 2 , 4 , 8 , 12 , 16 way
- Power Splitting / Combining
- Wideband performance
- Low insertion Loss
- Amplitude and Phase unbalance
- Power handling 20 W
- DC Blocking (option)

RF OVER FIBER MODULES



Product Description

CSSPL RFoF Tx/Rx modules are designed to transmit wide frequency range of analog signals over long distances. It has two modules connected by a single mode optical fiber cable. The Optical Transmitter (RFOF Tx) module converts the electrical signal into optical signal by modulating intensity/phase of light and the Optical Receiver (RFOF Rx) module demodulates the received optical signal back to electrical signal.

Characteristics of Equipment

- Frequency 50MHz – 3GHz
- Wavelength 1310 or 1550 nm
- DFB Laser Diode
- Integrated LNA
- RF Gain +20 dB
- RF Connectors SMA , Optical SC/APC or FC/APC
- 12VDC Operation

Contact Person

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CSEART TECHNOLOGIES PVT LTD

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Organisation Profile

CSEART Technologies Private Ltd was established as registered Company in August 2014. Development of algorithms for Indian Defence applications with total in-house efforts reducing dependence on foreign sources was the mission of CSEART (Concept to Systems Embedded And Real-Time). Further aim was to maximize the output with a minimal but professionally strong work force.

Motivation

1. CSEART is charged with the vision to become a global defence Company, not necessarily in commercial sense. We want to keep the main focus on acoustics, communication and signal processing algorithms and simulation. Artificial Intelligence, deep learning and related fields will be used to augment the algorithms. Submarine Combat Management System design is one of the core strengths of the Company.

   We continuously endeavor to set higher standards of excellence in our activities. This will automatically ensure success of our products, projects and services

   We nurture the mission to drive innovation maintaining integrity and ethics.

   Finally, while pursuing our goals, we meet the needs of the customers first and always. At the same time, CSEART will fulfill its social responsibilities.

2. CSEART currently has two working Directors – Captain S Ramaprasad and Commander TB Rangachari. It has five engineers having excellent academic records. Since our focus is on the development of algorithms, we have found that we do not need large manpower, at present.

Business Activities

1. Currently, we have indigenously developed, an advanced AI-based acoustic classifier – Shabdavedhi Mk II for Naval Science and Technological Laboratory, DRDO. In addition, we are developing algorithms for a defence organization on regular basis. The projects / products developed by CSEART are brought out in the succeeding paragraphs.

2. **"Shabdavedhi Mk I"** is an intelligent self-learning target classifier that uses only target-radiated noise in listening mode for the classification process. The product, delivered to a DRDO laboratory, has already cleared all user-trials by the Indian Navy. It is in the process of deployment for field application. The classifier is Artificial Intelligence-based and works in semi-supervised learning mode. Result of the classifier will be used in making the decision to destroy the classified target.

3. **"Shabdavedhi Mk II"** is also an intelligent acoustic classifier delivered to NSTL for use in the acoustic mines. This classifier is AU-based and requires meagre resources.

   Both the acoustic classifiers provide classification results within 25 seconds of getting the signal. The result is used by the final fire-logic of the mines to decide whether the target has to be destroyed.

4. **AI-based Track Motion Analysis:** AI-based Track Motion Analysis module uses only the passive Bearings and the line frequencies provided by the Sonar and provides solution to the target motion problem. This module has been integrated with Submarine Combat System and is undergoing extensive testing. This algorithm has surpassed all the known benchmarks as far as the time-to-solution as well as the accuracy of solution are considered.

5. **Sonar Information Processor:** Carries in-depth analysis of the passive Sonar signals; presents information over intuitive-driven GUI comprising of several display pages, finally leading to the classification of target. The system has three independent processing channels and two independent display units. SIP was interfaced with Russian origin Sonar MGK400, without disturbing the set up that existed on board the submarine. The SIP was delivered to M/S Bharat Electronics Ltd and is being used by the Indian Navy

6. **Air Defence System Simulation:** Simulates targets and formation of targets, environment; Radars and weapon, communication lines; interfaces with government-provided digital maps; Radar coverage area prediction based on input map data and GPS simulation depending on environment; System hardware is based on seven industrial-grade PCs and some emulated operator consoles System was delivered to Defence Research and Development Laboratory, Hyderabad and is being used by the Indian Army and Indian Air force.

The simulator was supplied by BEL to the IAF and the Indian Army. The enhancements needed by the IAF was also implemented by us.

7. **Encryption for VHF/UHF radio link for Indian Army:** The encryption device was embedded in Radio Tele-link in use by the Indian Army. It incorporated both Public Key and Symmetric Key encryptions working in tandem, providing very high level of security. Hardware based on ACTEL FPGA for the device was completely designed in-house.

8. **Radar Scan Converter:** An in-house product built around Xilinx Vertex 4FS family of FPGA. Interfaced with Radars, the device performs ADC, signal processing like integration, sweep correlation, Constant False Alarm Rate Receiver, Scan Conversion etc. The RSC was approved for the Advanced Light Helicopter project.

9. **Track Motion Analysis:** Bearings-Only Automatic Contact Motion Analysis and Computer assisted Manual Track Motion Analysis were two independent and important modules that were designed and developed for Naval Science & Technological Laboratory (DRDO) for end-use in indigenous submarine program. The end-user found both the software modules operationally very useful. The Indian Advanced Submarine is using this software as part of the Combat Management System.

10. **Control of Wire-guided Torpedoes:** This algorithm guides the torpedo to the target under different modes of guidance depending on the tactical situation. The generic weapon is simulated using basic weapon model and the interface information uses the minimum basic data. Given the weapon specifications, we will be able to quickly develop the guidance and control algorithms for deployment.

11. **Antitank Guided Missile (ATGM) System Simulator:** This is required for training of ATGM operators at various levels. Even though it is a simulator, the Control Logic Unit (CLU) and the electronics inside were built to MIL specifications. The simulator for third Gen ATGM consisting of the CLU, Instructor Station and the Operator training Station has been handed over to BDL for use in the Indian Army.

12. **Moving Target Emulator:** CSEART is designing and developing a Moving Target Emulator which is an anti-torpedo decoy that has a navigation & control unit and an acoustic section. The MTE is in fact a decoy that is supposed to misguide the attacking torpedo thereby saving the submarine. We expect to hand over the system in about two months.

13. **Control & Registration Unit:** This is an indigenization of the existing Russian unit on board torpedoes. At present, the CRU is under design.

14. **Inertial Navigation System:** We are making an Inertial Navigation System that can be used in the AUVs and small vessels. It will fuse the information with that of GPS or any other space-based positioning systems, when available. However, it can work well even without the GPS. This economical and extremely light weight unit is a product of CSEART.
15. **Solution to the Problem of Swamping in Sonobuoy Signals:**We are working on providing solution to the P8I Sonobuoys that will separate all the masked / combined signals and provide rough classification to the separated signals.

Our clients

1. We are proud to be of service to the following organizations:

a) Indian Navy

b) DRDO Laboratories, Ministry of Defence

c) Weapons and Electronics Systems Engineering Establishment, Ministry of Defence

d) Bharat Electronics Ltd. We are registered with BEL as R&D Partners in Sonars and Signal Processing Areas

e) Bharat Dynamics Ltd.

End Notes

It is known that Indian Defence Industry is heavily dependent on foreign technologies. Even though CSEART is a small Company the Company and the team have handsomely contributed to the development of original algorithms that are critical in nature.

We are determined to exploit this unique strength to contribute our mite to India's self-reliance. Having implemented software based on Artificial Intelligence and Machine Learning algorithms, we are working on Deep Learning algorithms for defence applications.

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Products

a) Model of VARUNASTRA TORPEDO

b) Model of TAL Torpedo

c) Model of Advanced Light Weight Torpedo

d) Model of decoy MAREECH / SFD

e) Model of GTIIRS

VARUNASTRA TORPEDO



Product Description

Varunastra is a ship launched, heavy weight electrically propelled anti-submarine torpedo capable of targeting quiet submarines, both in deep and shallow waters in an intense countermeasures environment. It cab ne fired from all ASW ships capable of firing heavy weight torpedoes.

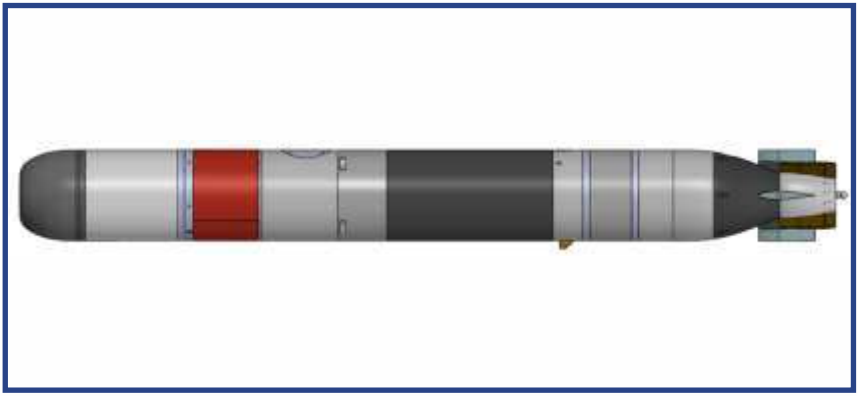
TAL TORPEDO



Product Description

Torpedo Advanced Light (TAL) is an electrically propelled anti-submarine weapon of the light weight class capable of launch from ships and aircraft to attack submarines in both shallow and deep waters

ADVANCED LIGHT WEIGHT TORPEDO



Product Description

Advanced Light Weight Torpedo is an anti-submarine torpedo launched from ships and aircraft to neutralize potent underwater threats with a potential to be a game changer in ASW conflicts. ALWT has capabilities comparable with the best in the world.

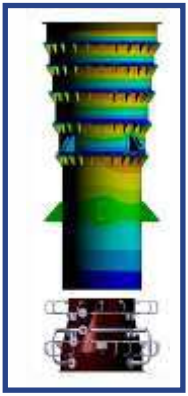
DECOY MAREECH / SFD



Product Description

Mareech, an expendable decoy, incorporates programmable features to optimize its performance for deceiving and reducing incoming torpedoes thus ensuring maximum torpedo engagement time to protect own ship

GTIIRS





Product Description

Gas Turbine Infrared Signature Suppression System: Advanced GTIRSS system is an active infrared signature suppression system that combines the advantages of passive educator-diffuser system with additional cooling obtained from injection of sea water mist into the flow.

DHAKSHA UNMANNED SYSTEMS PVT LTD

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Organisation Profile

Dhaksha Unmanned Systems addresses the growing demand for advanced UAS technology, providing cutting-edge solutions to handle socio-economic challenges and meeting evolving needs of the society.

In April 2019, Dhaksha officially became an independent private limited company, founded by MIT alumni. With a 10-year technology partnership with Anna University (Chennai) until 2028, Dhaksha stands as an exclusive Strategic Partner of Anna University, driving R&D, manufacturing, and marketing of drones for the global market.

The state-of-the-art factory and R&D center situated at Ambattur, Chennai (India), serves as hub for innovation and excellence. Dhaksha has partnered with CASR-RPTO, a DGCA approved drone pilot training organization which imparts professional training to eligible candidates to meet the growing demand for UAV operators.

DHAKSHA Is An End-To End Solution Provider In The Field Of UAS/UAV Technology From Concept Design To Manufacturing &Amp; After-Market Operational Support Services, Viz.,

- Manufacturing & Integration
- Testing & Quality Assurance
- Training & Certification
- Knowledge Management
- Turnkey UAS Solutions
- Business Development & Pre-Sales
- R&D for Continuous Product Development (CPD)
- Product Life Cycle Management (PLM)

Our drones are all about indigenous design and smart technology. We take pride in creating user-friendly, customer-centric drones that cater to needs across Agriculture, Defence and Enterprise domains. We as a drone company have a direct control over the drone design & development process. This ensures the ability to adapt emerging trends, incorporate the latest technological advancements, and tailor designs to meet specific industry needs. Our drones are designed with advanced safety mechanisms and extended endurance that improves operational efficiency. Our drones are built with durable materials that undergo rigorous testing and adhere to high manufacturing standards, establishing the company as a reliable and trustworthy provider.

DH – LOGIGATOR



Product Description

DH-LOGIGATOR is designed for various logistical purposes, including last-mile delivery, emergency relief operations, and transporting goods to remote or inaccessible areas. These drones are equipped with advanced navigation systems, including GPS and other sensors, to ensure accurate and safe navigation. It is designed for autonomous or semi-autonomous flight with communication systems to receive instructions, transmit data, and maintain connectivity with operators or central control centers. These systems also enable remote monitoring and control. This logistics drones feature VTOL capabilities, allowing them to take off and land vertically. This capability is useful for operations in confined spaces or areas with limited infrastructure. The proposed system has Daylight and Thermal cameras providing enhanced situational awareness and dynamic command and control functions.

Characteristics:

- UAV Structure : Rotorcraft / Coaxial Quadcopter
- All up Weight in Kg : 110 Kg
- Range : 10 Km
- Endurance : 40 – 45 minutes
- Power Source: Battery
- Operating Speed : 8 - 12 m/s
- Max Launch Altitude 3000 m – 4000m AMSL
- Max Operating Altitude :1000m
- Payload : 20Kg / 15Kg @ 3000m / 4000m& 10X Day &Thermal Camera

DH – Q4



Product Description

DH-Q4 is designed for mapping and surveillance operational purposes. These drones are equipped with advanced navigation systems, including GPS to ensure accurate and safe navigation. It is designed for autonomous and semi-autonomous flight with communication systems to receive instructions, transmit data, and maintain connectivity with operators or central control centers. These systems also enable remote monitoring and control. This mapping drone features VTOL capabilities, allowing them to take off and land vertically. This capability is useful for operations in confined spaces or areas with limited infrastructure. The proposed system has HD Daylight, Thermal combo camera and mapping cameras providing enhanced situational awareness and dynamic command and control functions.

Characteristics:

- UAV Structure : Rotorcraft (RPAS)
- All up Weight in Kg : 4.5 Kg
- Range : Day - 2 Km / Night – 850 meter
- Endurance : 40 minutes
- Power Source: Battery
- Operating Speed : 15 m/s
- Max Launch Altitude 3000 m AMSL
- Max Operating Altitude :1000m AGL from Launch Altitude
- Payload : Day Light & Thermal Combo Camera, Mapping camera

DH – FLAMINGO



Product Description

DH-FLAMINGO is designed for various purposes, including long range and longer endurance surveillance, payload drop applications, Railway patrol, surveying and mapping, border patrol, forest fire-fighting, cargo delivery etc... It is an hybrid drone capable of VTOL and fixed wing forward flight. This capability is useful for operations in confined spaces or areas with limited infrastructure. These drones are equipped with advanced navigation systems, including GPS and other sensors, to ensure accurate and safe navigation. This is an light and durable platform. It is easy to assemble and storage with quick-release design. It has a stable and reliable fuel powered engine with electronic control unit can be operated under the low temperature and high altitude with excellent performance.

Characteristics:

- UAV Structure : VTOL Fixed Wing
- All up Weight in Kg : 35 Kg
- Range : 150 Km
- Endurance : 300 minutes
- Power Source: Battery
- Operating Speed : 30 m/s
- Max Launch Altitude 2000 m AMSL
- Max Operating Altitude :1500m AGL from launch altitude
- Payload : Combo Camera and Logistics Payload

DH –ALTIGATOR PLUS



Product Description

DH-ALTIGATOR PLUS is designed for mapping and surveillance operational purposes. These drones are equipped with advanced navigation systems, including GPS to ensure accurate and safe navigation. It is designed for autonomous and semi-autonomous flight with communication systems to receive instructions, transmit data, and maintain connectivity with operators or central control centers. These systems also enable remote monitoring and control. This drone features VTOL capabilities, allowing them to take off and land vertically. This capability is useful for operations in confined spaces or areas with limited infrastructure. It is used for long range and longer endurance surveillance. The proposed system has 40X / 30X / 10X Thermal cameras providing enhanced situational awareness and dynamic command and control functions.

Characteristics:

- UAV Structure : VTOL Fixed Wing
- All up Weight in Kg : 16 Kg
- Range : 75 Km
- Endurance : 4 Hours
- Power Source: Battery
- Operating Speed : 18 -20 m/s
- Max Launch Altitude 4000 m AMSL
- Max Operating Altitude :Upto 1500m AGL from Launch Altitude
- Payload : 40X / 30X / 10X Combo Camera Payload

Contact Person

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Organisation Profile

Established in 1984, Dynalog India Ltd has been a frontrunner in cutting-edge defence Electronics and Industrial Automation for four decades. It has consistently delivered state-of-the-art products throughout its journey, carving a niche in these competitive sectors.

In Defence Electronics, Dynalog is a trusted partner providing critical components for communication, radar, and missile guidance systems, and with a forthcoming factory in Pune will further bolster capabilities to meet defence organizations' stringent requirements. In Industrial Automation, Dynalog's innovative products cater to automotive, pharmaceuticals, food processing, and other industries. And empowers businesses to enhance productivity and efficiency by leveraging technologies like robotics and AI.

As Dynalog embarks on its 40th year, its upcoming factory serves as a testament to the company's commitment to growth and excellence in Defence Electronics and Industrial Automation. With a legacy of excellence, Dynalog looks forward to building on its achievements and delivering innovative solutions.

AUTOMATED TEST EQUIPMENT (ATE)



Product Description

Customizable Automated Test Equipment (ATE) used in Product testing (Hardware and Software), Functional Testing, Performance Testing in various domains by providing a high degree of repeatability and speed with minimal, or no error compared to manual testing. ATEs based on PXI, cPCI, Embedded architecture with Windows, QNX, Linux OS and Display.

Characteristics:

- TFT Display 12" to 19" size
- Data Acquisition System with Analog, Digital I/O's
- Standard Communication Protocols & Interfaces
- ARINC & MIL-1553B
- Camera Interface
- MIL grade circular connectors
- Compliance to JSS-55555 and MIL-STD-461E/F
- Multiple OS Support like Windows, Linux and RTOS
- Development Platforms Like Assembly, C, C++, Python, QT,Visual Studio, MATLAB and LabVIEW

RUGGED MANAGED & UNMANAGED MULTI-PORT GIGABIT ETHERNET SWITCH





Product Description

Rugged managed and unmanaged multi-port Gigabit ethernet switches are designed to withstand the harsh environmental requirements of military land, sea, and air applications like data acquisition and communication. Designed with sealed industry standard and optional MIL connectors to ensure protection against water and dust comply with MIL-STD-461, MIL-STD-810, IP67/68.

Characteristics:

Managed and Unmanaged models	Fully managed modular design	Fully managed modular design
8 ports, 10 /100 Mbps, Full Duplex	16-ports, 10/100/1000 Base-T copper ports with Single/Multi-mode FO ports	28-ports, 10/100/1000TX Gigabit Copper ports and 4*1000LX Single Mode
Redundant Power inputs (10V to 30VDC)	Advance networking features and high reliability	10KM Support SFP ports, Dual AC inputs
Activity LEDs for all ports	Standard RJ-45 connectors for Coper ports and LC/SC option for FO ports	Advance networking features and high reliability
M12, D-coded or 38999 MIL Circular Connectors	Heavy duty aluminium enclosure to cater to high Vibration and Bump	Standard RJ-45 connectors for Coper ports and LC/SC

Machined Al. Enclosure, Conduction cooled	19” rack mountable in 3U height	Extended Operating Temperature: -10°C to 55°C
Operating Temp: -20 C to 70 C	Suitable for wheeled vehicle application	Heavy duty aluminium enclosure to cater to high Vibration and Bump
Complied to JSS-55555 and MIL-STD-461E/F	Extended Operating Temp: -20°C to 55°C	19” rack mountable in 2U height
	Complied to JSS-55555 & MIL-STD-461E/F	Extended Operating Temp: -20°C to 55°C
		Complied to Environmental & EMI/EMC specs as per JSS-55555 & MIL-STD-461

RUGGED HMI WITH 7 INCH LCD



Product Description

Rugged Human Machine Interface (HMI) CAN-based devices, combine ergonomics into compact solutions for open and enclosed track, wheeled vehicle applications. Designed for versatile data acquisition, processing and Operator control capabilities using push buttons, rotary switch, touch panel. The unit qualifies MIL, JSS55555 and IP standards for shock, vibration and extreme weather..

Characteristics:

- Hi-bright TFT-LCD displays up to 12”
- SBC with Intel x86 or ARM processors with USB and Ethernet
- Sealed Enclosure, Conduction cooled
- Mounting: Base, Panel, VESA
- MIL circular connectors
- Operating Temp: -20ºC to 70ºC
- Complied to JSS-55555 and MIL-STD-461E/F
- Opt: Blink indicators, Buzzer Alarm, Push buttons, Odometer I/F

HMI-8.4 INCH & 10.4 INCH





Product Description

Rugged Human Machine Interface (HMI) CAN-based devices, combine ergonomics into compact solutions for open and enclosed track, wheeled vehicle applications. Designed for versatile data acquisition, processing and Operator control capabilities using push buttons, rotary switch, touch panel. The unit qualifies MIL, JSS55555 and IP standards for shock, vibration and extreme weather.

Characteristics:

- Rugged HMI displays up to 10.4”
- Intel Core i5 processor, 8GB RAM and 512GB SSD
- 8.4” LCD (800 x 600 resolution) with Resistive touch screen
- 10,4” LCD (1024 x 768 resolution) with Resistive touchscreen
- 2 x USB3.0, 2 x GbE & 2 x Serial
- D-38999 series-III and M12 connectors
- 24VDC operated with wide range: 9 to 36VDC
- Sealed, conduction-cooled enclosure
- Base, Panel or VESA mount
- Complied to JSS-55555 & MIL-STD-461E/F

RACKMOUNT FOLDABLE KEYBOARD & DISPLAY (KVM-1900)



Product Description

The KVM range comes with Heavy Duty 1U Rack Mount Drawer Display in standard sizes. It offers a symmetrical viewing angle, keyboard, and mouse pad options are also available. Glass window screen protected against shock, vibration and extreme temperatures for multi-platform harsh operating environments such as shipboard, submarine and ground mobile applications.

Characteristics:

- 17" / 19" rackmount, 2U height Aluminium and SS construction
- 17" / 19" LCD with LED backlit & 1280 x 1024 resolution
- 97/104-Keys, illuminated sealed keyboard with Touchpad
- MIL-STD-26482 series-II connector
- Suitable for Static or Mobile operation on wheeled vehicles
- Complied with JSS-55555 & MIL-STD-461E/F
- Supports front USB for keyboard / mouse
- Support USB, VGA / HDMI / DVI
- Supports computer indicator when user switch to another computer.
- Support cascading connection, max up to 512 computers.
- DC and AC power input option available

MIL CABLE HARNESS



Product Description

Reliable cable harness meeting varied requirements in projects and products with proven track record to withstand MIL environmental & EMI/EMC standards.

Characteristics:

- Cable harness capability have reliably proved in numerous projects to withstand MIL environmental & EMI/EMC standards
- Harness cable consists of PTFE wires, Twisted pair, Coaxial, PTFE tape, TPC shielded braids, Heat shrinking tubes, boots, MIL circular connectors like D3999, 26482, 5015, TNC
- Operating Temp: -20ºC to 70ºC (Opt: -40ºC to 85ºC)
- Complied to JSS-55555 and MIL-STD-461E/F

RUGGED DATA ACQUISITION & CONTROL SYSTEM



Product Description

Is a portable, rugged data acquisition platform that integrates connectivity, data acquisition, and signal conditioning into modular I/O for directly interfacing to any sensor or signal. It offers a wide operating temperature range of -20 to 55 °C (-4 to 131 °F) and is shock and vibration resistant.

Characteristics:

- 3U Compact PCI with Intel Core i7 processor with 4GB RAM, 16GB Flash and 256GB SSD
- 11-Slot cPCI backplane integrated with 5 x IP carrier boards
- 6-slots free for expansion
- 32 x AI, 12 x AO, 32 x Opto-DI, 32 x Opto-DO, 144 x Solid State Relay
- 6 x RS232/422, GPIB, VGA, Keyboard/Mouse
- I/O interfaces on MIL-STD-26482 series-II connectors
- Machined Al. HE-30, cPCI and Euro card Cage to cater to high Vibration and Bump
- Suitable for wheeled vehicle application
- Extended Operating Temp: -20°C to 55°C
- Complied to JSS-55555 & MIL-STD-461

RUGGED LCD DISPLAYS & PANEL PCS



Product Description

Rugged Displays are designed for top performance in a variety of multi-platform environments such as shipboard, submarine and ground mobile design including track, wheeled vehicles, shelters, command systems against shock, vibration and extreme temperatures as per MIL, JSS55555 and Marine, IP standards. Customizable display type, form fit, mounting and connector options.

Characteristics:

- 15”/17”/19”/21.5”/24”/32”/43”/50”/55” TFT-LCD with LED Backlight
- Resolution SVGA to 4K
- Panel Mount, VESA Mount options VGA/HDMI/DVI
- MIL Circular Connectors
- Operating temp -20ºC to +70ºC
- Complied for JSS-55555 and MIL-STD-461E
- Vibration compliance for 0.04 g2/Hz -3db Octave 10 min per axis
- Optional: Touch screen display

RUGGED 10/16-PORTS SERIAL TO LAN CONVERTER



Product Description

A multiport device server is a device that allows multiple serial devices to be connected to a network. It provides a safe and secure network connectivity solution for virtually any device with an RS-232/422/485 serial interface. It is equipped with a built-in web server that simplifies configuration and control, making it easier to integrate 'edge' devices such as medical devices, kiosks, POS/retail terminals, or security equipment into the enterprise network.

Characteristics:

- Serial device server connects legacy sensors over Ethernet network
- 16 serial devices over single Ethernet interface
- All ports configurable as RS-232/422/485
- Baud Rate up to 921.6 kbps
- 15KVA ESD protection for all ports
- MIL 26482 series-II connectors
- Operating Temp: -10ºC to 55ºC
- Complied to JSS-55555 and MIL-STD-461E/F
- 19" rack mountable, 2U height

RUGGED SMALL FORM FACTOR CONTROLLER



Product Description

Rugged Small Form Factor Controllers are designed to perform in extreme conditions while providing versatile data acquisition and control capabilities. Compactly packaged unit aimed for multi-platform ground mobile applications including track, wheeled vehicles against shock, vibration and extreme temperatures as per MIL, JSS55555 and IP standards. Customizable mounting and connector options.

Characteristics:

- High Performance Computing and I/O's
- Customized options for isolated I/O's of Analog, Digital, Serial, LAN, USB, Video, Signal conditioning modules
- Conduction cooled, Sealed Al. Enclosure
- MIL grade circular connectors
- Operating Temperature: -20ºC to 55ºC
- Complied to JSS-55555 and MIL-STD-461E/F

PORTABLE RUGGED WORKSTATION



Product Description

A Portable Rugged Workstation is a computer that is designed to withstand harsh environments and is optimized for performance, reliability, and user experience. These workstations are ideal for professionals who need to work on the go or in the field.

Characteristics:

- 17"/19" Foldable Display compact and lightweight
- High Performance Computing and I/O's
- 1920 (RGB) × 1200 & 16:10
- 600 cd/m² (Typ.) / 2000:1 (Typ.) (TM)
- Gen 7 Intel® Core™ i7-8700T Processor
- 32GB RAM and 8TB 2.5 inch SATA III SSD
- Operating 0 ~ 60 °C (Ext Temp available)
- Customized options for isolated I/O's of Analog, Digital, Serial, LAN, USB, Video, Signal conditioning modules
- Portable Rugged Design for indoor/outdoor use
- Compliance to JSS-55555 and MIL-STD-461E/F
- Optional: MIL grade circular connectors

1U RUGGED IPC



Product Description

1U ½ 19" inch Rugged Industrial PC is a customized Core i7 based BOX PC with different I/O's. The enclosure is fabricated from aluminum alloy material. Inlet vents and exhaust fan are provided for cooling. All the I/O's are terminated on the front plate with standard connectors and Power input is provided at the rear side with blind mate type connector.

Characteristics:

- 1U size
- ½ 19" Rack Mountable
- -10 to +55 Operating temp
- Core i7 – 8th Gen
- 32GB/ 1TB
- High Performance Computing and I/O's
- Operating 0 to 55 °C (Ext Temp available)
- Portable Rugged Design for indoor / outdoor use
- Compliance to JSS-55555 and MIL-STD-461E/F
- Optional: MIL grade circular connectors

DATA RECORDING AND PROCESSING SYSTEM



Product Description

Data Recording and Processing Cabinet is a type of cabinet used to store and process data. It is typically used in data centers and other environments where large amounts of data are processed and stored. These cabinets are designed to be rugged and durable, and they often feature built-in cooling systems to keep the equipment from overheating. They can also be equipped with a variety of different types of hardware, including servers, switches, and routers.

Characteristics:

- Single Display Console
- 21.3" PPC
- 4 x Workstations
- 1 x Ethernet Switch
- 4 port KVM switch
- Rackmount UPS
- 8 nos Circular Connectors
- Rugged Laptop
- High Performance Computing and I/O's
- Operating 0 to 55 °C (Ext Temp available)
- Compliance to JSS-55555 and MIL-STD-461E/F

RUGGED TABLET PC



Product Description

Rugged Tablet PC is a tablet computer that is designed to withstand harsh environments and is optimized for performance, reliability, and user experience. These tablets are ideal for professionals who need to work on the go or in the field. These tablets are designed to handle the most demanding tasks and are ready for anything, are shock-resistant and waterproof.

Characteristics:

- Intel® Core™ i5, i7 options
- 15" TFT-LCD panel with LED backlight
- Touch enabled
- Robust hardened front bezel
- Mobile Portable Tablet PC
- Low Power Consumption
- Customized I/O options available
- Anti-glare coated display
- Wi-Fi LAN
- 2 hours Battery Backup
- High Performance Computing and I/O's
- Operating -20 to 60 °C
- Compliance to JSS-55555 and MIL-STD-461E/F

RUGGED RACKMOUNT COMPUTER



Product Description

This computer is designed to connect hundreds or thousands of devices to industrial automation systems. It offers high I/O density and is equipped with a built-in web server that simplifies configuration and control. This computer is built rugged to withstand extreme environments and is stacked in racks with specialized chassis and cooling systems. It is designed to handle the most demanding tasks and is ready for anything. These computers are designed to meet MIL-STD 810G, 901D, and 461G, and are for use in military, aerospace, and government environments. They can be integrated with fully sealed MIL-SPEC connectors and heavy-duty filters for the harshest environments.

Characteristics:

- 10U Height, 19" Rackmount
- 17" Rugged Display
- MIL Circular connectors
- Front IP65
- MIL-STD-461F Complied
- JSS-55555 Complied
- Rugged Modular Enclosure with Card Cage Housing 6 slot VME + 2 Slot CPCI Hybrid Back Plane

- Pluggable 500W Multi O/P Power Supply (+3.3V, ±12V, +5V) and Linear Power Supply 50W O/P (+5V)
- Intel® Core™ i5, i7 8th Generation options
- 17" TFT-LCD panel with LED backlight
- High Performance Computing and I/O's
- Operating -20 to 60 °C
- Compliance to JSS-55555 and MIL-STD-461E/Fhe Air Intake Panel is a ground equipment used to test the Air Intake Ramp, which controls the amount of air supplied to the engine in Sukhoi-30 MKi aircraft. The tester is used to control the movement of the ramp and monitor the diagnostic information coming from the 'Air Intake System' of the aircraft. It also gives discrete command to check the serviceability of the system.

SIGNAL CONDITIONING PACKAGE



Product Description

Signal Conditioning Package (SCP) is part of the on-board Flight Control Instrumentation System. It interfaces with various transducers and converts physical parameters like pressure, temperature, and vibration to a measurable voltage range acceptable by data acquisition system.

Characteristics:

- Compact (approx. 6" x 6" x 5") Aluminum HE30 machined construction
- Modular stackable design with Rigi-flex PCB with D38999 series connectors
- Various I/O's – Temperature, Vibration., Pressure, Strain, Single Ended & Differential Electrical Signal & Buffers
- Complying to Environmental & EMI/EMC Specifications as per JSS-55555 and MIL-STD-461D
- Operating temp -20ºC to +70ºC

RUGGED NEVAL CONSOLE



Product Description

- It is a touch-enabled display unit that accepts inputs from ship's Navigation System via MIL-1553 / RS-422 and Ethernet interfaces and displays sensor parameters for operators. It is the replacement for the original Russian equipment and is based on Intel platform with embedded SBC with latest processor configuration.
- Characteristics of Equipment (Capability & Physical Characteristics in bullet points)
- Based on Intel platform with embedded SBC with latest processor configuration
- Integrated with 12.1" LCD with Capacitive Touchscreen
- Compatible with Windows / Linux
- Complies with Environmental & EMI/EMC specifications as per JSS-55555 & MIL-STD-461 for Naval Systems
- Resolution SVGA to 4K
- MIL Circular Connectors
- Operating temp -20ºC to +70ºC

Contact Person

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Organisation Profile

We are EEE, a partners to various Defense and Homeland Security manufacturing companies in India and being a partners, we are very much enthusiastic to build a nation with a mission and vision of Make in India for India and Global as AtmaNirbhar Bharat. We are a member of FICCI in the Defence and Homeland Security Committee.

Our partner Fibro Plastichem India Pvt Ltd established in 1972 in the Eastern part of India., the company started its Business and evolved into the country's most diverse platform for Composite Products. The Business model adopted by FPC relied on technology to provide our partners with Simpler, Convenient and Economical solutions to grow their business with reliability, peace of mind and sustainability.

We Design, Manufacture and Deliver best in class products in Fiber Reinforced Polymer (FRP) for various market segments which includes Chemical Industry, Paper & Pulp Industry, Water transportation and filtration, EPC contracting and many more.

We are developing FRP composite based WT Doors and Hatches for Ship's and Naval Department under Make in India and AtmaNirbhar Bharat.

Our products are designed to meet user criterion making us the manufacturer of choice and reliability.

Our Products include Tanks, Pipes, Porta cabins. Modular toilets and Security cabins, Poles, Gratings, Pultruded profiles, and pressure vessels.

FIBER REINFORCED POLYMER (FRP) BASED PRODUCTS



Seat for Marine Applications



FRP Composite based WT Doors and Hatches for Ship's developed under Make in India vision.

Product Description

We Design, Manufacture and Deliver best in class products in Fiber Reinforced Polymer (FRP) for various market segments which includes Chemical Industry, Paper & Pulp Industry, Water transportation and filtration, EPC contracting and many more.

Our products are designed to meet user criterion making us the manufacturer of choice and reliability.

Our Products include Tanks, Pipes, Porta cabins. Modular toilets and Security cabins, Poles, Gratings, Pultruded profiles, and pressure vessels. We are developing FRP composite based WT Doors and Hatches for Ship's and Naval Department under Make in India and AtmaNirbhar Bharat.

Also, we provide Seat's for Marine Applications. (we have supplied Seats to the Goa Shipyard Limited)

Characteristics of Equipment

A - Fiber Reinforced Polymer (FRP)

B - FRP Based Porta Cabin

C - FRP Based WT Doors and Hatches

D - FRP Based Security Cabins

E - Seat For Marine Applications

Contact Person

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ECONOMIC EXPLOSIVES LTD. (EEL)

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Email : eel.defence@solargroup.com

Website : www.solargroup.com

Organisation Profile

Economic Explosives Ltd. (EEL) is a 100% subsidiary of Solar Industries India Limited (SIIL), which is a Public Limited Company. It is listed on BSE and NSE of India with the current market capitalization of about Rs.35,000 Crores. Solar Group is the largest manufacturer and exporter of Industrial Explosives and Initiating Systems in the Country. We export our products to over 65 countries and have set up manufacturing facilities in Nigeria, Zambia, Turkey and South Africa.

'Economic Explosives Ltd' is a company in India having CIN U24292MH1995PLC091808 and its registered office at 11, Zade layout, Bharat Nagar, Nagpur – 440033, India.

EEL has requisite license and CCE/PESO approvals for manufacturing of ammunition and explosives. The facilities for production of Rockets & War Heads for Missiles are fully operational which includes 'Composite Propellant Plants' and 'Integration of Rockets'. We have successfully established production of 'Pinaka Rockets', 'Akash Missile Booster', Propellant for Brahmos i.e. 'High Thrust Motor' & 'Low Thrust Motor' etc. as per the TOT from DRDO. We have been received Order from VSSC for supply of PSOM-XL Booster Motors. We have obtained technology from DRDO for tank ammunition, aerial bomb, rockets, missiles, New Family of Munitions, Chaffs and flares etc.

EEL also undertakes production of various types of Detonators, Booster Pellets, Igniters, Fuses, Assembly and integration of Ammunition. We are the Production Agency for Multimode Hand Grenade as per the design of TBRL and for which we have recently been awarded a contract for supply of 10 Lakh Nos to Indian Army/Indian Air Force.

MULTI MODE HAND GRENADE (MMHG)



Product Description

Economic Explosives Limited, Nagpur, has successfully established production of Multi Mode Hand Grenade as per TOT obtained from TBRL (DRDO). MMHG as a replacement of the vintage Hand Grenade M 36, offers numerous advantages to the Soldier in terms of Safety, Dual Mode capability and Lethality:-

- Twin Delay Tubes provided to ensure High Reliability.
- Additional safety to the soldier through minimum 0.5 Sec Arming Delay.
- Battle field supremacy to the soldier with dual mode capability: 'Defensive Mode' & 'Offensive Mode' through quick change.
- 3800 numbers of fragments with uniform fragmentation pattern for higher Lethality.

Characteristics of Equipment

- Delay Time 4 ± 0.5 Seconds
- Operational Temperatures -20°C to +55°C
- Storage Temperature range is -20°C to +55°C
- Uniform Fragmentation pattern
- High Lethality
- High Reliability (> 95%)
- Safe for para dropping in primed condition
- Maintenance Free

PINAKA ROCKET



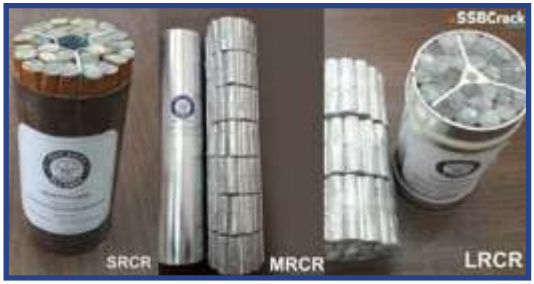
Product Description

The Pinaka Rocket is an all weather artillery rocket produced by Economic Explosives Limited. The rocket is launched by Multi Barrel Rocket Launcher System which delivers accurate and massive firepower at a high rate over extended ranges. The variants are Pinaka MK I, Pinaka Enhanced and Pinaka Guided (Extended Range)

Characteristics of Equipment

- 100% indigenous design & development
- Assured lifecycle support
- Impressive field performance
- Shoot and Scoot capability

CHAFF



Product Description

Navy Payloads (SRCR, LRCR, MRCR) Chaff is a passive expendable electronic countermeasure technology used to protect naval ships from enemy's radar and radio frequency missile seekers.

The three variants namely short range chaff rocket, medium range chaff rocket, and long range chaff rocket met Indian navy qualitative requirement.

Characteristics of Equipment

Application:

The chaff rocket deployed in the air reflect as multiple targets for the missile guidance system and deflecting adversary missiles, thus protecting own assets. Chaff is a passive expendable electronic countermeasure technology used worldwide to protect naval ships from enemy's radar and RF missile seekers.

30MM HEI/HET



HEI HET

Product Description

The system's primary purpose is for firing from 30 mm guns on naval ships and Armoured fighting Vehicles.

Characteristics of Equipment

The ammunition can be fired from AK-630 is a fully automatic Naval close-in weapon system based on six-barrelled 30 mm rotary cannon which is mounted in an enclosed automatic turret and directed by MR-123 radar and television detection and tracking. A similar ammunition is also fired by 30 mm Guns on armoured fighting Vehicles.

YDB 60



Product Description

State-of-the-art A/S rocket fuze fitted with RGB 60 rockets. Equipped with pyro technique and mechanical safety and actuation systems, the fuze explodes the rocket warhead either on impact with target or at pre set depth. High reliability and accuracy of pre set time are its key attributes.

Characteristics of Equipment

- Length 361 mm
- Diameter 135 mm
- Weight 6.6 kg
- Preset Time ≤ 30 Sec
- Lead Charge 148 gm

Contact Person

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Organisation Profile

ECIL, established in 1967 under the Department of Atomic Energy had the primary objective of productionising the products developed at BARC, Mumbai in order to support the Country's Nuclear Power and other Atomic Energy Programmes. Concurrently, it has endeavored to create a strong indigenous / production base in the Country for professional grade electronics spanning from small passive components to large and complex computer based systems. Though the initial thrust was on meeting the C&I requirements of NPP, the expanded scope of self-reliance pursued by the Company enabled it to develop various special purpose products and systems to cater to the needs of Defence, Civil Aviation, Information & Broadcasting, Telecommunications, Space, Security, Oil & Gas Power, Education and several other user departments in the Government domain

The Company has thus evolved over the years as a multi-product Company serving multiple sectors of Indian economy with emphasis on Import Substitution and development of products and services that are of economic and strategic importance to the Country spanning the strategic sectors of Atomic Energy, Defence, Aerospace, Security, IT & eGovernance.

MISSION COMPUTER SYSTEM (MCS)



Product Description

MISSION COMPUTER SYSTEM (MCS) is a leading edge, flexible, robust, compact and rugged modular computer that can be configured to meet the general-purpose requirements. The MCS leverages proven protocols and expertise in application specific requirements to provide high performance, state of the art computing resources for Avionics, ground based and shipboard systems.

Characteristics of Equipment

- Mission Computer System (MCS) is to acquire the INS inputs and obstacle data from sonar and subject these inputs to algorithms in real time.
- Two dual channel Mil 1553 communication bus
- 8 channel configurable serial ports,
- 32 channel opto isolated digital IO
- 16 channel Analog to Digital Conversion (ADC), Single ended +/- 10V
- 8 channel Digital to Analog Conversion (DAC) (Single ended +/- 10V
- System OS: Vx-Works (Linux Optional)
- Input Power : 1 to 36V DC
- Dimension (LxBxH): 240 x 210 x 210 mm
- Mil Std 461-E complied.

AXI-SYMMETRIC AUV



Product Description

The Autonomous Underwater Vehicle is a remotely operated vehicle, very small in size and operates around a mother ship from where it is launched, controlled and recovered.

This will be useful for any under water surveillance and intelligence gathering as well as for carrying pay loads as per the mission requirement.

Characteristics of Equipment

- Vehicle Tracking
- Control, Guidance and Navigation
- Launch & Recovery operations
- Depth rating: 600 m and scalable to 1000 m
- Buoyancy: Positive buoyancy (+25 kgs)
- Endurance: 20 hrs @ 4 knots
- Dimensions:
  - Length (L): Approx. 4600mm
  - Diameter (Ø) : 450mm
- Displacement: 0.65 Cum
- Speed: 4 knots
- Propulsion Thrusters: Single thruster for forward propulsion
- Ailerons / Fins: Vertical (course) – 2, Horizontal (diving) – 2
- Power Sources: Lithium-ion battery
- Navigation & dynamic positioning: INS, DVL and DGPS aided navigation Inertial Navigation System (< 0.01 deg/hour) Doppler Velocity Log (10m/hr drift)

Contact Person

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NEUTRON REM MONITOR (NRM100)



Product Description

Neutron Rem Monitor (NRM100) is a Battery powered, Portable Instrument developed for monitoring radiation in the areas surrounding reactors, accelerators and other neutron producing equipment and neutron sources.

NRM100 is based on classic Andersson Braun technique and measures Ambient Dose equivalent rate H*(10) as per guidelines mentioned in IEC 61005.

Characteristics of Equipment

- The Instrument consists of BF3 / He3 Neutron Detector, mounted within the moderator and associated electronics.
- Electronics mainly consists of Charge sensitive Pre-Amplifier & Amplifier circuit, Processing unit, High Voltage supply & Battery Charger.
- The instrument is featured to display Dose Equivalent Rate & Accumulated Dose, RS232 Communication and TREND recording.
- NRM100 is RISC Microcontroller based Instrument. Micro-controller based Battery charger unit provides an accurate 3-stage charge to battery and reduces risk of overcharging them.
- The temperature sensor attached on battery further refines the charge profile for correct charging under a variety of conditions.
- A bicolor LED indicates charging status. Processing unit monitors battery status periodically and indicates low battery on LCD display.

GAMMA EXPOSURE MONITOR (GEM)



Product Description

GEM: GAMMA EXPOSURE MONITOR is a gamma dose rate detector unit in a network of radiation monitoring system. It comes under primary data sources (first level devices) of RGMS system. The main function of GEM is to check for the gamma dose rate prevailing in that area of the plant. The output signals are in the digital (i.e. differential) form

Technical Specification:

Measuring range	: 1*10-4 R/h to 1*10-1 R/h (Sens.) and 1*10-1 R/h to 1*103R/h (Rough)
Anisotropy of unit sensitivity	: ± 40 %
Detector Used	: ZP1301 (Rough), ZP 1321 (Sensitive) GM Tube
Mains Power	: DC Supply +12 V DC From SPD
Dimension	: 307X256X116 (IU) and Ø65X220(DU)
Weight	: 7 Kg (IU) and 1 Kg (DU)

56 CHANNEL DIGITAL INPUT VME MODULE (VMEIO2-1)



This is a VME-bus based Digital Input module

Technical Specifications

Termination	VME64 interface Two 96 pin EURO connectors
Input	56 optically isolated digital inputs
Output	None
Front panel hardware	Two 96 pin Euro connectors for inputs acquisition
Diagnostic Features	Board ID and Version read back
Functional Features	• VME A16/D16 addressing • 56 DIs out of which 8 are read at a time through MUX-ing. • Geographical addressing • Opto-isolators provide isolation of $2500V_{AC(rms)}$ for t = 1 min

96 CHANNEL DIGITAL INPUT VME MODULE (VMEIO2)



This is a VME-bus based Digital Input module

Technical Specifications

Termination	VME64 interface Two 96 pin EURO connectors
Input	96 optically isolated digital inputs
Output	None
Front panel hardware	Two 96 pin Euro connectors for inputs acquisition
Diagnostic Features	Board ID and Version read back
Functional Features	• VME A24/D16 addressing • 96 DIs out of which 16 are read at a time. • Geographical addressing • Opto-isolators provide isolation of $2500V_{AC(rms)}$ for t = 1 min

ABSOLUTE PRESSURE SENSOR





Product Description

Measures Absolute Pressure in The Process Medium

Salient Features:

Process Medium : D.M. water.

Process pressure : Up to 10MPa

Process Temperature : Up to 100°C.

Ambient operating conditions:-

Pressure: upto 0.8 to 3 Kgf/cm2

Temperature: upto 55 °C.

Relative humidity: upto 100 %

Measurement Ranges : 0.4 - 4 mg/l, 4-40 mg/l, 40-400 mg/l, 1-10mg/l, 10-100 mg/l.

Sensor Housing Material: SS 321/SS 316 as per application requirement.

Range of Automatic Temperature compensation : 20-100°C.

Accuracy : ±5% of Upper range value of the selected measurement range.

Analog Output : 0-10V linear.

Discrete Output : Two numbers of potential free contacts - 24 V DC , 2A.

Remote Health check facility for electronics.

Cable length from primary converter to electronics converter : 50 meter (max.)

Electronic Converter Enclosure : Die Cast Aluminum Alloy

Vibration & shock resistant

SPEED MEASUREMENT SENSOR



Product Description

Measures Main Turbine Shaft Rotational Speed (with Direction Of Rotation) And Detectts The Rotational State Of The Turbine Shaft (stoppage/running)

Salient Features:

Number of measurement channels :

Three Independent channels for rotational speed measurement system

One channel for shaft state detection system

Range of the shaft rotational speed measurement: -6000 rpm to 0 to +6000 rpm.

Type of Primary transducer: Hall effect based sensor

Toothed Gear wheel: Made of carbon steel (ASTM A516 Gr-70) and 60 number of teeth.

Output (for rotational speed measurement system):

Analog output:

Voltage output of -10V to 0V to +10V and

current output of -5mA to 0mA to +5mA

Negative polarity of the output signal indicates anticlockwise rotation (ASTERN) and positive polarity indicates clockwise rotation (AHEAD).

Frequency output:

0-6000Hz, Frequency output proportional to the shaft rotational speed.

Differential output:

TTL output indicating the direction of rotation.

Measurement Error (for shaft speed measurement system): ±0.5% of FS

SALINITY SENSOR





Product Description

Measures the salinity of water and generates output proporational to salinity or to generate relay output on detection of high salinity.

Salient Features:

Process Medium: D.M. water.

Process pressure: Up to 10MPa

Process Temperature: Up to 100°C.

Ambient operating conditions:-

Pressure: upto 0.8 to 3 Kgf/cm2

Temperature: upto 55 °C.

Relative humidity: upto 100 %

Measurement Ranges: 0.15 – 1.5 mg/lit, 0.4 - 4 mg/lit, 10-100 mg/lit, 40-400 mg/lit.

Sensor Housing Material: SS 321/SS 316 as per application requirement.

Range of Automatic Temperature compensation : 20-100°C.

Accuracy: ±5% of Upper range value of the selected measurement range.

Analog Output : 0-10V linear.

Discrete Output : Two numbers of potential free contacts - 24 V DC , 2A.

Remote Health check facility for electronics.

Cable length from primary converter to electronics converter: 50 meter (max.)

Electronic Converter Enclosure : Die Cast Aluminum Alloy

Vibration & shock resistant

ULTRASONIC LEVEL SIGNALIZER



Product Description

Detects presence or absence of water

Salient Features:

Sensor Housing Material: SS316 / SS321 / Titanium Alloy as per application requirement.

Process connection: Threaded, Welded, Flanged, Clamped as per application requirement.

Ambient operating Conditions:

Pressure : 0.8 to 3 Kgf/cm2

Temperature: up to 55 degC.

Humidity: upto 100%

Liquid level alarm indication error: ±5 mm relative to nominal actuation level.

Mounting Position: Primary converter can be installed in vertical, horizontal or inclined position.

Electronic converter mounted remotely from primary converter (cable length up to 30m)

Output : Alarm relay with changeover contacts indicating high level alarm or low level alarm

Output alarm relay contact rating 24 V D.C., 2 A.

Remote health check facility for electronics.

Ingress Protection: Waterproof.

Electronic Converter Enclosure : Die Cast Aluminum Alloy

Shock and Vibration Resistant

RUGGED & LOW POWER VMEBUS CPU



Product Description

COM-VME CPU

COMExpress Type 6 & SMARC

6U VMEbus CPU

Low Power (10W to 14W)

High resolution video and graphics capabilities o -40°/+85° C operation

Conduction Cooling Option o Processor Support - ARM® & Intel® o Operating System Support - Windows® & Linux (Standard); QNX & VxWorks (N

Application specific carrier-based board design to support vendor interoperability and technology reuse.

Specifications of VME Carrier -

Features	Specifications	
COM Express module compatibility	Type-6 Basic (125x95 mm) and Compact (95x95 mm) Intel/AMD Processors (Refer below table for list of processor details)	
SMARC module compatibility	Full size (82x80 mm) and short size (82x50 mm) Intel / ARM Processors (Refer below table for list of supported processor details)	
I/O Devices	SATA	1 x 6 Gbps
	Ethernet	2 x 1 Gbps
	Serial Port (UART)	2 x RS-232/ 2 x RS-422 or RS-485
	USB	2 x USB 2.0, 1 x USB 2.0/3.0
	JTAG	1
	Memory	2/4/8/16/32GB with ECC and without ECC
	Display	DVI-D or HDMI
	GPIO	16 bits
Other Features	WDT	1
	Temp. Sensor	Optional
Power consumption	≤ 6 W (Carrier Card)	
Software Support	OS and BSP	Linux, Windows
Secure Element	TPM	Optional
Mechanical	Form factor	6U 4T (can be customized)
Operating Temperature		-40° to +85° C

Hardware & Software customization is possible as per below table. Please contact ECIL for further assistance.

COM Type	Processor support	COM Manufacturers	Standard BSP Support by OEM	Extended BSP Support
COM Express	Intel – Latest generation Core i3/i5/i7, Atom, Pentium and Celeron processors	Adlink, Portwell, Kontron, Eurotech, Congatech, Advantech	Windows, Linux	VxWorks, QNX
	AMD Ryzen Pro		Windows, Linux	
SMARC	Intel - Latest Generation Atom, Pentium and Celeron processors		Windows, Linux	VxWorks, QNX
	ARM – Cortex A53, A35, A9 processors		Android, Linux	VxWorks, QNX, FSR (Flexible Safety RTOS)

M7 RADIO



Product Description

The ECIL M7 family of radios will deliver a platform with the flexibility required to accommodate both the varied demands of today's military forces and the anticipated needs in the future. This flexibility is achieved by producing hardware that has its operational parameters defined by software; this approach facilitates the implementation of a variety of waveforms and the execution of a broad spectrum of interface possibilities.

Software definition also adds a powerful capability in terms of upgrade and product improvement, by installing and executing new or improved software modules, changes can be effected on performance specifications, waveform patterns and interface protocols. Its exceptionally high co-location performance under dense electromagnetic fields makes it a preferred system for installation on board ships

Characteristics of Equipment

- The major features of the ECIL M7 V/UHF equipment :
- Transceiver (Separate Transmitter and Receivers available as option)
- Control of radio from one or several M7 remote control units
- Operation over the frequency range 100MHz to 400MHz
- High Transmitter output power, 50W AM carrier and 100W FM
- Multimode voice and data communications in normal, secure or Electronic Protection Measures (EPM) modes
- Designed for fixed, naval, Air force and transportable applications for both Civil and Military operations
- Meets international maritime requirements in the range 156 MHz to 163 MHz for both ship and shore station configurations

- M7 Transmitters / Receivers / Transceivers are IP enabled and has VoIP capability for net centric operation on IP networks such as VCCS
- Variety of Analog & Digital Interfaces for integration to Command & Control Systems – interfaces include Ethernet I/P, E1/T1, Rs422.
- Software & Hardware upgradable Architecture
- Highly modular in construction with strict partitioning in all hardware and software modules
- Comprehensive Built-in-Test
- Security Profiles for access control to specific functions of Radio
- Up to 20 waveform profiles and 400 Frequency presets can be stored in the radio

Contact Person

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TR-2400



Product Description

The EC TR2400 HF 100 Watt Communication Systems are designed to meet long range secure communication needs of the Indian Defense forces. These systems are based on the latest Digital Signal Processing (DSP) technology, hence more reliable than discrete components architecture and provides flexibility in configuration and future growth. The family of radios have embedded features such as Digital Encryption, Frequency Hopping, Automatic Link Control etc. In addition to voice, the EC TR2400 Systems can support data and also can extend e-mail facility to remotely located users

It is lightweight, small and having long mission life, a cost-effective solution is provided using 3V3 technology and multiple processors.

Characteristics of Equipment

Family of HF radios includes TR2400, TR 2600 & TR2801 models

- Portable, Rack mountable HF radio, operating from 1.6 to 29.99999 MHz.
- DSP (Digital Signal Processor) based system with most up to date features
- Configured for Shipborne use with co-location filter, Remote Control Unit, Antenna Tuning Unit, Message Software etc.,
- Ideal for voice and data communication from Ship to shore, ship to Air and Ship to Ship communications.
- Built-in ECCM facility (upto 40 hops/sec) , COMSEC for voice and data.
- Operated in LSB, USB, AM,CW (Morse) and DATA modes
- External Modem facility
- SMS (90 characters of Short Message Service) (on Selcal, ALE) , Channel Programming (1-99), Squelch and Mute facilities.

- Variants include:
- TR 2000 (25w)- Manpack
- TR 2400 (25w- Manpack & 100W- static/ship borne)
- TR 2600 (125w & 400w with ext PA) – Static station
- TR 2801 (100w & 400w with ext PA) – AIRBORNE TRANSCEIVER
- All the above variants are interoperable

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ELECTROPNEUMATICS AND HYDRAULICS (I) PVT LTD

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Organisation Profile

- 20+ years of experience in design, development and manufacturing of defence equipment and systems
- Pioneered many of India's firsts like Servo Presses, Hydroforming technology and many, many more
- Expertise in all relevant engineering domains like fabrication, hydraulics, Electrical, Electronics & Software
- Multi-Functional design, manufacturing and testing capabilities in core engineering fields
- In-house research & development team, DSIR-recognised
- Accredited by the Directorate General of Quality Assurance (DGQA), under 12 different categories for supply to Indian Armed Forces
- An ideal single source to undertake a complete project from design to successful handing over to the client post trials, followed by training and maintenance contracts
- Successfully executed defence turnkey projects in India and abroad in a time bound manner
- Complete life cycle support for 25 years with upgrades and obsolescence management

Our Products and Services:

Automation and Upgrade of Weapon Systems	Guns L-60, L-70, Zu-23
Gun Systems	Remote Controlled Weapon Station (RCWS)
	Automation of Artillery Guns
Missile Launchers	Akash-NG
	Ship Launcher System
Weapon Support Systems	Rotating-cum-Resting Fixture (RCRF)
	Automated Missile Loading/ Unloading System
	Automatic Levelling Systems
Weapon Sub-Systems	MIL Grade Electronic Products
	Hydraulic Cylinders and Systems
Combat Engineering & Homeland Security	Trawl and Plough System for Anti-mining
	Unmanned Guided Vehicles (UGV)
Machines for Defence	Presses
	Tube Benders
	Complete Automated Lines
Naval Projects	Naval Simulators
	Submarine Simulators Support & Applications
Reconditioning and Life Cycle Support	

TRAWL AND PLOUGH MECHANISM



Product Description

The Trawl and Plough mechanism is a mine activation and clearing system that is mounted in front of an armoured vehicle/tank to create a vehicle safe lane through a suspected mine field.

Characteristics of Equipment

- The system is manufactured from armoured grade steel with special fabrication process and sophisticated high precision machining.
- The trawl roller assembly rolls in front of the tank and actuates mines coming in its path. The pressure-activated land mines are detonated by the roller action and the plough digs up buried land mines and pushes them out of the track path or turns them over.

REMOTE CONTROLLED WEAPON SYSTEM (RCWS)





Product Description

RCWS is a Remote Controlled Weapon System often equipped with a fire-control system which can be installed on any moving platform like combat vehicle or sea going vessel or stationary location like watch tower for perimeter Defence. This system enables remote operation of different caliber weapons and automatic cannons. Our RCWS design is of modular construction that allows use of client's existing weapons and moving platforms by undertaking the required modifications and alterations. Electropneumatics RCWS design maximizes operator safety, accurate fire, improved situational awareness and crew survivability.

Characteristics of Equipment

- Comprises of 100% indigenous Optronic System, Motor, Controller and Gunner Station
- Adaptable to weapon calibers of 5.56, 7.62, 12.5, 25 mm
- Ballistic computation and lead angle generation
- Fully functional remote control and backup manual control
- Highly accurate bi-axial weapon and sight stabilisation
- Highly accurate on-the-move firing
- Interlocks for safe firing and day & night operations
- Indigenous software development for gunner station console in Linux
- Indigenous developed fALCON MIL grade controller
- Customised ergonomic design with seamless and convenient human machine interface

AUTOMATION AND UPGRADE OF GUN SYSTEMS



Product Description

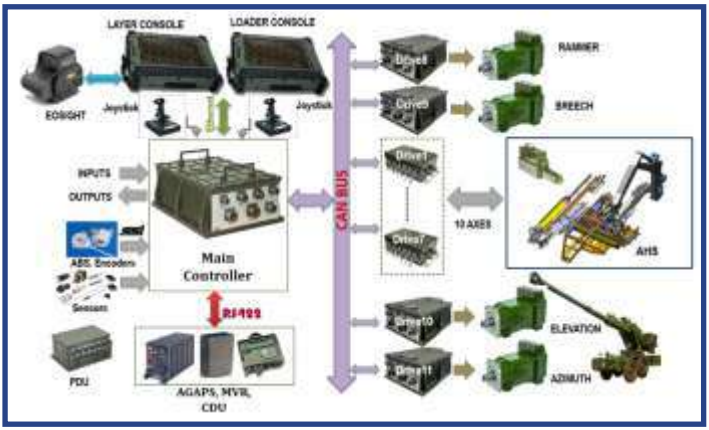
Guns such as L-60, L-70, ZU-23 can be upgraded from manual systems into sophisticated fully automated electro-mechanical systems in a cost-effective manner.

The upgrade includes MIL grade controllers with HMI, Enhanced Tactical Computers (ETCs), servo motors and drives, EO system with auto-tracker, ammunition handling system, MVR, INU, etc. and seamless integration with external radars and C2 system.

Advantages

- Fully stabilised system, real-time ballistic computation
- Improved accuracy and hit probability
- Operational flexibility and rapid reaction time to the user
- Operation in zero light and all-weather conditions
- Engagement of aerial as well as ground targets
- On-board battery bank for smooth and silent operation

AUTOMATION OF ADVANCED TOWED ARTILLERY GUN SYSTEM (ATAGS)



Product Description

To improve performance of artillery guns, rate of fire, reduce crew fatigue/error and ensure versatile gun operation, Electropneumatics upgrades legacy or pre-existing artillery pieces with automation and upgrades. The gun upgrade includes incorporating automatic loading and ramming, azimuth and elevation control, ammunition handling or any other automation to meet customer's needs.

Electropneumatics has collaborated with ATAGS (Advanced Towed Artillery Gun System) program which includes a 14-axes gun automation and electrical system consisting of MIL grade drives, motors, controller, joysticks, enhanced tactical computer, power distribution unit, actuators and harnesses.

Characteristics of Equipment

- CAN bus protocol communication between controller and drives
- Main controller connected to GUI through Ethernet
- Main controller communication with AGAPS, MVR and EO through RS-422
- In-house developed software for interfacing AGAPS, MVR, EO Sight, VDCU, ballistic calculation/fire control system
- Complete integration of software and hardware for artillery system

AKASH NG MISSILE LAUNCHER



Product Description

Akash NG is a short-range mobile surface-to-air missile system (SRSAM) with a range of up to 30 km designed and manufactured by Electropneumatics in collaboration with DRDO. The system consists of six canisterised missiles that are mounted on a mobile platform for transportation.

The launcher control includes:

1. Launcher operation in auto mode from CCU through RF/Line link including safety interlocks
2. Status monitoring, health checks, BITE and diagnostics
3. Self-test and Continuous Built-In Test (CBIT)

Characteristics of Equipment

- Operates to an elevation of 20° to 70° and azimuth of 360°
- Ergonomic design for reloading two canisterised missile stacks within 10 mins.
- Reaction time of 10 s from target acquisition by CCU to single missile launch
- Firing rate of 3 missiles within 20 s
- Deployment period of < 20 mins between transportation mode and ready-to-fire state and vice versa
- Platform levelling time < 180 s

SHIP-BASED AIR DEFENCE MISSILE LAUNCHER (SLS)



Product Description

FTR missile launcher is a joint turnkey design and development project of Electropneumatics with DRDO including installation and trials onboard an Indian naval ship. This advanced weapon system is designed for launching interceptor missiles that track and destroy incoming enemy missiles in exo/endo atmosphere.

The SLS missile launcher is made of a special grade steel base frame, launch beam and a corrugated leak-proof canister along with a missile guiding, article locking and interface mechanism. For this project, the pioneering fabrication, advanced hydraulics with cylinders and QNX-based control system were all developed in-house by Electropneumatics.

Characteristics of Equipment

- The missile is placed inside the canister and sealed
- The canister can be articulated for firing from 0^{0} to 90^{0} (horizontal to vertical) within 120 s
- The canisterised missile after being made vertical is locked in vertical position to the ship deck
- The interface mechanism is extended to seal the gap between the canister and the plenum chamber which is fixed to the deck of the ship
- The launcher control system co-ordinates with the hatch opening system during launching
- The whole system weighs around 30 T and was built in record time of 1.5 years.

SHIP DAMAGE CONTROL SIMULATOR (DCS)



Product Description

The DCS imparts training to the ship's crew for battleship damage control scenarios in a real war-like situation. It simulates war-time damages including flooding with explosion sounds, smoke and damage to systems occurring in a controllable rolling environment. The unit is designed to cater for exercising 25-30 trainees at a time.

The turnkey project typically includes civil construction, design, engineering and development with completely indigenous technology.

Characteristics of Equipment

- A three-deck ship-like structure, supported on end bearings, housed on portal frames
- Hydraulic actuators mounted on the portal frames on either end of the longitudinal axis help achieve a controlled rolling motion
- Includes an engine room, control room, DC store, mess decks with auxiliary machinery compartments and alleyways mimicking a ship interior
- Linux-based control system with touchscreen GUI to control simulator operations
- BMS (Building Management System) to operate all auxiliary equipment including ventilation, flooding system and lighting
- Smoke and noise generators to simulate a real war-like environment
- Underground sump and other water management facilities to judiciously utilize water
- Civil building houses an instructor room, class room and briefing room

NUCLEAR, BIOLOGICAL CHEMICAL TRAINING FACILITY (NBCTF)



Product Description

NBCTF is used for real-time Defence training from nuclear, biological, chemical, radiological and other nuclear agents onboard ships by simulating the following scenarios:

- Automatic detection of agents by ship-borne fixed equipment and sensors
- Alarm-emergency stations and change over to citadel condition
- Operation of the pre-wetting system from DCHQ
- Search for CBRN agent hot spots on the weather deck
- Cleansing procedure for the crew in cleansing stations
- This is a first of its kind design and we are presently successfully maintaining the said facility at >95% operational uptime.

Characteristics of Equipment

- A three-deck, ship-like structure in an open water sump
- Consists of various compartments that are required to create a realistic NBC environment
- Apart from NBC detection and monitoring systems, the simulator has two sets of cleansing stations, classrooms, DCHQ, CBRN store, ATU and bridge
- Pre-wetting system for water curtain
- Ship installed radiation / chemical / biological detection systems
- Total Atmospheric Control System (TACS) for closed down ventilation
- Calibration facility for portable equipment
- Water filtration system
- CCTV, storage of CBRN equipment onboard
- Linux-based control system to integrate all ship's systems, NBC equipment and sensors

SUBMARINE HANDLING AND MOTION CONTROL SIMULATOR (SHMCS)



Product Description

The SHMCS is a fully functional replica of the equipment, consoles and instrumentation of the 1st deck of control room of a submarine.

It includes an onboard panel and devices like steering console, watch keeping panels, communication devices with dynamic and static mockups.

The following scenarios are simulated in the Submarine Simulator:

a) Management and operation of diving, propulsion and steering systems

b) Management and operation of safety systems and auxiliary machinery

c) Operation and maneuvering of submarines in harbour and on surface

d) Preparations before diving and surfacing

e) Diving and surfacing operation and maneuvers

f) Trimming the submarine at various depths and speeds

g) Operation and maneuvering at periscope depth

h) Snorting (both start and stop)

i) Speed and depth changes over the entire speed and depth range respectively

j) Safety procedures and drills

k) Other drills and exercises

Characteristics of Equipment

- The simulator is mounted on a motion platform with two degrees of freedom (2 DOF), i.e. roll and pitch motion, to simulate the submarine's motion.
- It imparts submarine crew training in operation of various systems and equipment in the control room. Apart from the control room on the motion control platform, other compartment watchkeeping posts are also installed outside the simulator to ensure whole ship training.

SHIP FIREFIGHTING TRAINING FACILITY (FFTF)



Product Description

The FFTF imparts realistic firefighting training to personnel serving onboard ships. In the FFTF, the trainees experience fire, high temperature, low visibility, smoke, sound, etc., which prepares them for prompt and effective response. During the training, trainees fight fires in the most fire-prone compartments of the ship using fixed / portable firefighting equipment.

Characteristics of Equipment

- A covered facility with a three-deck ship-like structure, placed on columns, in an open water sump
- Burn compartments- engine room, MCR, galley and mess decks
- Different types of fire based on location- fuel fire, bilge fire, oil fryer fire, electrical fire and carbonaceous fire
- Burner technology and flame management as per latest NFPA guidelines
- Fuel options- propane / LPG
- Gas detection system for unburnt fuel and carbon monoxide Temperature monitoring system for safety redundancy
- PLC control system to use and operate various equipment
- Automatic and manual single button emergency system activation
- Double hose area to learn the nuances of handling pressurised water hoses
- Open Fire Hard with multiple fire pits for basic firefighting training
- Mockup of a helicopter for Helo deck fire

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Organisation Profile

The journey of Garden Reach Shipbuilders & Engineers Ltd., a premier Warship building Company in India, under the administrative control of Ministry of Defence, a PCMM Level-2 Certified Company, dates back to 1884 when it started its journey as a small workshop to repair vessels of River Steam Navigation Company. The Company was taken over by the Government of India in 1960. GRSE has the distinction of becoming the first shipyard of independent India to build a warship for Indian Navy, the Seaward Defence Boat (SDB) INS Ajay, way back in 1961. GRSE also built the first ever Indian Export Warship "CGS Barracuda" for Govt. of Mauritius, a Fast Patrol Vessel "SCG PS Zoroaster" for Seychelles and an Ocean-Going Cargo & Passenger Ferry Vessel "MV Ma Lisha" for Cooperative Republic of Guyana. The shipyard was conferred the status of a Miniratna Category I Company in 2006. GRSE has built over 790 platforms including 109 warships for Indian Navy, Indian Coast Guard, and friendly foreign countries - highest warships built & delivered by any Indian shipyard till date. From Frigates, Corvettes, Fleet Tankers, Landing Ship Tank, Landing Craft Utility to Survey Vessels, Offshore Patrol Vessels and Fast Attack Craft - the repertoire is rich and varied. In addition to shipbuilding & ship repair, GRSE is also engaged in engine production and other engineering activities. The engineering division manufactures deck machinery items, pre-fabricated portable steel bridges and marine pumps. Noteworthy accolades include Raksha Mantri Award 2022 in Designing the most silent ship for Indian Navy for ASW operation, Defence Minister's Award for Excellence for In-house Design Effort for Offshore Patrol Vessel for Government of Mauritius, CGS Barracuda, Best Performing Defence Shipyard of India for Four Years in a row. GRSE embraced infrastructure modernization over past decades and can undertake concurrent construction of 20 ships at a time. Team of highly skilled design engineers and state of art VR Lab & latest software aid in the in-house design capabilities. With proven credentials, the shipyard is on a growth path, reaffirming its motto "In Pursuit of Excellence and Quality in Shipbuilding.

P17A ADVANCED FRIGATE



Product Description

The prestigious contract for construction of three Advanced Frigates under Project 17A was signed by GRSE on 20 Feb 2015 and is the largest ever order won by the company. P17A Frigates are state-of-the-art Guided Missile Frigates, built with latest Integrated Construction Methodology with enhanced pre-outfitting, to improve quality and reduce build periods. M/s Fincantieri, Italy, is the Knowhow Provider for Technology Upgrade and Capability Enhancement of the Frigates.

GRSE's maiden foray into the outfitting and installation of Brahmos SSM, MFSTAR antenna and LRSAM SAM during execution of Project 17 A, bestows new capabilities on the shipyard and catapults it to the higher league of shipyards capable of building potent stealth frigates for the nation. With P 17A, the shipyard has migrated to the digital realm and is successfully implementing AVEVA for the 3D modelling across multiple locations using a secured data network. Moreover, the vessel's workflow has adopted the Siemens 'TEAMCENTRE' for Product Data Model and Product Life Cycle Management (PDM/PLM).

Main Particulars of the Vessel

Length (LBP)	138 M
Length (LOA)	149 M
Beam Max (On weather deck)	17.7 M
Breadth (BWL at Design Waterline)	15.9 M
Depth (at Centre)	9.9 M
Deep Draft	5.1 M
Design Deep Displacement	6670 T (approx.)
Speed	Max 28 Knots
Complement	Total : 225
Endurance	5500 NM at economical speed and 1000 NM at max speed
Propulsion Machinery	2 x CODOG propulsion plants

NEXT GENERATION OFFSHORE PATROL VESSEL



Product Description

The Contract for the four-ship Next Generation Offshore Patrol Vessel was signed on 30 March 2023. These ships are capable of fulfilling roles such as Seaward Defence, 'Out of Area' Contingency Ops (OOAC), Non-Combatant Evacuation Ops (NEO), Convoy Operations/Anti-Piracy Missions, Counter Infiltration Ops, Anti-Poaching/Trafficking, HADR, Search and Rescue Missions, Hospital Ship, Fleet Maintenance Support and COMINT Ship.

Main Particulars

Length Overall	113.00 M (Approx.)
Length On WL	107.5 M
Breadth Moulded	14.6 M
Depth Moulded to No. 1 Deck at Side	8.70 M
Depth Moulded to No. 01 Deck at Side	11.30 M
Draft (Design)	4.0 M
Displacement (Design)	ABT 3000 T
Frame Spacing	600 MM
Design Speed	23 KNOTS
Endurance at 14 Knots	8500 NM
Officers	20
Sailors	130 Bunks for 125% of the Complement

SURVEY VESSEL (LARGE)



Product Description

The Contract for the four-ship Survey Vessel (Large) project was signed on 30 Oct 2018. These ships are capable of full scale coastal & deep-water hydrographic survey of Ports & Harbors, as well as of approaches & determination of navigational channels & routes. In addition, the ships are also capable of undertaking survey of maritime limits and collection of oceanographic & geographical data for Defence applications.

These ships are propelled by two Marine Diesel Engines combined with Fixed Pitch Propellers and fitted with Bow & Stern Thrusters for maneuvering at low speeds during surveys. The ships are designed by the Design team of GRSE and are built & outfitted in compliance with applicable provisions and regulations of the Classifications Society (IRS).

The ships are also constructed utilising the concept of 'Integrated Construction'. Accordingly, a large amount of pre-outfitting is carried out at the block stage itself.

The First of Class Ship, Yd. 3025, shall bear the name 'Sandhayak' upon being commissioned to the Indian Navy. Incidentally, 'INS Sandhayak', the first Indigenous Oceanographic Research and Survey Vessel built by GRSE, was decommissioned in June 2021, after her glorious service to the nation for 40 years.

Salient Features of the Vessel

Length	110 M
Beam	16 M
Draught	3.75 M
Displacement	3408 T (approx.)
Speed	18 KNOTS
Complement	18 Officers + 160 Men
Endurance	6500 Nm at Economical Speed
Helicopter	01 x ALH

ANTI SUBMARINE WARFARE CORVETTE



Product Description

Anti Submarine Warfare Corvettes — Kamorta Class Ships are super-sophisticated frontline warships with Stealth features, having Anti-Submarine Warfare Capability with a low signature of radiated underwater noise. The ships are equipped with Super Rapid Gun Mounting, Anti-Aircraft Guns, Torpedo Launcher, Rocket Launcher and Chaff Launcher as well as early Warning, Navigation, Fire Control Radars and Under Water Sensors. They are also equipped with Integrated Communication System and Electronic Warfare System.

Principal Particulars

Length Overall	109.100 M
Breadth	14.17M
Displacement	3200(T) app
Max Speed (KNOTS)	25.00
Endurance (NM)	3450 app at 18knts
Propulsion Machinery Main Engines	4x3888 KW at 1050 rpm
Power Generation Diesel Generator	2x 1000 & 2 x 500 KW
Accommodation Officers	17
Sailors	106

ANTI-SUBMARINE WARFARE SHALLOW WATER CRAFT (ASW-SWC)



Product Description

ASW Shallow Water Crafts are capable of Anti Submarine Warfare in coastal waters & capable of Low Intensity Maritime Operations (LIMO) & Mine Laying Operations

The envisaged capabilities also include :

SAU and Coordinated ASW operations with aircraft

Interdiction/ destruction of sub surface targets in coastal waters

Carrying out Search and Rescue by day and night in coastal areas

Capability to prosecute intruding craft as part of LIMO

Specification

Length Overall	(M)	77.6
Breadth	(M)	10.5
Draught	(M)	2.7
Displacement (Full Load)	(T)	900 (Approx.)
Max Speed	(Knots)	25
Endurance	(NM)	1800 (Approx.) at 14 Knots
Main Engine	(KW)	3 x 4300
Propulsion		Three Marine Diesel engines connected with three Waterjets through reversible reduction gearbox.
Diesel Generator	(KW)	4 x 400
Accommodation		Officers : 07 Senior Sailors : 50

Weapon & Sensors

- Twin triple tubelight weight Torpedo Tube
- Rocket Launcher
- Twin Anti-Torpedo Defense System (ATDS) with Fire Control System (FCS)
- 30 mm Close-In Weapon Systems (CIWS) with EO-FCS
- Twin 12.7mm Gun with Stabilized Optronic Control System
- Very Short Range Air Defense Missile (VSHORAD) Launcher
- Low Frequency Variable Depth Sonar (LEVDS)
- Hull Mounted Sonar
- Expandable Bathy Thermograph (XBT)

Communication

Internal Communication

- Main Broadcast and SRE system
- Auto Telephone
- Sound Power Telephone
- Intercoms
- External Communication
- Advanced Composite Communication Suite
- Satellite Communication
- Fixed Radio Sets
- Cryptographic Equipment
- GMDSS Suite

Electronic Warfare System with Direction Finder

Navigation

- Integrated Bridge System (IBS)
- Two Ring Laser Gyro
- One transmitting type magnetic compass
- 02 Nos DGPS
- Auto Pilot
- Automatic Identification System (AIS)
- One electro-magnetic log
- 02 Nos Band Radars
- Automatic Weather Observation System (AWOS)
- Echo Sounder

OFFSHORE OFFSHORE PATROL VESSEL



Product Description

The ships are capable of carrying out multi-purpose roles. These include – Anti Piracy Operations, Search & Rescue Operation, Anti-Smuggling & Anti-Drug Surveillance, Anti-Poaching Operation of EEZ including Fisheries Protection, Logistic Support Operation including Transportation of Dry Cargo, Fuel Oil & Fresh Water and Refrigerated Fresh Food, Transportation of Small Detachment of Troops/ Personnel, Helicopter Operations, Pollution Response Operation and External Fire Fighting.

Principal Particulars

Length Overall	(M)	74.10 (approx)
Length B.P.	(M)	69
Breadth, moulded	(M)	11.40
Depth upto Dk. No.1	(M)	7.90
Depth upto Dk. No.2	(M)	5.50
Draught (Full load)	(M)	3.50 (approx)
Displacement	(T)	1350 (approx)
Frame Spacing	(MM)	600 throughout
Speed	(KNOT)	22
Propulsion Machinery		
Main Engines		2x4300 KW
Power Generation		
Diesel Generator		4x250 KW, 1x80 KW
Accommodation		
Officers		14
Sailors		48
Passengers		31
Endurance		5000 Nautical Miles (NM)

OCEAN GOING PASSENGER & CARGO FERRY VESSEL FOR GOVT. OF GUYANA



Product Description

Ocean Going Ferry designed and built to operate on Coastal and Riverine Areas of Guyana

Ferry is capable of operating with seating capacity of 276 passengers, 14 Sedan type Cars and 2 fully loaded 20T Truck with Bow Ramp

Provision for carrying following types of Cargo:

Total cargo carrying capacity of 250T

Packaged cargo

General cargo in 10 ft. containers (6 nos below deck inside FWD cargo hold + 4 nos above hatch cover)

Dedicated cold & cool room for refrigerated cargo (20 Ton)

Hazardous cargo on open deck

Specifications

Length	69.55 M
Breadth	13.50 M
Depth	4.65 M
Draft	3 M
Displacement	1700 T
Max speed	15 KNOTS
Capacity	294 (12 crew + 6 officers + 276 passengers including 10 officials
Endurance	500 NM

LANDING CRAFT UTILITY



Product Description

Landing Craft Utility (LCU) Vessels are deployed to transport troops and equipment from ship to shore and vice versa. Following are the salient features of the LCU platforms :

- Equipped with Bow Ramp for handling combat equipment and vehicles
- Arrangement for transporting and stowing equipment/vehicles on main deck
- Ballast tanks to achieve desired trim and for smooth beaching/ un-beaching operation
- Arrangement to pull in/ pull out stranded vehicles on beach using Tank Hauling Capstan installed on main deck
- Integrated Platform Management System (IPMS)

Specifications

Length Overall	(M)	62.8 (approx.)
Breadth, moulded	(M)	11
Depth upto Dk. No.1	(M)	4
Draught (design)	(M)	1.70
Displacement	(T)	830 (approx.)
Speed	(KNOT)	15
Endurance	(NM)	1500 at 12 Knots
Main Engines	(KW)	2 x 1850
Diesel Generators	(KW)	2 x 250, 1 x 350
Payload		01 No Main Battle Tank/ 04 Nos. Armoured Personnel Carrier (Light Tanks)/04 Nos. 4 Ton Trucks
Weapons		02 Nos. CRN-91 Guns 04 Nos. Medium Machine Guns (MMGs) 02 Nos. Heavy Machine Guns (HMGs)
Accommodation (Total : 216)		Officers: 10 Sailors: 46 Troops : 160

WATER JET FAST ATTACK CRAFT



Product Description

Water Jet Fast Attack Crafts promise to transform naval shoreline operations by packing a powerhouse punch of agility and speed. These WJFACs are ideally suited for interception of fast moving surface craft and will duly perform Anti-Smuggling, Fishery Protection and Search & Rescue Operations. The ships are fitted with Hamilton Water Jets.

Specifications

Length Overall	(M)	48.9
Breadth	(M)	7.5
Displacement	(T)	321 (Approx)
Max Speed	(KNOTS)	35
Endurance	(NM)	2000 (Approx) at 12-14
Propulsion Machinery Main Engines		3x2720 KW
Power Generation Diesel Generator		3x80 KW
Accommodation Officers		6
Sailors		23

FAST PATROL VESSEL



Product Description

Fast Patrol Vessels for Indian Coast Guard are designed to offer high speed and enhanced maritime security. The primary role of the vessel is to perform Fisheries Protection, monitor foreign-chartered trawlers, EEZ and Coastal Patrol, Anti-Smuggling and Search and Rescue Operations. However, it can also serve to provide communication link and Escort Coastal Convoys during hostilities and wartime. The ships are fitted with Rolls Royce water jets.

Principal Particulars

Length Overall (LOA)	(M)	48.9
Breadth	(M)	7.5
Displacement	(TONS)	308
Max Speed	(KNOTS)	34
Endurance	(NM)	1500 at 12-16 knots
Propulsion Machinery Main Engines		3x2720 KW MTU Engines
Power Generation Diesel Generator		3x120 KW, CUMMINS DG
Accommodation Officers		15
Sailors		20

FAST INTERCEPTOR BOAT



Principal Particulars

Classification	:	IRS Approved
Length overall	:	9.85 M
Length on waterline	:	9.25 M
Beam (maximum)	:	3.38 M
Draught	:	0.65 M
Displacement	:	Full load condition – 5 tonnes
Fuel capacity	:	650 Ltrs.
Fresh water capacity	:	100 Ltrs.
Crew	:	4 crew and up to 10 passengers
Range	:	75 N miles @ 25 Knots (including 25% reserve)
Cruising speed	:	35 Knots at 100% MCR of OBMs.
Max speed	:	35 Knots
Propulsion	:	2 X Outboard Motors (275 HP each)

Propulsion

- Main Engines: Two commercially available outboard petrol engines with counter rotation gear boxes driving stainless steel propellers.
- Gear Box: Each engine drives a close coupled reverse/ reduction gear box. The gear boxes provide the ability to back flush the water jets to clear debris, weeds etc.

Principal Particulars

Classification	:	IRS Approved
Length overall	:	13.0 M
Length on waterline	:	11.30 M
Beam (maximum)	:	3.70 M
Draught	:	0.70 M
Draft (maximum)	:	0.90 M (At full speed and full load)
Displacement	:	Full load condition – 1.2 tonnes
Fuel capacity	:	1250 Ltrs./1350 Ltrs.
Fresh water capacity	:	500 Ltrs.
Crew	:	4 crew and up to 12 to 16 passengers
Range	:	200 N miles @ 25 Knots (including 25% reserve)
Cruising speed	:	25 Knots at full load with crew and passengers
Max speed	:	35 Knots (493 BHP each) driving water jets through
Propulsion	:	ECM controlled, 2 X Inboard diesel engines reversal gear box.
Stern Gear	:	Two Hamilton HJ 292 Water Jet

Propulsion

- Main Engines: Two turbo charged and after-cooled Cummins Marine Diesel Engines with electric start/stop and remote control.
- Gear Box: Each engine drives a close coupled reverse/reduction gear box. The gear boxes provide the ability to back flush the water jets to clear debris, weeds etc.

AUTONOMOUS UNDERWATER VEHICLE (AUV)



Principal Particulars

Autonomous Underwater Vehicle (AUV). GRSE in collaboration with an industry partner M/s AEPL has developed a Man Portable AUV (which is being launched today). The AUV has been designed as a completely autonomous vehicle and is designed to take on a variety of payloads depending on the required role including mine detection, ASW training, underwater inspection, search & rescue missions and scientific exploration.

Principal Particulars of AUV

GRSE & AEPL have jointly developed a 2.15 m Autonomous Underwater Vehicle

- Endurance about 4 hours
- Depth rating 300 m
- Modular Design
- Equipped with:
- Side Scan Sonar
    - Forward Looking Sonar
    - Acoustic Modem
- Potential Roles:
    - Mine Counter Measure applications
    - Reusable ASW training target
    - Underwater payload delivery
    - Passive acoustic monitoring

GOA SHIPYARD LTD

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Organisation Profile

Goa Shipyard Limited (GSL), functioning under Ministry of Defence, Govt. of India, is designing & building sophisticated ships & maritime platforms. GSL has a track record of timely execution at 'fixed cost' of over 225 Ships & 175 Composite Boats to various clients. GSL's product range includes Patrol Vessels, Missile Boats, Landing Crafts, Training Vessels, Survey Vessels, Pollution Control Vessels, GRP Boats etc. GSL has successfully exported over 37 platforms to friendly countries. At present, GSL is engaged in construction of 2 Missile Frigates, 7 NGOPVs for Indian Navy and 2 PCVs, 8 FPVs for Indian Coast Guard.

35 KN, 50 M, FAST PATROL VESSEL



35 KN, 50 M, FAST PATROL VESSEL

Product Description

This 35 Knots, 50 meters in length, Fast Patrol Vessel, is in-house designed and built by Goa Shipyard Ltd. This vessel is primarily designed for patrolling, anti-smuggling and anti-terrorist operations. It can also support the Navy during wartime as a coastal convoy escort and as a communication link.

Characteristics of Equipment

- These class of vessels are proven in service.
- Excellent stability & performance proved in harsh sea conditions.
- Multiple role capable, cost effective product, comparable to any other similar internationally available product.
- Ready availability of proven platform design, which can be adapted to specific customer needs.

105M NAVAL OFFSHORE PATROL VESSEL



105M NAVAL OFFSHORE PATROL VESSEL

Product Description

The NOPV is based on the in-house design developed by GSL through its R&D. Four of these vessels have been constructed for the Indian Navy by GSL. These vessels have successfully proved the specified performance and sea worthiness during operations in service with the Indian Navy. Similar vessels are under construction at GSL for Sri Lanka Navy.

Characteristics of Equipment

- Cost effective Warship design to handle multiple role requirements.
- Excellent stability & proven performance in harsh sea conditions, complies to stringent Naval standards etc.
- Specially shaped hull developed to provide Stealth features for combat capability.
- Ready availability of proven platform design, which can be adapted to specific customer needs.
- Capable of taking higher weapon package, such as BrahMoS or other missiles.
- High degree of Automation for Platform Management for minimum crew.

115M POLLUTION CONTROL VESSEL



115M POLLUTION CONTROL VESSEL

Product Description

The vessel is 115 mtrs long, 16.5 mtrs wide and a tonnage of 4100 Tonnes will have a maximum speed of 22 Knots. The pollution response capabilities of the vessel will include an advanced Radar with oil slick detection software, Oil Recovery Operation System (ORO System) with two Flush type integral side collector sweeping arms, Oil Spill Dispersant (OSD) Spray System, Ocean Booms, Near Shore Booms, Skimmers, RO stowage portable barges among many other state of the art features.

Characteristics of Equipment

- Completely in-house designed
- Excellent stability and performance proved in harsh sea conditions.
- Multiple role capable, cost effective product, comparable to any other similar internationally available product.
- Efficient Integration of the propulsion system with Controllable Pitch Propellers to achieve flexibility of wide variation of speed requirements over operating profile.

Contact Person

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GOODRICH GASKET PVT LTD

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Organisation Profile

Goodrich Gasket Private Limited is acknowledged as the market leader in manufacturing & supply of High – performance Industrial Static Sealing Products for the Global Processing Industries. Goodrich Gasket is currently manufacturing and supplying the entire range of Industrial Gaskets from its 25,000 Sq. m state of the art brand new facility at Chennai, India. Founded in 1987, the company has more than 3000 satisfied customers worldwide. “At Goodrich Gasket, we Design, Manufacture, Supply, Install, and give On-Site support for all of your Gasket needs and Concerns.

GASKETS



Product Description

Goodrich Gaskets are metallic sealing rings suitable for high pressure and high-temperature applications and are fitted in ring groove-type flanges. They are widely used in Oil & Gas, Petrochemical Industries, Valves etc. The Gaskets are machined to the required tolerances and surface finished using high-quality CNC Lathes. Other Non-Standard types of Metal Rings are also available like Combination, Delta & Lens to customers' specifications. Required tolerances and surface finished using high-quality.

Characteristics of Gaskets

- Quality Assurance Program – Approved by major EPC, PMC, & PSU's
- Highly skilled engineers for designing products with optimal performance & ability to design products with special requirements.
- Complete control over all critical processes, including raw materials.

Contact Person

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IDEAFORGE TECHNOLOGY LTD

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Organisation Profile

IdeaForge is the pioneer and the pre-eminent market leader in the Indian unmanned aircraft systems ("UAS") market. We had the largest operational deployment of indigenous UAVs across India, with an ideaForge-manufactured drone taking off every five minutes for surveillance and mapping on an average. Our customers have completed over 400,000 flights using our UAVs. We ranked 5th globally in the dual-use category (civil and defense) drone manufacturers as per the report published by Drone Industry Insights in December 2023. Our UAVs are equipped with industry-leading specifications and capabilities, comparable to those of other established global players in the UAV industry. Our capabilities like our indigenous design and technological ability to invent, design, and deliver customer-centric offerings allow us to design, develop, engineer, and manufacture our UAVs in-house with a control on performance, reliability, and autonomy.

NETRA V4 PRO UAV



Product Description

Belonging to the pedigree family of NETRA UAVs, the NETRA V4 PRO UAV comes with a flight time of 90 minutes. This upgraded UAV is purpose-built for high-altitude operations with best-in-class flight time and features. It boasts robust build and surveillance capabilities to deliver critical on-ground situational awareness in harsh weather and terrain conditions. NETRA V4 PRO can be used in a wide range of mission-critical applications, including defence, public safety, mapping, inspection, and emergency response.

Characteristics of Equipment

- Range : Upto 10 miles (15 Km) Operational Range
- Endurance : 90 Minutes (up to 3,280 ft/1000m above mean sea level) take off
- Weight : <13.2 lbs (6 kg)

Contact Person

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JANATICS INDIA PVT LTD

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Group company: Janatics Automation & SKYFAST

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Organisation Profile

Established in 1977, Janatics is one of the leading world-class manufacturers of standard and custom pneumatic components and systems. Over the years, Janatics expanded its product portfolio and started manufacturing systems and new technology products.

Our products are backed by best-in-class infrastructure that includes a central manufacturing facility in Coimbatore, South India, which is supported by satellite plants in Noida and Ahmedabad.

With an in-house R & D recognized by DSIR, expertise in design, development, programming, and a dedicated project management team, today the company offers an impressive range of products and solutions for various industrial applications.

Janatics takes pride in supplying indigenously developed products that are on par with global quality norms. Our product portfolio includes cutting-edge solutions exclusively for the Defense and Aerospace sectors.

A strong network of domestic and international dealer network ensures prompt and reliable service.

EXHAUST ENGINE BRAKE



Product Description

- Exhaust Engine brake system developed indigenisation for BEML (TATRA defence vehicle).
- Pneumatic cylinder design and developed by M/s Janatics

Characteristics of Equipment

- BEML high mobility vehicle
- Engine brake retarder during the down hill operation of the heavy truck
- Block the exhaust partially for free rotation
- Operating -40 to +50 deg ambient temperature, high attitude and underwater.
- Work in pneumatic operating pressure up to maximum of 8.5 bar
- Qualified for MIL standard:

3/2 SOLENOID VALVE



Product Description

3/2 solenoid valve design and developed indigenisation for BEML (TATRA defence vehicle)

Characteristics of Equipment

- BEML high mobility vehicle
- Electro pneumatic solenoid valve for open and close operation of different aggregate.
- Operating -40 to +50 deg ambient temperature, high attitude and underwater.
- Work in pneumatic operating pressure up to maximum of 8.5 bar
- Qualified for MIL standard

SOLENOID VALVES, ELECTRO DISTRIBUTORS AND PRESSURE REGULATORS






Product Description

5/2 way solenoid Valve, Double electro piloted 5/2, Electro Distributor 5/2, Pressure regulators, 5/2 Spring return valve, design and developed for Electro pneumatic control system

Characteristics of Equipment

- Electro pneumatic control system for warship
- Operate range : 12bar
- Operating temperature : -40 to +100 deg ambient temperature
- Qualified for MIL -810F standard

PNEUMATIC SYSTEMS



Product Description

Pneumatic systems design and development for Air intake systems (Tank)

Characteristics of Equipment

- Electro pneumatic systems for control Air intake system
- Operating range : 12bar
- Operating temperature : -40 to +100 deg ambient temperature
- Qualified for MIL-810F standard

HIGH PRESSURE REDUNDANT 3/2 SOLENOID VALVE



Product Description

High pressure redundant 3/2 solenoid valve design and development for Launch vehicle engine testing ground system

Characteristics of Equipment

- High pressure solenoid valve command gas supply to pneumatically actuate EP valve.
- Operating range : 65 bar
- Operating temperature : - 25 deg C to 60 deg
- Explosive proof standard coil
- Qualified for space qualified standard

Contact Person

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KALYANI STRATEGIC SYSTEMS LTD

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Organisation Profile

Kalyani Group of Companies, established in mid 1960s, is an Indian multi-national with high technology, engineering & manufacturing capability across critical sectors such as Engineering Steel, Automotive, Industrial, Renewable Energy, Urban Infrastructure and Specialty Chemicals. Bharat Forge Ltd. (BFL), the flagship company of the USD 3 billion Kalyani Group of companies., is a leading global supplier of forged and machined products.

Kalyani group of companies has launched itself on a challenging journey by making major investments in the area of defence; the Kalyani group has setup a defence company under the name of Kalyani Strategic Systems Ltd (KSSL). In its Defence vertical, KSSL is focusing on areas like Artillery systems, Protected Vehicles, Armoured Vehicles Upgrade, Ammunition (only empties), Air Defence solutions, Small Arms, Defence Electronics, Under water systems and Marine Engineering products and Aerospace. KSSL has expanded its infrastructure & facilities and has set up state-of-the art manufacturing facilities at selected locations in India to offer end to-end solutions in all its focus areas. Technology and innovation are the cornerstones of our offerings in Defence sector, with tangible efforts on developing 100% indigenous products for the Global Armed Forces.

KALYANI UAV



Product Description

The Kalyani UAV is a vertical take-off and landing (VTOL), fixed-wing unmanned aircraft used to provide advanced multi-sensor intelligence, surveillance, and reconnaissance (ISR) services. Delivering 14+ hours of endurance and an operational range of 200 km in LOS, the UAV is ideal for multi-payload, multi-mission operations. Runway independent, the system can be set up and operational in less than 30 minutes without the need for launch or recovery equipment. With a droppable payload capacity of up to 30 Kg, the UAV offers flexible payload options. Utilizing industry leading imaging sensors, long range EO/MWIR as well as on board tracking, stabilization and video processing. In addition to the multi-mission payload bay and superior optics, the UAV features a common autopilot and ground control system architecture providing a highly customizable, modular platform which can be custom-configured to meet operational or customer requirements.

Payload Drop – Unmanned Aerial Vehicle specifications

Parameters	Operational Specifications
Total Weight	130 Kg (with Payload)
Fixed Wing span	6m
Vertical Take off & Landing (VTOL)	VTOL
Service ceiling	6500 m
Speed	>= 30m/s
Maximum Launch Altitude	4500 m
IC engine based	Forward Flight (Sky Power SP 275)
Quad propulsion	Electric
Hover time	5 minutes
Endurance	14-18 hours (w/o payload), 4-6 hours (with 30 kg payload),
Range (one way)	50 KM (can be enhanced up to 200 KM) with RF Can be enabled with SATCOM
Payloads	60 FPS EO-IR Camera
Munition payload	3 Hard points for 30 Kg munition payload (with IRM)
Wind resistance	Class 4
MIL Qualification	MIL-461 Qualified

MR AUV



Key Features

- To augment Navy's Mine Counter Measure (MCM) capabilities
- Autonomous operation as part of planned missions
- Equipped with Wi-fi modem, GPS antenna, UHF antenna,
- AIS transponder and Iridium antenna on mast for Communication system
- Equipped with INS, GPS, Pressure sensor, Doppler Velocity Log (DVL), Obstacle
- Avoidance Sonar (OAS) as part of Navigation System.
- Utilizes Side Scan Sonar (SSS) to seabed survey for MCM
- Equipped with Li-Ion battery pack of 1680Wh, including BMS to monitor performance & safety management of Battery

EXPENDABLE UNDERWATER TARGET





Product Description

- Used for undertaking Anti-Submarine Warfare (ASW) training at Sea
- Capable of simulating a submarine by being detected, located and tracked by Hull Mounted Sonar, Active/Passive towed array Sonars and Sonobuoys
- Can be utilized by ships, submarines, helicopters and aircraft for anti – submarine exercises
- Capable of operating at Sea States 4 & can manoeuver up to 8 knots at 150 m depth by imitating acoustic signature of maneuvering Submarine.

KSSL BUOYANCY GLIDER



1000-meter depth- Real time tracking 110 days of endurance tracking

Key Features

- Powerful autonomous sensing platform designed for persistent ocean monitoring & exploration
- Allows to gather chemical, physical, biological and acoustic data along the water column and provides real-time data profiles
- User friendly software suite allows constant supervision & mission control from any place in the world.
- Extremely cost-effective solution for data collection – requires no supervising boar at surface during its mission.
- Easy to operate; designed for both shallow & deep-water operations.

TURBOCHARGER



Product Description

- **Turbocharger Layout**: The turbocharger consists three main casings, namely;
- **Muffler Assembly**: Acts as an air filter for Turbo.
- **Compressor Housing**: Made in a shape of air volute, encloses impeller and diffuser.
- **Gas Receiver**: Intended for delivery of exhaust gases from diesel engine to Turbine.
- **Exhaust Housing**: Intended for bleeding of Turbine used gases to exhaust system

Sindhughosh class EKM turbo Specifications

• Air mass flow rate	:	0.87-2.05 kg/s
• Operating speed	:	14,000 – 24,000 RPM
• Max. Operating speed	:	27,500 RPM
• Pressure Ratio	:	1.4 – 2.7
• Turbine Inlet Temp.	:	470 – 680 ^{o} c
• Lube Oil Pressure	:	5.4 – 6.3 Bar
• Cooling Medium	:	Water cooled
• Turbine Back Pressure	:	1.0 Bar

Characteristics of Equipment

Turbocharger Features:

- Vertical mounting on engine
- Water cooled turbine casing
- Radial Compressor (2 piece with Spline)
- Axial Turbine (2 stator + 2 rotor)
- Hollow Rotor Shaft
- Lower and Upper Bearings To Support The Vertical Shaft
- Two Hydro-dynamic radial bearings & one Thrust bearing



KRASNY DEFENCE TECHNOLOGIES LTD

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Organisation Profile

Krasny Defence Technologies Limited (erstwhile Krasny Marine Services Pvt. Ltd.) was established in 1995 for rendering specialised service with a focus on the Indian Navy, the Indian Coast Guard, and related organisations. Over the 27 years of its operations, Krasny has built-up a formidable reputation for its prowess in Project Management. This core competency has enabled Krasny to complete all its projects well in time, regardless the complexities, size or financial outlays.

Today, Krasny's domain expertise stretches across the entire gamut of avionics, aviation and maritime electronics; sales, installation, operationalisation, and life cycle support of technology intensive equipment and turnkey projects on behalf of Foreign Original Equipment Manufacturers (OEMs); and complete refits of ships (more than 60 Indian Coast Guard Ships refitted to date).

On conversion of the company from Private Limited to a Public Limited Company, hardcore professionals have been inducted as Independent Directors who are specialists in the related fields of Aviation, Marine Engineering and Electrical & Electronic Engineering. Whilst the Aviation domain Expert is retired Vice Chief of the Naval Staff, Electrical and Electronic domain expert is an ex CMD of a Defence Shipyard. Marine Engineering expert has 30 years of onboard marine experience in addition to holding high positions in private sector ship repairs yards.

Krasny currently has functioning work centres at Mumbai, Goa, Karwar, Kochi and Visakhapatnam. It also has the ability to rapidly set up work centres anywhere in India, depending upon the needs of particular projects.

KRASNY ECOKLIEN



Product Description

"KRASNY ECOKlien" is a marine Wastewater (sewage) Treatment System

Characteristics of Equipment

- Durability and operational longevity in marine & offshore applications.
- Effective electrolytic treatment of both black and grey water by generating sodium hypochlorite and mixed radicals
- Suitable for retrofit and new builds.
- Combat design to meet space constraints
- Available in ranges from 1780 L/day to 55400 L/day with flexibility to combine for increased capacities.

Contact Person

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MARINE VALVES



Characteristics of Equipment

- Globe Valve
- Gate Valve
- Butterfly Valve
- Check Valve
- Ball Valve
- SDNR / SDSL

COMPOSITE BLOWER



Characteristics of Equipment

- We possess technological competence in developing composite structures/ equipment of any desired specifications.
- Our composite blower has already cleared type testing for marine applications through ABS and is being empanelled by IHQ MoD(N)/ DNA for supplying to IN ships.

HABITABILITY PRODUCTS





Characteristics of Equipment

- Complete system to meet the accommodation application ranging from panels to doors, as well as the flooring system including epoxy, vinyl & underlayment
- 3D rendering for interlock accommodation mock up

WATER TIGHT/WEATHER TIGHT/AIR TIGHT DOORS





Characteristics of Equipment

- Customized Watertight doors to suit the different requirements on each individual project
- Water tight pressure upto 44 meters (4.40 kgf/m2)
- Customized air tight doors upto 4Kpa air pressure
- A60 & A0 Fire Class doors

WATER TIGHT/WEATHER TIGHT HATCHES





Characteristics of Equipment

- From high-pressure hatch to standard escape hatch, designs are strongly emphasized to ensure ease of operation at sea

LADDERS



Characteristics of Equipment

- Customizable light-weight aluminium ladders for easy operation with the assistance of air/electric winches.
- Portable gangway, wharf & bulwark type for fast bridging

Contact Person

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RSU CALIBRATOR



Characteristics of Equipment

- RSU Calibrator is a customized product specifically designed for calibration of Remote Sensing Unit (RSU).

Contact Person

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MARINE GROWTH PREVENTION SYSTEMS (MGPS)



Characteristics of Equipment

- Complete protection against bio fouling
- With consistent disinfection system
- Easy to install, PLC controlled
- Non-Hazardous

Contact Person

Cmde. Mathew Lathra M, NM, IN (Retd.), Chief Executive Officer

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LARSEN & TOUBRO LTD

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Organisation Profile

Larsen & Toubro Limited (L&T) is an Indian Multinational conglomerate with a revenue exceeding USD 20 bn. With a diverse portfolio like Engineering, Defense, Construction, Hi Tech manufacturing and services, L&T is engaged in core, hig sectors of economy.

L&T Defence, the Defence vertical of L&T, is one of India's leading Private Sector companies for supply of Defence Equipment, Systems, and Platforms. L&T's current Defence portfolio, built largely through in-house R&D with 8 dedicated manufacturing facility in India, includes a wide variety of Weapon Launch Systems, Artillery Systems, Land & Naval Platforms, Communication Systems, Avionics, Missile Systems, Engineering Systems and Upgradation of legacy equipment of Russian and Western origin that provide the Armed Forces with the decisive edge across land, sea and air.

L&T Defence has established strong reputation in global markets for quality products. The company has exported defence platforms, equipment, systems and upgrade solutions to many friendly foreign countries which are being put to effective operational commitments.

SUDARSHAN – CLOSE-IN WEAPON SYSTEM (CIWS)



Product Description:

L&T's Close-In Weapon System, SUDARSHAN is designed to protect critical assets such as air bases, military stations and power plants from aerial threats. The system can detect aerial threats at a considerably long distance through its long range search RADAR. Its command and control module automatically evaluates the threat and assigns the target to the appropriate weapon system.

Characteristics of Equipment:

- Search Radar, Fire Control Radar, Command & Control Unit (CCU), & 40mm Anti-Aircraft Gun
- Day & Night, All Weather operation capability
- Detection at a range of 30 km
- Tracking variety of flying platforms, with speed 0-500m/s
- Modular in design and easy to install and maintain
- Firing rate of 300 rounds per minute and range of 3.5 km

SHARANG – REMOTE WEAPON STATION



Product Description:

L&T Sharang, developed in-house, is a highly accurate and compact RWS for engaging threats. It is light weight, cost-effective and can be installed in any tracked or wheeled vehicle with minimum modifications to vehicle. It can be operated from a distance or inside the vehicle giving full-hull protection to crew.

Characteristics of Equipment

- Capable of operating in high altitude
- Gun motion does not require any electrical power
- Very low electrical power requirement
- Can be adapted to any belted machine gun up to 7.62x54R Cal.
- Can be configured with a variety of day/ night sighting systems
- 300 rounds ready to fire in standard configuration, can be customized as per requirement
- Minimal Modifications to the vehicle
- The control station fitted inside the vehicle consists of display unit and control handle for movement of the external mounted gun. It is ergonomically designed. The control concepts can also be customized according to the requirement with hand wheels for cramped spaces or 2 hand joystick.
- Undergone extensive user trial by the Indian Army on its BMP platform vehicle by firing more than 1000+ live rounds till date

TRATR 40 MM AIR DEFENCE GUN



Product Description

TRATR, the state-of-the-art Air Defence gun constitutes the Firing Unit of L&T Sudarshan, Close-in Weapon system and can also be provided as a stand-alone unit. The System consists of an onboard digital Fire Control System and Ballistic Computer and offers day/night capabilities. The gun can operate in multiple modes – Autonomous and Manual which provide redundancy of operation to the use.

Characteristics of Equipment

- Provides round-the-clock, 360° protections in all weather conditions, across all types of terrains
- Can engage various targets such as fighter aircraft, transport aircraft, helicopters, remotely piloted aircraft, cruise missiles, PGMs, and Microlight aircraft flying at various speeds
- Can be controlled through Fire Control Radar or independently through Electro Optic Sight and onboard Fire Control System (EOFCS)
- Effective range > 3.5Km
- Rate of fire - 300 rounds/min
- 60+ ready-to-fire ammunition
- Capable of firing programmable ammunition
- Automatic round-by-round programming to engage various targets
- Automatic gun levelling and tilt correction system
- Fully automated quick deployment and out-of-action capability
- Unmanned turret ensures safety and comfort of crew members operating the gun

TEEVRA 40 MM NAVAL GUN



Product Description

L&T's Teevra 40 Naval Gun is designed to provide a well-proven and reliable weapon (Bofors 40 L70 gun) in the form of a high-technology solution with innovative features. The system provides precision fire power capability, high operational flexibility along with high survivability. Automation along with in-built safety features ensures the utmost protection for the operator.

Characteristics of Equipment

- Armament: Single 40mm L70 gun
- Crew: 1 Commander, 1 Gunner, 1 Loader
- Rate of Fire: 300 rounds per minute
- Ready Fire Rounds: 76, Automatic AHS
- EO System: Day & Night (TI) camera with eye safe, Laser Range Finder (LRF)
- FCS: Digitally Integrated FCS and Ballistic Computer, Auto target tracker
- Control Station: Digital Display with Control Panel and Control Handle
- Weight: < 2.5 tons, 3m x 3m excluding barrel
- Temperature: -5°C to +45°C
- Safety: In built health monitor, Hardware and Software Firing Interlocks
- Effective Range: 3500m Slant; 1500m Height
- Elevation Range: -20° to +85° with buffer stop
- MIL STD 810F

V150 COMMANDO UPGRADE



Product Description

L&T has successfully implemented modernization of V-150 Armoured Vehicle for a friendly foreign nation. The solution includes complete custom designed power pack upgrade (mobility) with new engine, automatic transmission and cooling system. Further a state of the art fire power upgrade shall also be a part of the solution offering. The solution includes night driving and night firing capabilities. We also propose to improve the composite armour plating for better protection. The Company assures the following:

(a) Training of personnel in India and at site for operation and maintenance to enable National Ground Forces to be self-reliant for the Through Life Support of the vehicle.

(b) Cater for spares and manufacturing. Composites for armour with resin to make it lighter on tonnage reduction, if needed.

(c) Support for obsolescence management.

(d) Willingness to partner with a local company/ firm in Country to meet the localization requirement.

(e) Propose a visit of the team of experts to India to evaluate the upgrade and visit the facility.

Characteristics of Equipment

- Fire Power Upgrade consist of day-and-night vision capability, faster and smoother engagement with electro-mechanical drives, simplified gun-laying with display and single control handle
- The upgrade solution extends the life of the platform with provision for further upgrade through integration of optional sub-systems
- The mobility upgrade is based on COTS subsystems to provide extended life, better performance and improved mobility characteristics with multiple improved features such as driver front and rear vision, etc.

WM-18 ROCKET LAUNCHER



Product Description

Rocket launcher WM·18 is used for beach-clearing operations by the LST class of ships, before launching amphibious operations. The weapon system comprises of two launcher mounts, one each for port and starboard. The launcher is an electro-mechanical system, stabilised against the ship's roll and pitch. The Rocket Launcher WM-18 can be slaved to a Director Sight and is equipped with a semi-automatic weapon-reloading system.

Characteristics of Equipment

- Number of Launcher per Ship: 2 mounts – port & starboard side
- Number of Rocket per Launcher: 18
- Rocket: RL 140
- Range: 10Km
- Modes: Single; Salvo (4.4sec)
- Semi-automatic weapon reloading system
- Electro mechanical system with stabilization

ANTI-SUBMARINE WARFARE SUITE FOR SURFACE VESSELS



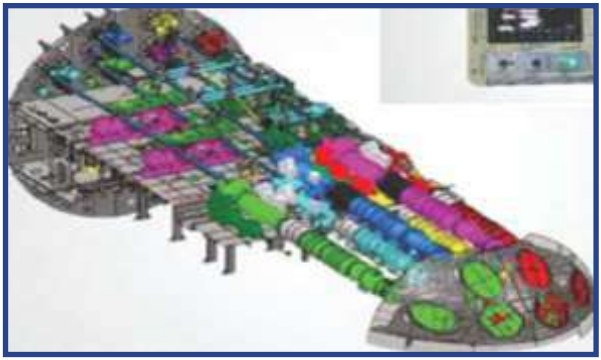
Product Description

L&T Defence provides the widest range of anti-submarine warfare (ASW) systems onboard Naval warships and submarines. L&T's ASW portfolio for surface ships includes Fire Control System, Rocket Launchers, Torpedo Launchers and Torpedo Countermeasure systems. The range of offerings include standalone systems as well as integrated solutions. A key partner to the Indian Navy for over three decades, L&T Defence also offers tailor-made ASW solutions for Naval platforms to friendly countries.

Characteristics of Equipment

- ASW FIRE CONTROL SYSTEM: The system interfaces with the ship's SONAR and Combat Management System (CMS), and facilitates combat planning and launch of ASW weapons. The ASW FCS displays the target data received from the SONAR on a high-resolution display and computes an optimum solution to neutralize the target. It interfaces with the designated weapon launcher, transmits the fire control solution to the weapon and authorizes the firing /launch.
- HEAVY WEIGHT TORPEDO LAUNCHING SYSTEM: The Twin Tube Torpedo Launcher is a Heavy Weight Torpedo (HWT) launching system, with a provision to launch Anti-Ship and Anti-Submarine Torpedoes. The HWT launcher is designed for single shot as well as salvo firing of torpedoes through an integrated ASW Fire Control System. The Launcher is made of Aluminum Magnesium alloys, and is supported by a hydraulically adjustable Torpedo Loading Trolley.
- ASW ROCKET LAUNCHER: The ASW Rocket Launcher is a ship-based anti-submarine rocket launch system, capable of firing 12 radially arranged, depth charge rockets at submerged targets.
- LIGHT WEIGHT TORPEDO LAUNCHER: The Light Weight Torpedo (LWT) Launcher Is capable of launching standard, NATO compatible Light Weight Torpedoes. Torpedo firing is achieved by using dehumidified high-pressure air, with each barrel firing one torpedo at a time.
- Advanced Torpedo Defence System: The ATDS is a torpedo counter-measure suite for warships. It has been developed in technological partnership with DRDO and comprises Reaction Management System (RMS), Decoy Launchers and Decoys.

TORPEDO LAUNCH COMPLEX FOR UNDERWATER PLATFORMS



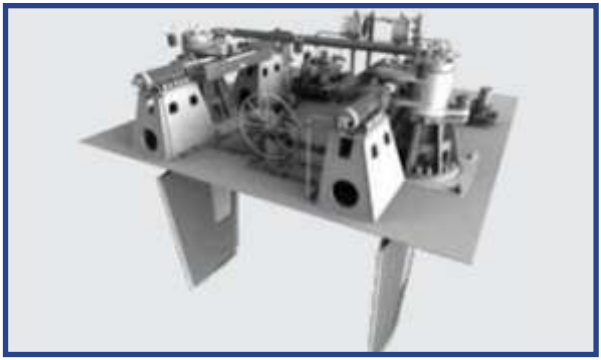
Product Description

The Torpedo Launch Complex is designed to launch Heavy Weight Torpedoes from submarines in both push-out and swim-out mode. The system is designed to feed various launch parameters using advanced electronic controls, thus ensuring reliable operations at all platform conditions

Characteristics of Equipment

- Torpedo Tubes
- Quick Loading Gear Assembly
- Torpedo Tube Preparation System

STEERING GEAR SYSTEM



Product Description:

Steering Gear is an electro-hydraulic system used to steer the ship. L&T Defence offers Steering Gear Systems for all varieties of Naval platforms – Interceptor Boats, Corvettes, Frigates, Destroyers and Aircraft Carriers.

L&T Defence Steering Gear Systems consist of:

Rudder, Rudder Stock and Bearing Arrangement

Steering Mechanism

Hydraulic System

Lubrication System

Control System

Characteristics of Equipment

- Twin Rudder System operated hydraulically, with electronic synchronization
- Rudder Torque customisable to platform-specific requirements
- System designed and shock-tested as per Naval Shock Standards
- Control system is based on VME64X open architecture
- Modular design: Single / Twin pair
- Fixed / Foldable / Retractable
- System designed as per Naval Shock standards
- VME64X open architecture Control System

WATERJET PROPULSION SYSTEM



Product Description

The Waterjet Propulsion System is one of the most effective propulsion systems for shallow water operations. Developed to meet the operational demands for Naval and Coast Guard vessels, it adds critical dimension of high speed for the operations. A compact system with in-built steering and braking systems, the WJPS provides good manoeuvrability and efficient operational performance. L&T offers dual options of customised mixed or axial flow waterjet solutions to suit the ship's operational requirements.

Characteristics of Equipment

- Compliant to Lloyds Register's classifications
- Duplex stainless steel impeller for maximum corrosion protection and wear resistance
- VME/PLC-based integrated steering and propulsion control system
- Multi-point steering control solution: Bridge, Fly Bridge and Waterjet compartment
- Dedicated hydraulic lubrication system
- L&T has developed WJPS ranging from 651 kW to 3000kW

STABILIZER SYSTEM



Product Description

L&T Defence offers Fin Stabiliser Systems for varieties of Naval platforms – Corvettes, Frigates, Destroyers, Offshore Patrol Vessels and Survey Vessels

Characteristics of Equipment

- Each fin operates by own electro-hydraulic unit
- L&T supplies – single/ twin pair and fixed/retractable fin stabilisers

WINCH AND HANDLING SYSTEMS FOR SONARS





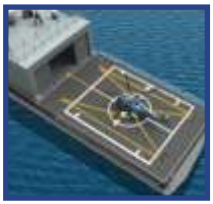
Product Description

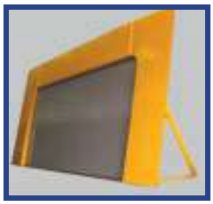
L&T Defence undertakes design and development of Winch and Handling Systems for Active as well as Passive SONAR. This Winch & Handling system is used for deployment, retrieval and storage of towed cables, towed body (Active SONAR) and towed array (Passive SONAR). A special purpose drive system developed by L&T Defence with fail safe braking arrangement, is capable of operating the winch system in three different modes of operation, viz. Hydraulic, Electric and Manual, through the same gear train, without use of clutches.

Characteristics of Equipment

- Mode of operation: Primary Mode: Hydraulic
- Emergency Mode: Electric
- Maintenance Mode: Manual
- Winch: 6Ton
- Hydraulic Power Pack: 2.5 Ton
- Winch System electronics including portable console: 1.5ton
- Capable to Operate at max sea state 5
- Capability to with stand all inertial loads at max sea state 6
- Power Supply: 3Ph 415V AC, 50Hz
- Material of Drum and winch: Duplex SS/S690QL

HELO HANDLING SYSTEMS



Product Description

L&T offers a full Helo handling Solution (clockwise from top L – Helo Landing Grid, Helo Traversing and Securing System, Rolling Hangar Door, Folding Hangar Door) customised according to the need of the user.

Characteristics of Equipment

Landing Grid –

- Assists Heli Landing on the high seas
- STANAG 1276 HOS,
- Overall dia 2750 mm, Useful dia 2500 mm
- Height: 200mm

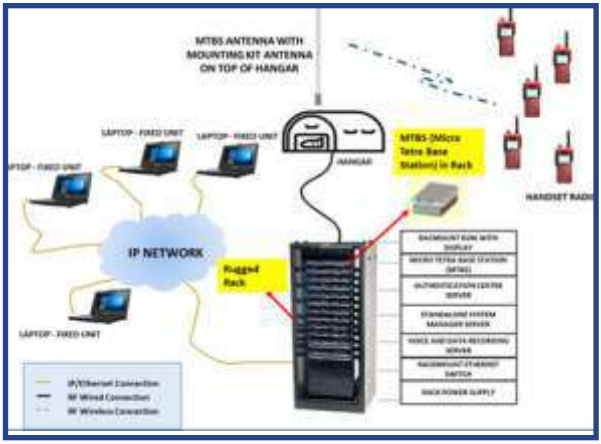
Helo Traversing & Securing System –

- Safe path from Landing to hangar and vice versa
- Two variants - With Rail (AUW 12Tons) and Without Rail (AUW 15tons); Available in single/twin hangar configuration
- Suitable for handling both nose & tail wheel configurations of helicopter
- Available for Single/Twin Hanger configuration

Foldable Hangar Door – Blast proof, high strength steel; mode of operation: Electrical; Operating time in electric mode: ~2mins; Operating Time in Emergency (Manual) Mode: ~15mins

Rolling Shutter Door – High strength Al alloy, Light weight, suitable for corvette, OPV; Operating time in electric mode: ~2mins; Operating Time in Emergency (Pneumatic motor operated hydraulic pump) Mode: ~4mins

HELO DECK COMMUNICATION SYSTEM



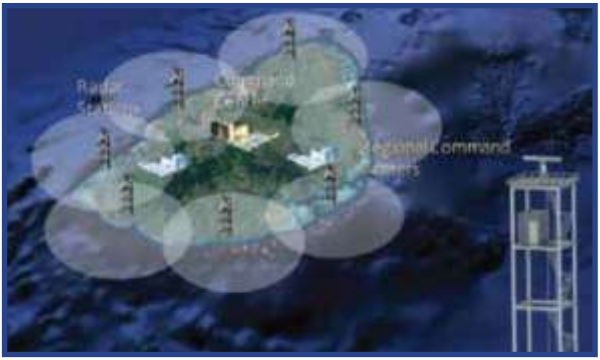
Product Description

The HDCS provides real-time monitoring and control of landing and take-off operations of Helicopters on the Ships Helo Deck. The system enables the Ship crew to make realtime assessment of the Helicopter Operations On-board Ships.

Characteristics of Equipment

- The solution is based on Micro Tetra Base Station (MTBS)
- Tetra 410-430 MHz operation
- Authentication and Encryption
- Call pre-emption, Priority, emergency & Group calls
- Recording solution and System Manager
- JSS55555-2012(Rev3)/ MILSTD461E/F

COASTAL RADAR SYSTEM



Product Description

L&T can provide a comprehensive solution for Coastal Surveillance System for controlling flow of goods/ personal, enhancing security, prevention of smuggling & piracy and efficient collection of tariffs.

Characteristics of Equipment

- Coastal Radar System: It comprises a network of Radar Stations (RS), Regional Command Centers (RCC) and a common Command Center (CC). System Voice/Data/Sensor Link (VDSL) interlink these RSs, RCCs and CC for exchanging near real-time data related to Surface and low-level air surveillance to provide situational awareness of the entire coastline.
- Maritime Vessel Solution consisting of Fast Surveillance/Interceptor Boats

MANOEUVRABLE RECOVERABLE AERIAL TARGET



Product Description

L&T Aerial Target is a platform developed in-house for target practice for air defence weapons for armed forces. Equipped with onboard payloads, it has high speed and maneuverability to emulate aerial threats for air defence weapon engagement. The aircraft is launched from a catapult launcher and has flight control system.

Characteristics of Equipment

- Maximum Speed: 432 kmph @ 5km level flight
- Maximum Endurance: 30-45 mins
- Minimum/Maximum Altitude: 20m/ 5000m
- Rate of climb: 10m/sec
- Maneuverability: 2g
- Control Range: 100 km
- Payload – Radar System, Infra-Red, Smoke Flares, Acoustic Miss Distance Indicator, Luneberg lens for RCS enhancement

MAYA UNMANNED UNDERWATER VESSEL



Product Description:

Maya is India's first field deployed AUV platform with a proven track record in river water, coastal and open sea environment. The system can be customised for diverse applications with different kinds of payloads. This versatile platform is simple to operate yet rugged in design for rough missions.

Characteristics of Equipment

- Dimension: OD240 to OD325/ L2000 to 3250 mm, (Configuration Dependent)
- Endurance / Top speed: 8 hrs / 5 kts
- Operating Depth: 200m (Configuration Dependent, can be increased)
- Weight: 75 / 250 kg (Configuration Dependent)
- Payload options: SSS/MAS/SAS, MBES, SBP, CTD/SVP, UW Camera, Periscope camera
- Mission capability: ISR, REA, MCM, ASW, training target, subsea surveys, R&D

AMOGH UNMANNED UNDERWATER VESSEL



Product Description

Amogh is a deep water AUV, designed for hydrographic applications. An IHO S-44 special order survey grade, it provides high-quality, high-resolution data with excellent position accuracy. It is supplied with a proven Launch And Recovery System (LARS) allowing for safe and efficient launch / recovery.

Characteristics of Equipment

- Dimension: OD700 x L5700 mm
- Endurance / Top speed: 22 hrs / 5 kts
- Operating Depth: 1000 m
- Weight: 1000 kg
- Payload Options: SSS/MAS/SAS, MBES, SBP, CTD/SVP, UW Camera
- Mission Capability: Hydrographic Survey, REA, MCM

COUNTER DRONE SYSTEM



Product Description:

L&T Counter Drone System is a comprehensive anti-UAV solution with detection and neutralization capability with both Soft and Hard Kill options. It is offered as a standalone system mounted on a tripod as well as a mobile transportable system on a vehicle with its own in-house developed C2 console.

Characteristics of Equipment

- Capable of Detection, Tracking, Deter, and Neutralization
- Sensors: Radar, Direction Finding Array, EO Tracking System
- Centralized C2 to provide excellent situational awareness with in-built Threat Prioritization, Evaluation and Resource Assignment Algorithm
- Soft Kill System: RF Jamming System, Drone Catcher System
- Hard Kill System: L-DEW, Kinetic Drone Kill, integration with Legacy Weapon Systems

FIRE CONTROL RADAR



Product Description

L&T Defence's Fire Control Radar is designed for short & medium-range, high-precision target tracking. It tracks air threats in all weather conditions and hostile Electronic Counter Measure (ECM) environments. The radar has a dual-frequency tracking feature for faster acquisition and providing high precision track data to the guns & missiles. FCR is available in both land and naval versions. Combined with a search radar and Command & Control system, it provides a unique air defence solution for land/naval-based operations.

Characteristics of Equipment

- Single or Dual Beam Configuration
- Ka Band Tracking
- High-precision tracking of air and surface threats like UAVs, aircraft, missiles, fast maneuvering aircrafts, drones, ships, etc.
- All weather operation, equipped with EO Tracking with TI & LRF
- Instrumented Range: 25km
- Coverage: Azimuth: Continuous; Elevation: 130°
- Low Probability of Intercept (LPI)
- Standalone operation on a trailer or on a 4x4 vehicle for land variant; Sea disturbance compensation for naval variant
- ECCM features
- Ergonomically designed user interfaces
- In-built simulator

OFFSHORE PATROL VESSEL (OPV)



Product Description:

L&T Defence offers a range of Offshore Patrol Vessels capable of ocean policing, control, surveillance and monitoring. They are designed to operate up to sea state 7 and undertake helo operations. L&T has supplied 7 OPVs to Indian Coast Guard.

Characteristics of Equipment

- Length (overall): 98.2 m
- Breadth (max.): 14.7 m
- Deep displacement: 2140 T
- Max. speed: 26 knots
- Range: 5000 NM @ 12-14 knots
- Crew Capacity: 102
- Two rigid inflatable boats
- Hangar Capacity: One helicopter
- One 30 mm gun and two 12.7 mm guns with FCS
- Integrated bridge system with multi-function workstation and X & S Band navigation radar

INTERCEPTOR BOAT (IB)



Product Description

The high-speed Interceptor Boat is designed to meet the stringent requirements of defence and law enforcement agencies. These include round-the-clock coastal patrolling, surveillance, high-speed interception and search-and-rescue operations. It has excellent maneuverability and acceleration. The boat can survive up to sea state 6. L&T has supplied IB to Indian Coast Guard.

Characteristics of Equipment

- Length (overall): 27.42 m
- Breadth (max.): 6.62 m
- Deep displacement: 110 T
- Max. speed: 45 knots
- Range: 500 miles at 20 knots
- Endurance: 24hrs
- Crew Capacity: 13 crew with 10 detainees/passengers
- Lightweight, compact design enables shallow-water operations
- Rigid inflatable boats for SAR operations
- Hi-resolution electro-optical camera for day-night surveillance
- 12.7 mm heavy machine gun and 7.62 mm light machine gun
- Integrated bridge system

MULTI PURPOSE VESSEL (MPV)



Product Description

L&T Defence offers Multi-Purpose Vessels which primarily serve as trial platforms for naval weapons/sensors. MPVs can undertake maritime surveillance and Humanitarian Assistance & Disaster Relief, Search & Rescue operations, and provide as support platforms for Immediate Support Vessel operations, along with limited capacity hospital services and logistic support for island territories.

Characteristics of Equipment

- Length (overall): 103.4 m
- Breadth (max.): 18.6 m
- Displacement: 3750 T
- Max. speed: 15 knots
- Endurance: 4500 miles at 10 knots
- Crew Capacity: 08 Officers and 108 Sailors
- Dynamic Positioning (DP-2) System for accurate station keeping
- Weapons & Sensors Capabilities: 30 mm & 12.7 mm Guns, Chaff Launcher, ASW Rocket Launcher, Radars, Heavy & Light weight Torpedo launchers
- Launch & Recovery of Surface & Aerial Targets

CADET TRAINING SHIP (CTS)



Product Description

L&T Defence offers a range of Cadet Training Ships capable of providing comprehensive sea training to naval cadets. These can perform secondary roles as hospital ships to handle extra causalities, Humanitarian Air and Disaster Relief, Non-Combatant Evacuation Operations and Search and Rescue Operations. L&T has received order to supply CTS to Indian Navy.

Characteristics of Equipment

- Length (overall): 121.8 m
- Breadth (max.): 18 m
- Displacement: 4700 T
- Max. speed: 20 knots
- Range: 7500 miles at 15 knots
- Endurance: 60 days
- Crew Capacity: 20 Officers, 150 Sailors and 200 Cadets
- Cadet training facilities - Exclusive Cadets Training Bridge and Cadets Chart House, 03 Class Rooms, 70 Nos Seating capacity each Ship designed for training men & women Cadets
- Weapons and sensors - 76 mm SRGM, AK 630 Guns, 12.7mm Guns, Lynx-U2 & EON 51 Fire Control Systems, ESM, COMINT

HIGH SPEED PATROL BOAT (HSPB)



Product Description:

L&T offers High Speed Patrol Boat (HSGB) which are purpose-built for controlling and ensuring sea security and sovereignty, detecting illegal activities such as smuggling, and undertaking search and rescue missions by the law enforcement agencies. This all aluminium hulled vessel is capable of undertaking intended operations up to Sea State 6 with excellent maneuverability, stability and acceleration. HSGB is fitted with state-of-the-art navigation and surveillance equipment and self-defence capabilities on board.

Characteristics of Equipment

- Length (overall): 35.1 m
- Breadth (max.) : 6.8 m
- Displacement : 130 T
- Max. Speed : 35 knots
- Endurance : 1200 NM @ 14 knots
- Crew Strength : 12 Personnel
- Construction Material : Aluminium
- Fitted with Remote Control Weapon Station (RCWS) with a built in 12.7 mm Gun.

FLOATING DOCK



Product Description

L&T offers specially designed Floating Dock capable of undertaking docking/undocking of naval assets. The Floating Dock is designed for operation along side a jetty or at sea with a mooring system. The vessels is capable of meeting end-to-end requirements for repairs of high-end warships and submarines. Multiple docking can be undertaken on Floating Dock.

Characteristics of Equipment

- Length (overall): 185 m
- Breadth between inner walls : 28 m
- Lifting Capacity: 8000 T
- Accommodation Capacity: 113 personnel
- Fully automated ballast control system for ballasting and de-ballasting operation
- Retractable covers for all-weather operations
- Fully-automated hauling-in system
- Services the needs of docked ships and ships berthed alongside such as power, fresh water, Fi-Fi etc.

SHIP LIFT & TRANSFER SYSTEM



Product Description:

L&T Defence has designed, manufactured, constructed and commissioned India's largest Ship-lift for L&T's shipyard at Kattupali near Chennai. The shiplift platform is lowered and raised by a number of hoists, driven by high precision Variable Voltage Frequency Drives with an encoder-based feedback system, operating in a synchronized manner. The system monitors the load and position on a real-time basis and a fail-safe double brake system ensures safety of the Shiplift System and ship. The Ship Transfer System consists of electro-hydraulic trolleys along with trestles, which are designed to transport ships from the ship-lift to dry berths on land.

- Characteristics of Equipment
- Platform length: 200 m (extendable to 260 m)
- Platform Width: 46 m
- Ship-lift Capacity: 21050 Tonnes (upgradable up to 23000 Tonnes)
- Electro-hydraulic trolleys with auto-indexing feature for cross-transfer
- An ingenious, fail-safe double brake system for ensuring safety of the ship and the ship-lift system

SUBMARINE ESCAPE TRAINING FACILITY





Product Description

This facility is designed to train the submarine crew using an SEIE MK 11 escape suit, simulating escape from a damaged or sunken submarine. It includes a Submarine Escape Training Tower comprising two chambers - Tower Escape (simulating an undamaged submarine compartment) and Rush Escape (simulating a damaged, flooded submarine). The tower escape is equipped with systems, equipment and fittings to facilitate flooding, draining, pressure equalising, built-in breathing, a stole-charging valve to inflate the SEIE MK 11 escape suit, etc. The rush escape chamber is integrated with the RCC to cater to any decompression emergency. The entire facility is controlled from control room. There is a provision for emergency / urgent draining. Underwater communication, video recording and monitoring are provided to record and replay the training process and evaluate the performance of the training

Characteristics of Equipment

- In-house design
- Under construction at INS Satavahana for Indian Navy
- The infrastructure includes a ramp, a heavy duty lift, emergency power back up (DG), a water filtration plant, a heavy machinery room, HP air compressors and bottles, training classrooms, a maintenance room, a medical room, a conference room, etc
- In addition to escape training, L&T has also developed in-house designs for other submarine training simulators like Submarine Damage Control Training Facility and Submarine Fire Fighting Training Facility. Altogether, the company can offer comprehensive solution for training needs of crew operating any class of submarine(s).

Contact Person

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LOKESH MACHINES LTD

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Organisation Profile

Lokesh Machines Limited has been incorporated in 1983 and started commercial operations in 1985. It is amongst Top 5 CNC Machines Manufacturer in the country. The Company also manufactures critical engine components for Automotive and Tractor Industry and Precision Components for the Defense sector.

The clientele includes all leading Truck and Tractor OEMs such as Ashok Leyland, Mahindra & Mahindra, Volvo Eicher, Tata Motors etc. and a host of TIER I and TIER II vendors in the auto component and defense sectors.

The company predominantly caters to the Indian market with modest exports of CNC Machines to Russia, Turkey, Italy and USA.

After a successful foray into Machines and Auto components manufacturing and given the manufacturing expertise, the company is successfully making a Defense foray.

The defense division of Lokesh would specialize in small arms. The small arms division of the company has already developed the 9x19mm Sub-Machine Gun and 7.62x51mm Light Machine Gun in association with M/s ARDE and Indian Army. These weapons are already tested and technically approved by the Indian army and are ready to be commercially supplied.

The defense division of Lokesh has also developed 7.62x51mm Belt Fed GPMG and the same is under testing. The company is working on further platforms such as the higher caliber 12.7mm and 20mm weapons.

9x19MM MACHINE PISTOL-ASMI



9x19MM MACHINE PISTOL-ASMI

Product Description

- Lightweight Weapon,
- Ambidextrous Cocking and Safety Catch
- Captive Pins for Locking
- Picatinny Rails at 6 and 12'O Clock
- M-LOK Slots at 3 and 9'O Clock
- Side Foldable BUTT

Characteristics of Equipment

• Caliber	:	9 x19 MM
• Ammunition	:	9 x19 MM in service Indian and NATO
• Operation	:	Blowback
• Weapon Mass	:	<2.0 Kgs
• Barrel length	:	7.2 Inch
• Length	:	BUTT Folded 382 MM, Extended- 612 MM
• BUTT	:	Side Folding
• Picatinny Rail	:	At 6'O Clock and 12'O Clock (Full Length) M-Lok Slots at 3 & 9'O Clock.
• Construction	:	Aircraft Grade Aluminium Alloy with Hard Coating Carbon Fibre Polymer Pistol Grip
• Accessories	:	3 Point Sling Fore grip, Reflex Sight, Magazine (23-32 rounds), Silencer.

7.62x51MM BELT FED GPMG



7.62x51MM BELT FED GPMG

Product Description

- Single Piece Machine Receiver
- Chromium Plated Barrel for longer life
- Provision for quick Barrel change
- Equipped with 3 position gas regulator.
- MIL std 1913 Picatinny rail
- Butt stock with shock absorber for low recoil
- Fire capability on Bipod or Tripod or Vehicle Mount
- Can be mounted on Ground Vehicles, Naval Vessels & Aircrafts
- Iron Sighting system with Luminous tips
- Capable of firing 7.62 x 51mm Indian & NATO Ammunition (All variants)

Characteristics of Equipment

• Caliber	:	7.62x51 mm
• Effective Range	:	1000 m
• Automation	:	Gas Operated
• Locking	:	Tilted Bolt
• Mode of Fire	:	Single (SS), Auto (SB)
• Belt Capacity	:	250 Rounds in one belt More Belts attachable
• Safety	:	Applied and Mechanical
• Sights	:	Iron Sight with luminous tip standard and Telescopic Day sights and TI Sights optional
• Accessories	:	Bipod, Fore grip, BFA, Ammunition Pouch (50 Rds)

Contact Person

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Organisation Profile

Lotus Wireless offers tailor-made solutions for challenging and varied project requirements through its competencies in Embedded Electronics, Wireless Technologies, IT Development, and Electrical Controls & Automation. The company undertakes system implementations on a turnkey basis to ensure high performance and on-time delivery of projects. As India's leading industrial automation technology provider for Power, Steel, Port, Mining, and Transport sectors, Lotus Wireless enjoys a major share of the technology business in India, with growing exports of solutions to various countries worldwide. The company leads in offering turnkey customized solutions for all real-world industrial automation applications.

LRS - 5100



LRS - 5100

Product Description

The LRS-5100 is a next generation, high-capacity, outdoor, wireless point-to-point and point to multi point radio link designed for industrial, ISP, enterprise, campus, transport, and broadcast backhaul applications. The cost-effective LRS-5100 operates in license free 2.4 GHz / 5.8 GHz spectrum and can be quickly deployed without waiting for spectrum licenses. In standalone configuration, System Provide full duplex with high speed throughput, Cross polarization, interference cancellation, enabling re-use of the same channel pair, for higher spectrum efficiency. The LRS 5100 is easy to deploy and includes the industry's most complete feature set and offers best-in-class performance.

RRC



RRC

Product Description

The radio remote control for loading cranes.

As one of the market leaders in the field of controls for all types of cranes, hoists and other industrial applications we offer a mature and professional technique.

REFLEXO RADAR



RADAR

Product Description

Lotus Wireless REFLEXO Radar is a Frequency Modulated Continuous Waveform radar object detection system designed to alert equipment (vehicle, truck, machine) operators to the presence of obstacles. The sensor detects both moving and stationary objects in a pre-defined coverage area and reports these detections via J1939 CAN bus messages to the chosen Human Machine Interface (HMI). REFLEXO perform extremely well in harsh environments (high temperature, fog, rain, snow, etc.) We have option where the sensor can be sealed to meet IP69K, withstands high vibration and shock levels, and is virtually maintenance free

HMI



HMI

Product Description

HMI Engineered to withstand challenging and abusive environments. 10.4" LCD with functional Keypad/touch screen display as per order. Designed with suitable graphical interface and brightness control option along with anti-glare screen for comfortable operation during both in the day & night.

ZYNA-450



ZYNA-450

Product Description

ZYNA - 450The Zyna-450 is a high power (10 W) transmitter with two receivers operated in a Diversity Reception mode or as full duplex mode. These radios are designed to meet the challenges of the most demanding mission critical network. These radios can double as half duplex radios with diversity reception or full duplex radios. The Diversity Reception improves the reliability of the connection where there is a lot of signal fading caused by reflections. The Zyna-450 radio come with a host of interface options like RS-232, RS-422 and RS-485 and Ethernet (optional) which can be configured through a PC. Zyna-450 radio modems are rated for 100% duty cycle and continuous operation to provide reliable, real time data communications over distances ranging long distances.

LWT-1D-500



LWT-1D-500

Product Description

The LWT-1D-500 Radar is designed to measure the distance (line of-sight) between two units. The measurement is not affected by vibration or angular misalignment. During the measurement, user data can be transmitted wirelessly between the units at the same time. The units can be installed with a side and height offset, while they always measure the shortest line of sight between the devices. Several integrated send-/receive-antennas ensure the very high reliability of the measurement.

CCU



CCU

Product Description

Custom designed rugged computer system for ground and mobile applications. Low Power High Performance MPU with 1GHz Clock Speed. Rugged, IP67 Environmentally Sealed System

Contact Person

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M. RAJ & CO.

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Organisation Profile

Established in 1984, M/s M. Raj & Co. with its base as Visakhapatnam is the leading stock holding and trading house for industrial support accessories like Industrial Hardware, Pipe & Pipe Fitting of various grade and material and special lifting devices.

M. Raj & co are the pioneers to introduce the Flangeless/ Weldless Viega pressfit coupling in the Indian Navy in year 2011. Till date we have successfully completed 13 projects for the Indian Navy and the Naval ship building Yards. Our products have been fitted on both aircraft carriers of Indian navy, in addition to Destroyers, Frigates and Corvettes.

VIEGA Germany – Press fit piping (Cuni 90/10, SS316, Copper, GI, Composite pipe (Sanfix Fosta)

PIPE FITTINGS AND END CONNECTIONS



Product Description

M/s Viega make pipe fittings and end connections for double press weldless and flangeless couplings for marine applications.

On display we would also have live demonstration of connecting these weldless/ flangeless couplings which will enable our esteemed visitors to understand and appreciate this technology.

Our product is type tested for shock and vibration and recommended by NSTL for use onboard both ships and submarines.

Characteristics of Equipment

- Designed for use onboard ships and submarines fresh water, sea water and oil systems
- The end fittings are joined using Double press fit technology which is fast, reliable and environment friendly
- Our products are type tested for shock and vibration for use onboard ships and submarines
- Our products are approved for use onboard Naval ships by IHQMoD(N)/DME

- We provide solutions in Copper, CuNI, SS and carbon steel with different sealing materials for different applications
- Press fit consumes 60% less time as compared to conventional way of making joints using welding/ brazing
- Highly durable with no maintenance requirements during service. The renewal rate has been less than 10% even after 14 years of commissioning of the systems
- Zero Leak ensures clean and safe machinery spaces

Contact Person

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Organisation Profile

MAAN Defence is 100% Subsidiary of Sure Safety (India) Limited (20years) company with current revenue of 80 crore in the area of fire & safety. It is in four key technologies: Inflatable Decoys, Stealth Technology, Signature Management and Space Suites. MAAN Defence Pvt. Ltd. is associated with DRDO, ISRO, DEBEL and has proven credentials.

Maan Defence has state of the art R&D and Manufacturing unit at Vadodara, Gujarat. Vision of the company is to contribute to Make in India by making her self-sufficient in it's Aerospace & Defence solution needs, through provision of technologically intelligent – Defense & Aerospace sector products & equipment's.

The company is led by Mr. Nishith Dand, a visionary for providing protection to the brave soldiers and refence personnel who face challenges in adverse conditions. The company consists of technocrats who are well qualified in field research and acquainted with the needs foreseen to undertake innovations for serving the refence forces.

Key product lines:

- **Inflatable Decoys** which are used to mislead enemy forces about the location of real military assets. They can be used to simulate tanks, aircraft, ships, and other vehicles. Inflatable targets are used to train military personnel on how to fire weapons and operate other equipment. They can be used to simulate a variety of targets, including tanks, aircraft, ships, and people.
- **Space Suites:** Spacesuits are essential for astronauts who work outside of spacecraft. They allow astronauts to perform tasks such as repairing satellites, building space stations, and exploring the surface of the moon and other planets.

- **CBRN:** CBRN stands for Chemical, Biological, Radiological, and Nuclear. It is an acronym used to refer to a variety of hazards that can pose a threat to human health and safety. CBRN hazards can be natural or man-made, and they can be released accidentally or intentionally.
- **Signature Management:** Signature management is a critical part of defense operations. It is the process of reducing the electromagnetic, optical, and acoustic signatures of military assets, making them harder to detect and target by enemy forces.
- **Stealth Technology:** Stealth technology is a set of methods used to make objects less visible to radar, infrared, and other detection methods. The goal of stealth technology is to make objects appear as small, non-reflective, and cool as possible to enemy sensors.

Way ahead and Futuristic Plans:

- Signature Management
- Stealth Technology

FLOATING STRETCHER



Product Description

MAAN Inflatable The flotation system for the Sked Stretcher maintains the patient in a nearly vertical position. It is designed so that a patient in the water can be loaded into the stretcher. Self-righting, it will keep the patient's head above water even in rough seas

CASUALTY EVACUATION CHAMBER FULL



Product Description

The Casualty Evacuation Chamber (Full) is a portable device that can isolate and transport a person who is exposed to a pandemic or CBRN threat. The device has a clear visor, gloves, and a medical port to provide full body protection. The device has a battery-operated air purifier and filter cartridges to prevent contamination.

INFLATABLE SINGLE DECONTAMINATION UNIT



Product Description

MAAN's Inflatable Decontamination unit is a fast and easy solution for decontamination scenarios. It is fully inflatable and can be ready to use in minutes. It does not require continuous inflation to stay up.

CASUALTY EVACUATION BAG HALF



Product Description

The Casualty Evacuation Suit consists of a complete carrying bag which is designed along with Optical Capac ally Clear Wide Visior and equipped with gloves and medical port, providing complete body protection. It has a battery-operated air purifying respirator and filter cartridges.

WATER TANK PILLOW



Product Description

MAAN Inflatable storage tanks are designed for water and chemical storage. The tanks allow storage of hydrocarbons, oil, drinking water, wastewater, etc. It can be used as a mobile service station and deployed quickly and easily. It also has a folding feature.

SCBA (SELF CANTAIN BREATHING APPRATUS)



Product Description

The primary objective of the respiratory protection is to prevent exposure to air contaminated with harmful dusts, fogs, fumes,

mists, gases, smokes, vapors, or sprays, or for use in atmospheres with oxygen deficiency (where the concentration of oxygen is below 19%).and thus to prevent occupational illness.

EMERGENCY ESCAPE BREATHING DEVICE



Product Description

Self- resource is the emergency means of individual protection of respiratory organs, eyes and head from the effects of toxic combustion products during an emergency evacuation of people from the production, administrative and residential buildings during fire and other man-made emergencies.

INFLATABLE TENTS



Product Description

High-pressure technology has been the foundation of our inflatable tents for over 15 years. We serve military, humanitarian, and emergency organizations worldwide with our high-quality, simple, user-friendly, and reliable products. Our inflatable tents can withstand and climate or weather conditions. Deployed in close cooperation with the Indian Army and military operations.

Contact Person

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MAZAGON DOCK SHIPBUILDERS LTD

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Organisation Profile

Mazagon Dock Shipbuilders Limited, Mumbai, an ISO 9001: 2015 Company is one of the leading shipbuilding yard in India. After its takeover by the Government in 1960, MDL grew rapidly to become the premier war-shipbuilding yard in India, producing warships for the Navy and offshore structures for the Bombay High. It has grown from a single unit, small ship repair company, into a multi-unit and multi-product company. The company's current portfolio of designs spans a wide range of products for both domestic and overseas clients. Since 1960, MDL has built total 802 vessels including 28 warships, from advanced destroyers to missile boats and 7 submarines. MDL had also delivered cargo ships, passenger ships, supply vessels, multipurpose support vessel, water tankers, tugs, dredgers, fishing trawlers, barges & border out posts for various customers in India as well as abroad. MDL have also fabricated and delivered jackets, main decks of wellhead platforms, process platforms, jack-up rigs etc

INS VISAKHAPATNAM



Product Description

The P15-B class of Stealth Destroyers are follow-on of the P15-A class Destroyers with enhanced stealth features and indigenization content, in line with the 'Make in India' policy of the Government of India. The 163 M long ship, propelled by four gas turbines, is designed to achieve a speed of over 30 knots at a displacement of approx. 7500 tonnes. This indigenously designed stealth destroyer will have state-of-the-art weapons, sensors, an advanced information and communication system, an integrated platform management system, sophisticated power distribution system and host of other advance features. The first of the class, Visakhapatnam was commissioned on 21st November 2021. The second destroyer Mormugao was commissioned on 18 Dec 2022. The third destroyer Imphal is getting ready for delivery to the Indian Navy. The fourth destroyer Surat was launched on 17 May 2022 and is at an advance stage of outfitting.

- Equipped with state-of-the-art weapon sensor fit
- The weapon and sensor suite comprises Long Range Surface to Air Missiles (LR-SAM), Long range Surface to Surface Missiles, Rocket Launchers and Torpedoes, CIWS and MR Guns
- Destroyers have the latest Platform Management Systems for power and machinery and state-of-the-art communication and navigation suite integrated with ship borne data network with a fibre optic backbone
- Electronic Warfare (EW Suite) comprising of Electronic Suppression Measure and Electronic Counter Measure (ESM and ECM)
- Radars for Air and Surface Surveillance

INS NILGIRI



Product Description

The P17-A class Stealth Frigrates ae derivatives of P17 Shivalik class Stealth Frigates with enhanced stealth & automation features and are being constructed using integrated construction methodology, which involves extensive pre-outfitting of about 60% to 70% at the block stage and this would considerably reduce the build period. The 143 M long ship, propelled by two gas turbines (LM2500 IEC), two diesel engines, two CODOG reduction gearboxes and two controllable pitch propellers, is designed to achieve a speed of over 28 knots at a displacement of approx. 6670 tones. These indigenously designed stealth frigates will have state-of-the-art weapons, sensors, an Integrated platform management system, an integrated bridge system, an advanced composite communication system and a combat management system. All the four ships of this class namely Nilgiri, Udaygiri, Taragiri and Mahendragiri have already been launched. The first of the class i.e. Niligiri is scheduled to be delivered to the Indian Navy IN 2024.

- Designed with reduced radar reflections, changed geometry of structures on top, very few projections on the upper deck that is normally a giveaway for other warships, muffled noise and vibration as well as lower magnetic and heat signatures
- Weapon and sensor suite comprising anti-missile defence capability against low flying missiles, vertical missile launchers to counter air and surface attacks, chaff launchers as decoys and advanced anti-torpedo system to counter subsurface attacks
- These frigates have the latest Platform Management Systems for power and machinery and state-of-the-art communication and navigation suite integrated with ship borne data network with a fibre optic backbone

Satellites can give inputs to the frigate on lurking enemy vessels and they can creep as close as possible to the target without being detected

SCORPENE CLASS SUBMARINE



Product Description

One of the most modern and sophisticated submarines, the Scorpene can undertake multifarious types of missions which include Anti Surface Warfare, Anti-Submarine Warfare, Intelligence Gathering, Mine Laying, Area Surveillance etc. As she glides silently through the deep and vast oceans covering our plane, the Scorpene unmatched stealth will give her an incomparable invulnerability, and the ability to launch a crippling attack on the enemy using various precision guided weapons.

Contact Person

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Organisation Profile

Merlinhawk, an AS9100D (ISO9001:2015) certified company, has built its reputation over three decades as a trusted partner for OEMs, user agencies and operators in the aviation and defense sectors for customised solutions. We have over three decades of experience and are backed by all requisite accreditations as a Military and Civil Design Organization. We offer top quality electronic and electromechanical products and value added services guaranteed for reliable performance, especially in rugged and highly challenging environments. These include airborne and ground support products, test and measurement equipment, microwave products and solutions as well as cable harness assemblies, integration, installation including product lifetime support.

Aviation & Defence

Merlinhawk's core expertise is on the airborne and ground-based software and hardware for various aviation and defence platforms. A competent research team with track experience in aircraft and military systems works closely with user organisations on design and value-added development.

Test & Measurement

Merlinhawk offers various value-added products and services for testing of cables, power supply safety equipment, for aerospace, defence and semiconductor segments applications.

Microwave

Merlinhawk has a dedicated team of Microwave Engineers, who provide solutions for designers and manufacturers of military radar and communication products.

ELEKTRONE POWER PACKS



Product Description

Elektrone ground power units are compact, single operator use power sources that are designed to provide very high current for starting helicopters & turbo prop aircraft. They are portable and reliable power sources which can be used in remote locations and rugged environment. Also they have in-built heaters for operation in negative temperatures. Elektrone series power packs are available in various combinations of VA ratings compatible to most rotary wing & turbo prop aircraft. Elektrone series power packs can also be customised to a range of V/A ratings for a variety of aviation, military, transport, mining site, offshore and dockyard applications.

FUEL DISPENSING SYSTEM (FDS-72L)



Product Description

Merlinhawk's Fuel Dispensing System is a portable, lightweight and compact system that can deliver clean dry fuel to helicopters, and light aircraft at flow rate of 70±5 litres per minute. The unit consists of a DC electric pump, one micron filter assembly, intake & delivery hoses, fuel flow meter and a light weight anti drip nozzle. All components are fitted on a light weight trolley for easy movement for transportation and tarmac operation. The unit can operate from 24-28 V DC supply as an external battery or the aircraft's own power supply.

TAIL ROTOR VIBRATION WARNING SYSTEM (TRVWS)



Product Description

The TRVWS continuously monitors the tail rotor vibration of a rotary wing aircraft and gives a visual warning when vibration levels exceed preset limits. The unit monitors both the axial and radial vibrations on the tail rotor. This LRU features two warning levels indicated using AMBER and RED lamps in the cockpit. The thresholds for these warnings are preset in the unit. Accordingly, the unit triggers AMBER or RED warning lamp based on the current vibration level. The warnings of the radial and axial channels are ORed together for annunciation. Additionally, analog outputs are provided for recording on the aircraft's FDR system.

AUTOMATIC WORK STATION



Product Description

Automatic work station (AWS) is a standalone PC based ground tester used for checking the operability of the power plant of SU-30 MKi aircraft during ground run. AWS is a compact tester realized using state-of-the-art technology which consists of a rugged computer and a signal switching unit that interfaces with the engine control unit, external pressure and vibration sensors. AWS is used to carry out the scheduled checks, repair and fault detection of the important components of power plant.

AIR INTAKE PANEL



Product Description

The Air Intake Panel is a ground equipment used to test the Air Intake Ramp, which controls the amount of air supplied to the engine in Sukhoi-30 MKi aircraft. The tester is used to control the movement of the ramp and monitor the diagnostic information coming from the 'Air Intake System' of the aircraft. It also gives discrete command to check the serviceability of the system.

ELECTRONIC MANUFACTURING SERVICES (EMS)



Product Description

(Electronic Contract Manufacturing) Services, Support for Engineering Design and Manufacturing, free DFM/DFT and issue resolution, turn-key materials purchase Supply chain management (BOM review, planning and procurement), quick-turn SMT/PCB prototyping, sample assembly and modications, rapid New Product Introduction (NPI), small batch trial production, system assembly and manufacturing, testing, Wire Harness Mid volume production, logistics and distribution, RMA and after services.

- High-quality, rapid prototype
- New Product Introduction
- Design Analysis DFM & DFA
- Supply hain management and planning
- System Integration Electromechanical Assembly
- Custom cables and wire harnesses

SPEED:45000 CPH | FEEDER CAPACITY: UPTO416

Placement Speed and Accuracy - MY300HX-9/13	
Rated speed	45 000 CPH
IPC 9050 chip net throughput	33 000 CPH
IPC 9850 chip tact time	0.097 s
IPC 9850 chip repeatability 30 (X,Y, Theta)	30 µm, 1.8° 45 µm, 1.8°
IPC 9850 chip accuracy @ Cpk = 1.33 (X,Y, Theta)	50 µm, 2.6° 75 µm, 2.6°

Component Range High Speed Mounthead - HYDRA Z8	
Component Range	Chip (from 01005), SO28, SOT223, SOJ20, PLCC32, MELF, SOD, TSOP
Component Specification	Min : 0.4 x 0.2 mm (0.016" x 0.008") (01005) Max: 18.6 x 18.6 5.60 mm (0.73" 0.73" x 0.22") (PLCC44)

CABLE HARNESS ASSEMBLIES



Product Description

Merlinhawk has state-of-the-art cable loom shop to fabricate harnesses as per MIL and Aerospace Standards including laser marking on cables for aviation and defence applications. The facility also designs, manufactures and tests cable assemblies upto 20 GHz RF for Microwave / Communication sectors. The Cable shop has both a DTA and EOU unit to cater for both local and export requirements

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Organisation Profile

- Founder: **Mr. R Gopalakrishnan**
- Pioneer in Bellow Manufacturing.
- 40+ years of experience.
- **Make in India** initiative since 1980.
- We have highly skilled people in Design, Development, Production, Quality and Sales department.
- We focus on R&D, Indigenization, and localization activity mainly for various Indian Government Organizations.
- The Company was incorporated on February 08th of the year 1980
- **Location:** Located along the Bay of Bengal sea coast in Chennai (Southern part of India)
- Distance of 35 Kilometers from Airport.
- Land area = 4.3 acres.
- Build up area = 70,000 sq feet.
- No of employees > 120.
- Separate Value stream for different business verticals.
- State of the art facility and machinery.

AXIAL COMPENSATOR



Product Description

- Flexible connector allows for temperature related structural changes.
- These are used to compensate axial movements. By means of a suitable design, they can also absorb angular and lateral movement.
- The thermal expansion of a straight pipe line section between two fix points can be absorbed by Axial Expansion Joints with a relatively compact build-in length.

Characteristics:

- The thermal expansion of a straight pipe line section between two fix points can be absorbed by Axial Expansion Joints with a relatively compact build-in length.

COMPENSATORS



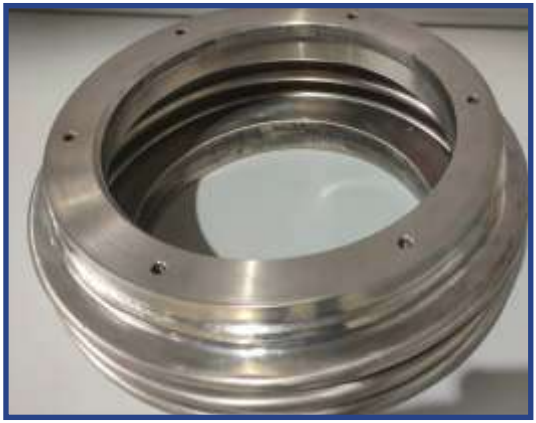
Product Description

- Flexible connector allows for temperature related structural changes.
- These are used to compensate axial movements. By means of a suitable design, they can also absorb angular and lateral movement.
- The thermal expansion of a straight pipe line section between two fix points can be absorbed by Axial Expansion Joints with a relatively compact build-in length.

Characteristics:

- The thermal expansion of a straight pipe line section between two fix points can be absorbed by Axial Expansion Joints with a relatively compact build-in length.

TITANIUM BELLOWS



Product Description

- Compensates for feedback or changes in pressure or temperature.
- Titanium bellows are often used in industries with high-performance requirements or high corrosion resistance requirements.
- Its typical application industries or fields are chemical, refining, aviation, valves, automobiles, medical instruments, and others.

Characteristics:

- Compensates for feedback or changes in pressure or temperature.

METALLIC HOSE



Product Description

- Metal hoses are utilized in a variety of industrial applications that need to transfer fuel, chemicals, or extremely hot fluid.
- Metallic bellows are normally applied in the pipe line and Ducts where high temp & high pressure are present.
- These are basically to accommodate or absorb the thermal movements of the ducts or pipes due to high temperature and pressure.

Characteristics:

- These are basically to accommodate or absorb the thermal movements of the ducts or pipes due to high temperature and pressure.

ACCUMULATOR



Product Description

- Store the potential energy of liquid or gas and smooth out pulsations.
- They are used to maintain pressure, store and recapture energy, reduce pressure peaks, power chassis suspensions, and dampen shock, vibration and pulsations. Under gas pressure, accumulators store a volume of fluid that can be re-fed into the hydraulic system when it is needed.

Characteristics:

- Store the potential energy of liquid or gas and smooth out pulsations.

PRESSURE TRANSDUCER



Product Description

- A pressure transducer is a device that measures the pressure of a fluid, indicating the force the fluid is exerting on surfaces in contact with it. Pressure transducers are used in many control and monitoring applications such as flow, air speed, level, pump systems or altitude.
- Pressure sensors allow for more specialized maintenance strategies, such as predictive maintenance. These devices collect real-time data on the conditions of equipment.

Characteristics:

- Pressure sensors allow for more specialized maintenance strategies, such as predictive maintenance. These devices collect real-time data on the conditions of equipment

VALVE BELLOWS



Product Description

- Valve Bellows are valves employed in piping systems to safeguard against leakage.
- The bellows-sealed shut-off valve is a highly specialized valve used to control flow rates in many industrial processing systems. It is suitable for various working condition pipelines in petroleum, chemical, pharmaceutical, fertilizer, electric power, and other industries to cut off or connect pipeline mediums.

Characteristics:

- Valve Bellows are valves employed in piping systems to safeguard against leakage.

Contact Person

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MILLENNIUM AERO DYNAMICS PVT LTD

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Organisation Profile

Millennium provides a wide range of manufacturing and engineering services for the Defence Industry in collaboration with our strategic partners.

With over a decade of experience in the Aerospace and Defence Industry, Millennium Aero Dynamics Private Limited has established itself as a trusted and reliable partner. Our company has a remarkable track record of successfully executing numerous high-end fabrication projects, catering to both Defence and Private-Public Partnership Shipyards.

We are proud to be registered and actively working with prestigious organizations such as:

- Mazagon Dock Shipbuilders Limited (MDL),
- Garden Reach Shipbuilders & Engineers (GRSE),
- Hindustan Shipyard Limited (HSL),
- Cochin Shipyard Limited (CSL),
- Goa Shipyard Limited (GSL),
- Indian Coast Guard (ICG)
- Naval Dockyards,
- Defence Research and Development Organisation (DRDO),
- Other esteemed defense establishments.

At Millennium, our Aerospace and Defence Division comprises a highly competent, skilled, and experienced team of over 200+ professionals.

Our division has in-house capabilities for designing, manufacturing, installation, commissioning & warranty management, also provides complete life cycle support for critical Naval equipment specifically tailored for naval application.

THE MANTIS AIRCRAFT HANDLER



Product Description

A state-of-the-art manoeuvering system offering fast, precise control for high density aircraft parking onboard ship or in land based hangars.

- Sophisticated control
- Permits optimised parking density
- Increased endurance between charges
- Highly stable in all conditions
- No need for embedded deck tracks

Characteristics:

MANTIS is a state-of-the-art aircraft handier for use on board ships or in land based environments.

Using advanced design and manufacturing technologies, the MANTIS combines light weight with an extremely rugged construction, purpose designed for use in the harshest conditions, including marine flight decks.

The MANTIS has two model which been designed with all current and future aircraft types ranging from low ground clearance helicopters & wheel aircraft with AUM (3 Ton to 30 Ton)

The handler operates within the footprint of the aircraft and with its 'turn on the spot' capability permits aircraft to be parked at very high density in confined hangar spaces and close to hangar bulkheads and deck edges.

From the operator viewpoint the MANTIS is steered by a remote chest pack mounted console connected handler. This enables the operator to view and control the aircraft movement from the safest position, especially whe interfacing with the aircraft.

Contact Person

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Organisation Profile

MKU is a global defense and homeland security company on a mission to empower heroes. We are a leading manufacturer of smart soldier solutions and smart platform solutions that deliver confidence to the military, paramilitary, homeland security, police, and special forces in challenging situations. Smart functionality, Smart design and Smart technologies are the foundations on which all our solutions are designed, developed and manufactured to ensure nothing but the best is delivered to the heroes.

We strive to empower heroes who stand in the line of duty to ensure our safety and security. Our operations are based in India and Germany. We have provided protection to over 3 million soldiers and 3000+ platforms across 230 forces till date.

Our products are tested and certified by leading labs and agencies in the world including the National Institute of Justice (NIJ), USA. Our facilities are AS-9100-2009 and ISO 9001-2008 certified in addition to the much coveted & stringent BA 9000 certification. We follow the NATO AQAP quality standards and are also registered with the International Aerospace Quality Group (IAQG). Our R&D House is recognized by the Govt. of India and aggressively invest 10% of our annual turnover into research and development activities. We also hold more than 10 patents in India & abroad.

KAVRO TAC-IIA+ BODY ARMOUR SYSTEM



Product Description

Kavro TAC-IIA+ is a front opening over vest designed for quick operational response. It offers uncompromised, full-frontal protection of Level III+ protection as per NIJ 0101.06. Its MOLLE-compatible design allows the soldier to carry additional search and rescue gear.

Kavro TAC-IIA+ is a front opening over vest designed for quick operational response. It offers uncompromised, full-frontal protection of Level III+ protection as per NIJ 0101.06. Its MOLLE-compatible design allows the soldier to carry additional search and rescue gear.

Characteristics:

- KIROSOFT TECHNOLOGY
- ADDITIONAL BULLET PROTECTION
- ANTI FUNGAL FABRIC
- LIGHTWEIGHT
- KIROSOFT TECHNOLOGY
- ALL WEATHER PROOF SEALING
- NON-TOXIC

KAVRO ACH-126 T HIGH FRAGMENTATION HELMET



Product Description

During war, shelling, grenades and explosions produce high velocity fragments resulting in severe trauma or death. The Kavro ACH-126 T Ballistic Helmet provides high-velocity fragment protection with a V50 of over 905 m/sec (17 gr). The lightweight, boltless helmet provides additional protection against BHBT (Behind Helmet Blunt Trauma) under 16mm. It is an ideal all-weather ballistic helmet for soldiers serving in snow, deserts, hills and plains. During amphibious/marine operations, it provides positive buoyancy and ensures minimal operating fatigue during prolonged use.

Developed using Macromatrix Technology, the helmet uses smart lightweight materials and clever techniques, providing excellent protection against ballistic threats and fragments like FSP, RCC, spheres, etc., while ensuring that the head remains lightweight and comfortable, even on missions where multiple headgear such as comms kits and night vision devices need to be worn simultaneously.

Characteristics:

- MACROMATRIX TECHNOLOGY
- REDUCED HELMET TRAUMA

- BOLT FREE
- HIGH FRAGMENTATION PROTECTION
- TWISTFIT
- CHEMICAL SAFE
- CLIP ON/CLIP OFF
- INTEGRATED COUNTER WEIGHTS
- EXCELLENT SHOCK ABSORPTION

KAVRO MSH-07 TROLLEY-MOUNTED SHIELD



Product Description

KAVRO MSH-07 is a trolley-mounted shield that provides NIJ Level IV protection (0108.01) to soldiers against high-velocity ballistic threats and fragments. It has a smart and sturdy frame to hold the shield stable while being moved or when attacked by a high-speed threat. The shield has a conveniently positioned viewport to provide optimum visibility. It also features a well-positioned gun port to allow the soldier to get into a conveniently firing position.

- The shield has a viewport that is made of ballistic glass with scratch-resistant coating to provide clear vision and unhindered sight of the field. It has an ambidextrous handle to drag the shield simultaneously.

Characteristics:

- DETACHABLE LIGHTS
- DETACHABLE VIEW PORTS
- SHIELD LIGHT
- TROLLEY MOUNTED
- WATER RESISTANT
- ALL WEATHER PROOF

NETRO NM-3000 NIGHT VISION MONOCULAR



Product Description

Netro NM-3000 is an ultralight, compact night vision monocular that can be held in the hand or mounted on the head, helmet and weapon. It can be easily switched from one eye to another while mounted on helmet. It allows for peripheral vision with the other eye for swift tactical movements or observation and can also be used for target acquisition. The Gen2+ /Gen3 image intensifier tubes within the device delivers excellent image quality.

Rugged and waterproof, NM-3000 complies to MIL-STD-810G standards. The device features and IR LED/Laser for illumination and fail-safe mechanisms such as auto-gating response and bright source protection.

Characteristics:

- GEN 3 II TUBE
- BRIGHT SOURCE PROTECTION
- EASE OF USE
- HELMET/HEAD MOUNTABLE
- DURABLE
- NEAR FOCUS RANGE TO INFINITY
- HIGH SNR
- WIDE FOV

Contact Person

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Organisation Profile

With an experience of more than 18 years Mr Nitesh N Panchal has started NMT Engineering & Services Pvt. Ltd. incorporated on 09th Oct 2013. The founder Director started its dream journey in the year 1994 From the beginning company was actively involved in manufacturing equipments, Spares & repair for oilfield Offshore & Onshore Rigs. FLUXO has continued It's Practices of making addition in Product, Improvement in process and there by quality. Our product is used, tested, accepted by many domestic & international customers. It is further supported by experienced sales & technical staff.

Having state of the are infrastructure with Latest machinery, Measuring & Testing Equipments, Experience Staff. Approvals and Accreditations from National & International Agency.

We are serving to Oilfield Oil & Gas Industry, Marine and Shipbuilding, Electrical Power Plants, Air Compressor Industries, Refineries & Fertilizer Plants and Contract Manufacturing Services for OEM.

Our main products are :

- Ring Joint Gasket
- Flanges-Spacer & Adaptor Spools
- Hammer Unions
- Cross Overs Connections
- Dies & Inserts
- High Tensile Studs & Bolts
- Metal Cutting & Machining Services
- Spares for Valves
- Fabrication / Welding of Structures
- Repair and Maintenance

FLANGES



Product Description

FLUXO can provide a wide range of Flanged or Studded connections,

which includes, Double Sided Adapters (DSA's), Blinds Tests, Targets, Adapter Flanges, Unions and Welding Necks.

All equipment conforming to API, ANSI, Aerospace Standard in line with specific Customer Requirements.

Ring Grooves can be inlayed with a variety of stainless steels and high Nickel Alloys.

Characteristics of Equipment

- 1" to 20" Size in Class 150 to 800. As per ASTM B16.5
- 2.1/16 to 13.5/8 Size in 2000 to 15000 PSI.
- All other International standard size is available.

VALVE SPARES & REPAIRING



Product Description

We do repair/refurbish/service of Valves of any OEM. Also manufactures and supply Valve spares for Technical Specifications as per customer Specific requirements. Types of Valves Spares we are making : Ball Valve, Globe Valve, Gate Valve, Check Valve, Non Return Valve, and other kind.

The Parts we Manufactures are :

Body, Bonnet, Steam, Bushing, Gasket, Coupling Flanges, Covers,

Balls for Ball Valve.

We can work on casting of all kind and all metals including Inconel , forgings. We do have Hydro Testing Facility up to 30,000 PSI with Computerized Chart recorder.

Contract Manufacturing and Manufacturing of Valves

We provide contract manufacturing services for all kind of components and assembled Equipment like Valves, Pumps, and other machines. We manufacture Valves like Gate, Ball, Check, & Butterfly. It is made as per customer design and specifications.

Characteristics of Equipment

- Gate Valve from 2.1/16" to 4.1/16" in 5000 to 1000 PSI
- Butterfly Valve from 2" to 12" size Class 150 & 300 in Manual

METALLIC GASKET



Product Description

FLUXO Metallic Gasket are made to perform under serve service conditions, such as high pressure, high temperature & extremely corrosive fluid.

Our Gasket is made as per Marine / Aerospace / ASTM / ASME standard specification. It is available in all size and shape.

Characteristics of Equipment

- All size as per ASTM B16.5
- All API 6A size in BX & RX.

PRECISION MACHINING COMPONENTS



Product Description

We have set up new Dust and Temperature controlled Manufacturing Infrastructure and Latest Technology machines from Germany, Japan, USA, & India. We can handle Metal job having Diameter from 5 mm to 450mm. Length of 50mm to 1000mm. In Cube we can handle the job of 1000mm x 600mm x 550mm. In Kg we can handle the parts and assembly having weight up to 5 ton. We are producing products having +or- 5micron tolerance.

Casting/Forging/3D Printing

Ferrous and Non-Ferrous Casting by Investment Casting/Pressure Die Casting/Normal Casting Methods. From Pattern Making till the Finish Machining. Forgings by Open Die/Close Die/HOT Forging Presses. We make Forgings in house up to 65Kg Job Weight. Components above 65 Kg, Forgings procure by outsourcing from our partner and verified supplier.

3D Printing procure by outsourcing from our partner and verified supplier. All the machining and other special processes get done in house.

Contact Person

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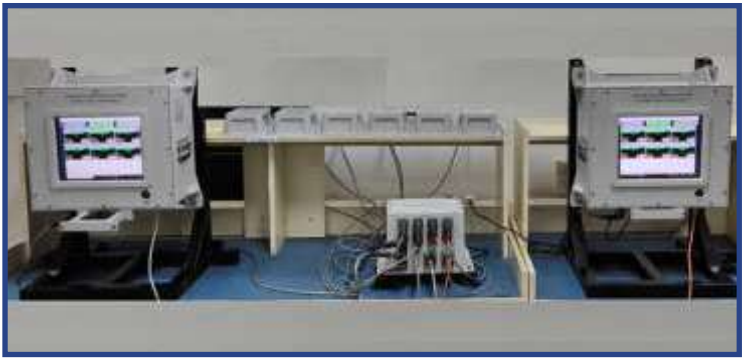
Website : www.nucleonix.com

Organisation Profile

Nucleonix Systems founded in the year 1990 is a well-recognized and established company, engaged in the design, development, manufacturing and supply of nuclear radiation measuring and allied Instrumentation. It carries rich product design and manufacturing experience. Nucleonix Systems offers instrumentation with state-of-the-art electronic circuit designs with built-in powerful embedded code to fulfill required instrument functionality, fault diagnostics features, and user-specific calculations/report generation. Many of these products have the capability of PC communication through Serial Ports for data transfer and networking operation. Some of these products are PC-based/controlled systems. Nucleonix Systems has well-established production facilities in a spacious building with a built-up area of 16,000 sq. feet. It has a compact development team of dedicated Engineers. This company is primarily established to meet the partial requirements of the above-mentioned instrumentation in the following market segments- University Education and Research, Nuclear Research and Industry, Cancer Hospitals, Atomic Mineral Exploration and Mining Industry / Environmental Radiation Monitoring / Measurements, Defence / Home Land Security / Steel and Forging Industry / Testing Labs. Many of these products are manufactured confirming IEC/ANSI/MIL810F/JSS 55555 Standard/ Environmental Conditions to meet performance specifications. Also, these products are EMI/EMC compliant as per IEC/MIL. The product range offered by Nucleonix Systems caters to various market segments.

1. Defence and DAE
2. Educational
3. Industry
4. Healthcare

SHIP INSTALLED RADIAC SYSTEM



Product Description

Designed and Developed by Nucleonix Systems is used for the Detection and Measurement of Radiation Levels during Nuclear fallout or in an NBC environment in IN ships using various Radiation Sensors. Ship Installed Radiac System (SIRS) is a radiation monitoring and measurement system, primarily designed to provide early warning and assessment of hazards Area This product shall be an advanced system with state-of-the-art electronics design based on Single Board Computers, Advanced Electronics, Micro-Controllers, Front End Electronics combined with powerful Smart detector modules for radiation detection in air, water and inside/outside the ship.

Characteristics of Equipment

(a) Measurement of Residual Gamma radiation.

(b) Direct Gamma radiation received by the ship, due to a nuclear weapon detonation.

(c) Gamma Emitting radioactive fallout / radioactive plume passing over the ship due to a nuclear accident or a detonation

(d) Induced radioactive contamination in sea waters from fallout or nuclear accidents or Otherwise

RADMAC



Product Description

RADMAC along with External Detector Probe is a battery-operated electronic unit designed to be fitted into tracked / wheeled vehicles as part of the NBC protection system. External Detector Probe is fitted with sensors to measure gamma dose and dose rates in the range of 1mR to 9999R and 0.1mR/h to 1000R/h respectively. It is also fitted with a sensor to detect gamma flash which occurs in the event of nuclear detonation. This sensor generates an INR activation signal for a gamma pulse greater than 4 R/sec.

The External Sensor unit is fitted with the following radiation sensors.

- Two GM tubes for measurement of low and high gamma dose rates.
- An INR sensor module for detecting gamma flash and generating an INR activation signal.

Characteristics of Equipment

a) Automatic measurement & amp; display of dose and dose rate on VFD display and 7-segment / Bar scale respectively.

b) Display of alarm messages and audio/visual warning indications in the event of the occurrence of radiation fallout, prompt INR, CWA events or in case of any failure events.

c) Extensive help to the user depending upon the current background radiation status and occurrence of different events.

d) Direct calibration adjustment through the keypad after the entry of a password.

e) Built-in fault diagnosis to identify bugs/failures in hardware at power-up.

AUTOMATIC CONTROL UNIT (ACU)



Product Description

Automatic Control Unit (ACU) is a 24 VDC battery-operated control unit designed to be fitted into tracked vehicles as part of the NBC protection system. This unit receives control signals from RADMAC and ACWAD and generates NBC activation signals to the Tank

Characteristics of Equipment

INPUT SIGNALS	OUTPUT SIGNAL
Manual CBR 0 – 24V DC transition signal (Pulse width>100 m sec) :	CBR out & Blower Start Activation Signal
Auto CBR 0 - 12V DC transition signal (Pulse width>100 m sec)	CBR Out & Blower Start Activation signal
Radiation Fallout 0 - 24V DC transition signal (Pulse width>100 m sec)	CBR Out & Blower Start Activation signal
Auto INR 0 - 24 V transaction Signal	Immediate activation of INR out & Blower stop. Deactivation & reactivation (Pulse width of 1 sec) NBC power out after 35 sec, activation of Blower start after 50 seconds
Manual AAP 0-24V DC transition signal	Immediate activation of INR out & Blower stop. Deactivation & reactivation (Pulse width of 1sec) NBC power out after & 35 sec, activation of Blower start after 50 seconds

RADAMC – A



Product Description

The Gamma Radiation Monitoring System (RADMAC-A) being developed for Airborne platforms, will display information regarding Gamma radiation dose and dose rate exposure to the pilot and crew of a helicopter to enable them to take informed decisions while operating in a nuclear-contaminated area.

Measurement Range:

Gamma Ray Energy Detection Range 60 keV to 1.3 MeV

Residual Gamma Dose 0.001 cGy to 999 cGy

Residual Gamma Dose Rate 0.001 cGy/h to 999 cGy/h

Characteristics of Equipment

Display: Cockpit Visual Indicator (CVI) with NVIS green, NVIS yellow & NVIS red lights of type-1, Class B as per MIL-STD-3009 (NVG compatible to Gen2+ +/Gen 3) for visual warnings as per predefined configurable dose and dose rate values.

Alarms: Visual alarms on the Cockpit Visual Indicator (CVI) as per predefined configurable dose and dose rate values

Serial Communication Interface: Two independent RS422 ports for IADS and for communication with GSE

CBRN









Product Description

Nucleonix offers varied solutions which include integrated CBRN sensors and sub-systems for CBRN protection of Defence Vehicle platforms - Ground/Airborne/Naval. These sensors when deployed will generate Alarms and generate activation signals for NBC protection when threats are detected. Data can be relayed to the Concerned Authority through suitable military networks. It could also be deployed for Homeland security applications wherein Citizens could be communicated through the CBRN Mobile App. Datasheet lists the specifications of Key Components

(A) Intelligent Integration and PS Unit Type NXG-IIU1:

(B) Chemical Agent Detector:

(C) Bio-Agent Detector:

(D) Prompt and Residual Gamma Radiation Detection System:

Characteristics of Equipment

Chemical Detector will be able to detect the following chemical agents in vapour form:

a) Nerve Agents: Tabun (GA), Sarin (GB), Soman (GD), Cyclo Sarin (GF) & VX

b) Blister Agents: Sulphur Agents (HD), Lewisite (L)

c) Blood Agents: Hydrogen Cyanide (AC)

d) Choking Agent: Phosgene (CG)

Bio-Agent On-line detection and sample collection of Vegetative Bacteria, Spores, Virus & Toxins (based on air samples)

Radiation Detected: X and Gamma Rays from 60 KeV to 2 MeV & INR Dose

GRASP



Product Description

The Gamma Radiation Aerial Surveillance Payload (GRASP) system is to be used for Aerial Surveillance of the Gamma radiation-affected zones/areas during nuclear emergencies/disasters.

The intended use of the GRASP is for monitoring and surveillance of nuclear radiation from air at coastal areas and near/around nuclear submarines. For any hike in radiation levels from background radiation levels, the system will generate warnings and alarms at the Ground Control Station (GCS). The nuclear radiation payload can measure gamma radiation in the range from 10μR/h - 100mR/h. The system will have an operational range of 5 km LOS radius and a flying altitude of 10 m - 200m (AGL).

Characteristics of Equipment

Type of Radiation Measurement: Gamma Radiation

Sensors: CsI (Tl)/ NaI (Tl) with Si-PM

GM Tube Measurement Range: Residual Gamma Dose Rate :10 μR/h - 100 mR/h

Residual Gamma Dose: 10 μR - 100 R

Accuracy: $\pm$ 20% (for both dose and dose rate)

Alarms: Settable visual indicator for 'Malfunction Alarm'. It should have provisions for the user to pre-set the threshold for alarms

PDRM



Product Description

The Portable Dose Rate Mark-II (PDRM) is designed as an electronic instrument having two radiation sensors i.e., Neutron sensitive p-i-n diode and gamma-sensitive MOSFET to detect and quantify Initial Nuclear Radiation and two GM tubes for fallout radiation dose & dose rate dose measurement.

Characteristics of Equipment

a) The instrument is battery-powered and operates in Standalone mode & through dose management & control software.

b) PDRM-Mark –II can greatly assist in efficient dose management of the personnel in a field organization.

c) The provisional operational requirements and the front panel layout are given in subsequent sections.

SHIP INSTALLED CBRN SYSTEM



Product Description

Ship Installed CBRN System for Indian Naval Ships is An Integrated Solution comprised of Nuclear Radiation detection modules and chemical and biological hazard detection modules for CBRN threats.

This product shall be an advanced system with state-of-the-art electronic design based on Advanced GUI, Intel Processor combined with powerful Smart detector modules for Radiation, Chemical and Biological Agent detection. Each of these Detection probes shall connect to the nearest Sub-Integration units for converging the CBRN data onto the ship-wide Ethernet / OFC network. Each of these Sub-Integration modules connects to the Central Console using Gigabit Ethernet or as available. The modules shall be powered by either AC or DC power supply located nearby.

Characteristics of Equipment

(a) Measurement of Residual Gamma radiation.

(b) Direct Gamma radiation received by the ship, due to a nuclear weapon detonation.

(c) Gamma emitting radioactive fallout / radioactive plume passing over the ship due to a nuclear accident or a detonation

(d) Prompt Nuclear Radiation event detection due to a nuclear weapon detonation.

(e) Induced radioactive contamination in sea waters from fallout or nuclear accidents or otherwise

(f) Chemical Warfare Agents (CWAs) and Toxic Industrial Chemicals (TICs). Multiple IMS based Chemical agent detectors are to be deployed based on the ship's architecture

(g) Biological agent detection. Multiple Biological Agent detection systems based on Laser Fluorescence technology are to be deployed based on ship architecture

RADIATION SURVEY METER



Product Description

RADIATION SURVEY METER (micro) Type: RM701N is a G.M. Detector-based, battery-powered, hand-held, ruggedized general-purpose radiation Survey Meter. This will be useful for dose rate measurements in Nuclear installations, Radiochemical plants, Reprocessing plants, etc. Additionally, it will be useful in medical, agricultural, industrial and other installations where radioactive isotopes are used for a variety of applications. This product is designed around a Microcontroller Chip. It is provided with an alpha Numeric LCD for indicating the dose rate in digits, the dose rate as a bar graph, and the cumulative dose in digits. It covers a wide range from 0 to 10R/hr in two ranges with auto-ranging. This unit has a facility for storing the data in built-in E2PROM in real time. The stored data can be recalled onto the display or transmitted to the PC through a USB port.

Characteristics of Equipment

a) Microcontroller-based design.

b) Compact, elegant and lightweight.

c) Uses energy-compensated GM Counter.

d) Range changeover Automatic.

e) Accuracy+/- 15% with Cs-137.

f) Measures Dose in mR/hr or Sv/hr

g) Facilitates storing recalling of readings and transmission of readings to PC

h) Works on 6V (1.5X4V) dry cell batteries

i) RTC for time stamp of each reading

j) IP rating is better than IP56 for unit and probe

k) EMI/EMC compliance as per IEC61000-4-3

DIGITAL CONTAMINATION MONITOR



Product Description

Digital Contamination Monitor (Micro) Type CM 710N designed, manufactured, and supplied by Nucleonix Systems is a state-of-art, ruggedized microcontroller-based unit which essentially serves as a low level alarming survey meter cum Beta contamination monitor. It measures contamination in CPS or CPM mode and low-level gamma dose rate in mR/hr / Sv/h.It has a lot of unique features which include a user interface, through a set of six command buttons and and the visual indication to the user is on a 16x2 LCD dot matrix display module. This unit has a preset alarm facility which can be set throughout the range of the instrument. The unit can store up to 1000 readings and stored data can be downloaded into a PC using data communication software, through built-in Micro USB port.

Characteristics of Equipment

a) Microcontroller-based design

b) Compact, Elegant and lightweight

c) External probe with cover for Beta / Gamma selection

d) Measures dose rate in mR/hr / Sv/h and count rate in cps / cpm

e) Range changeover Automatic.

f) Accuracy +/-15% with Cs-137

g) Facilitates storing and recalling of readings and transmission of readings to PC

h) Unit works on 6V, dry cells (4x1.5V)

i) RTC for the time stamp of each reading

j) IP rating is better than IP56 for unit and probe

k) EMI/EMC compliance as per IEC 61000-4-3

AREA GAMMA MONITOR





Product Description

Gamma Zone monitor type GA 720N, designed and and manufactured by NUCLEONIX SYSTEMS is primarily meant to serve as a Gamma Zone Monitor to indicate dose rates and alarm status (visual and aural), once the dose rates exceed the preset level fixed by the user. Also, relays will be activated on alarm condition. The unit also indicates fault diagnostic conditions on 1/2" LED display. Unit is provided always with an external detector probe mounted on the top of the Gamma Zone monitor enclosure by a clamp, with a short cable of 1-meter length by default. Longer cable lengths can be provided on request. This unit will be useful for monitoring Gamma dose rate levels in working areas of radioisotope laboratories, in oncology departments near cobalt therapy machines or Brachytherapy machines or at other similar medical systems and also in a medical cyclotron facility, or at other medical and and industrial radiological installations. This unit indicates the dose rate digitally on a 6 x 7 segment LED display. Each of the annunciator windows for NORMAL and ACTIVE conditions has an LED array. Once the alarm triggers ACTIVE window starts blinking. The unit can be programmed/configured using a front panel keypad which can be deactivated after completion of programming. Configuring the unit namely setting preset level, setting reset mode - AUTO/MANUAL etc are achieved by this keypad.

Characteristics of Equipment

a) Primarily serves as a Gamma Zone monitor, for cobalt therapy and brachytherapy machines, also recommended for installation at different locations in a medical cyclotron facility.

b) Provided with Internal detector / External detector probe (length from 1 meter / 10 meters or more).

c) Facilitates networking of multiple Area monitors for centralized monitoring of dose rate and alarm status through software.

d) Calibration accuracy within +/- 10% with Cesium source.

e) Energy response within +/-25% from 100keV upto 1.25MeV.

f) Dose rate range covered (0.01 - 100) mR/hr.

g) Auto ranging and auto TC selection in the range of 16 sec to 0.5 sec depending upon dose rate.

h) Large size 6 x 7 segment LED indication for dose rate is provided.

i) Designed using GM tube type 130E.

j) Large size WINDOWS for NORMAL and ACTIVE alarm condition.

k) 16x2 LCD dot-matrix display for visualization of other parameters.

RAD WATCH



Product Description

The Rad watch Type: RW718 is a lightweight, compact, and ultra-low power gamma radiation monitoring gadget in the form of a wristwatch. It indicates the prevailing dose rate, accumulated dose and current date and time as shown in Figure 1-1. Rad-watch is an ideal device for the first responders attending to an emergency or disaster to rule out the presence of a radiological event and can also assist the Emergency Response Personnel during the management of a radiological emergency.

Characteristics of Equipment (Capability and Physical Characteristics in bullet points)

a) Continuous monitoring of the ambient gamma dose and dose rate.

b) Detects gamma radiation through a Geiger-Muller tube detector.

c) Compact and lightweight system.

d) Water Resistant Design.

e) Digital watch with calendar Hours and Minutes. Day, Date and Month.12 hrs Time Format.

f) Audible alarm on preset dose rate.

g) The low battery and over range indication.

h) Auto exit from "Setting Mode" to normal operating mode after 30 sec of inactivity

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Organisation Profile

Optrel is leading manufacturer of personal protective equipment and produces high quality eye, respiratory and head protection products for professional industrial applications. Optrel India introduces the Optrel PAPR (Powered Air Purifying respirator) which is one of a kind battery powered air respirator which not only filters particles and gases but provides protection and comfort. It includes a facepiece, breathing tube, battery-operated blower, and particulate filters. Contaminated air entering the blower gets filtered by removing aerosols, pathogens, bacteria, and viruses, supplying purified air to the facepiece. This product is 40 times safer compared to FFP2 (N95 masks) and provides 100% eye protection in case of full mask. PAPRs are positive-pressure devices, allowing users to work comfortably for extended periods compared to N95 or negative pressure masks, which require more effort from the user's lungs to obtain sufficient air to breath. This module offers protection from particulates and chemicals while being lighter, effective and high endurance and more comfortable than traditional self-contained breathing apparatus (SCBA). By eliminating the bulky and heavy SCBA tank, OPTREL's PAPR systems have the potential to make overhaul work easier and faster, while also preventing injuries due to strain and exhaustion.

The Optrel India's innovation is a versatile filtration breathing apparatus which is not only light weight but also provide adequate endurance and comfort to the seafarer

OPTREL PAPR (POWERED AIR PURIFYING RESPIRATOR)



Product Description

Optrel India introduces the Optrel PAPR (Powered Air Purifying respirator) which is one of a kind battery powered air respirator which not only filters particles and gases but provides protection and comfort. It includes a facepiece, breathing tube, battery-operated blower, and particulate filters. Contaminated air entering the blower gets filtered by removing aerosols, pathogens, bacteria, and viruses, supplying purified air to the facepiece. This product is 40 times safer compared to FFP2 (N95 masks) and provides 100% eye protection in case of full mask. PAPRs are positive-pressure devices, allowing users to work comfortably for extended periods compared to N95 or negative pressure masks, which require more effort from the user's lungs to obtain sufficient air to breath..

Characteristics of Equipment

AIR SUPPLY	:	Air supply adequate for strenuous overhaul work
AIR CONTROL	:	Integrated and automatic airflow control and calibration, with adjustable airflow levels.
CONTROL PANEL	:	ON THE FRONT easy accessibility. battery and filter indicators.
COMFORT	:	Enhanced comfort and SNUG fitting on the back for maximum comfort even during long hours of work
DESIGN	:	LIGHT WEIGHT Compared to bulky SCBA tanks with very good airflow
FILTER MODULE	:	Various filter module configurations offer comfort, manoeuvrability, and ease of breathing, providing valid alternative options for firefighters during overhaul work.
PROTECTION	:	Protection against Chemical vapours. Protection against particulate hazards during fire overhaul operations and confined spaces. Single filter for particle as well as gas and odours

Contact Person

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Organisation Profile

Ray-Q supplies a comprehensive range of high-performance interconnect solutions and products, including wire harnesses, sensors and a growing range of specialized complementary equipment utilized in the wiring and control of sophisticated systems in military, aerospace, medical, naval, transportation and other advanced industries. From the first design and development stages, through project management and customer-tailored logistic support to final installation, Ray-Q successfully supports worldwide projects. Ray-Q's unique partnership with its customers in the design, manufacture and supply of high-quality electrical interconnect solutions, has earned the company a leading status with military, aerospace and other industries which require high reliability products.

Design and Engineering:

Ray-Q engineers begin from a macro understanding of the purpose and function of our customers' systems. Involving our highly experienced engineers in your early design stages brings added value to your design and manufacturing by anticipating future challenges, reducing weight and space requirements, and other applications of our knowledge base.

Ray-Q has learned, from over 49 years of hands-on experience in sophisticated applications, to provide interconnect solutions, components and harnesses which are resilient and which function optimally under the toughest mechanical, mobility and environmental conditions.

Ray-Q provides support to the full range of services in the field of interconnect design and engineering. This includes: Mechanical and electrical design of interconnect systems, prototyping, designing, manufacturing and testing processes, technical support specifications and documentation, training, harness fabrication,

Quality:

Our customers require faultless and resilient performance under the most rigorous of conditions, and therefore Quality is a core value at Ray-Q.

Ray-Q is a AS9100D certified company. We regard the international Quality Management System standard for the Aviation, Space and Defense industries, as the baseline standard in all our activities.

Ray-Q has worked with organizations like the Israeli Air Force, the IDF Signals Corp, Rafael – Advanced Defense Systems, Israel Aerospace Industries, Elbit and many others for decades. In recognition of our quality assurance standards and performance, they have come to rely on Ray-Q quality and today they receive and install our products in their systems without any additional incoming inspections.

Quality includes quality assurance, but it also includes quality in our relationships, integrity, and reliability. It includes open discussions, comfortable work space, and a decent salary for our employees. It also includes the experience of our sales engineers, and the ingenuity they bring to our customers' projects.

General Design Requirements:

The electrical characteristics required for interconnecting wiring are the first considerations to be established in designing the electrical wiring harness for the naval system. In particular, the wire types required depends upon the voltage, current capacity, and frequency of the circuits and also the required material.

The current Rating of the connector contact is mentioned below,

Contact Size	Test Current		Maximum Millivolt Drop Crimp*	Maximum Millivolt Drop Hermetic
	Standard	Hermetic		
22M	3	2	45	60
22D	5	3	73	85
22	5	3	73	85
20	7.5	5	55	60
16	13	10	49	85
12	23	17	42	85
10 Power	33	NA	33	NA

POWER CABLE HARNESS, MOULDED HARNESS



Power Cable Harness



Moulded Harness

Product Description

Interconnect Components:

1. **Wire:**
   The Wire and cable shall be based on the standard has been selected to meet the customer requirement.
2. **Shield:**
   Wire shields shall be bonded around the circumference, and preferably within the backshell of the connectors. Inner shields that are designed to be ungrounded at one end shall be terminated within the connector shell. A conducting layer placed around an insulated conductor or cable to limit the penetration or escape the electromagnetic fields, thereby preventing the electromagnetic interference.
3. **Adaptor:**
   A device usually attached to the rear of the connectors that provides for the attachment of the harnessing components, such as strain-relief clamps, heat shrinkable boots and braid, also provide the mechanical strength to the harness.
4. **Moluded Parts:**
   A polymeric material capable of being reduced in size when exposed to heat.
5. **Connector:**
   A device used to physically and electrically connect two or more conductors. Connectors used in the fabrication of wire harnesses and cable assemblies shall be suitable for the application. Wire harness connectors shall be of the rear insert able removable crimp contact.
6. **Identification of Harnesses:**
   Each wiring harness or cable assembly shall also be identified and physically marked with the drawing part number and a unique serial number at the time of fabrication. Each connector shall also carry the reference designation of its mating connector.

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Organisation Profile

Renewable Energy Systems Limited (RES), based in Hyderabad, India, was established in 1985. As the first private-sector thermal battery manufacturer, we acquired technology from DRDL and are a 70% supplier for BDL. RES has designed and supplied over 280,000 thermal batteries for various missiles, becoming a trusted partner for the Indian Defence sector.

With over 35 years of continuous production infrastructure, all RES equipment is in-house developed. Our core technical team, with over 40 years of battery experience, ensures high consistency standards. We stand as the largest and most cost-competitive manufacturer in the field. Our track record includes demonstrating Thermal Battery performance even after 15 years of shelf life, a distinction unparalleled in India.

RESL expertise spans the design, development, and production of Thermal Batteries with various electro chemistries for missile systems, including Trishul, Nag Type-I, Nag Type-II, Konkurs, Milan, NSTL, ARDE, and TBRL. Specializing in both Calcium Thermal Batteries (CTB) and Lithium Thermal Battery (LTB) technologies, we have demonstrated our diverse capabilities. Our extensive experience in mass manufacturing, continuous production assessment, and troubleshooting enables us to deliver batteries with stable, reliable, and predictable performance.

Awards:

- National Award Winner for successful commercialization of public-funded R&D by DSIR in 1990.
- National Award for indigenization in 1997 by the Department of Defence Production, Govt of India.
- FAPCCI award for industrial achievement & technology.
- AS9100D:2016 certified company.
- Certified for ISO 9001:2015 QMS, demonstrating a well-established Quality Health Safety Management System.

THERMAL BATTERIES



Product Description

Thermal Batteries have cells with anodes, cathodes, electrolytes, and heating pellets. These cells, stored with solid-state electrolyte pellets, activate using a heat pellet. Series-parallel cell connections yield the needed voltage. Activation ignites a pyrotechnic heat source, melting the electrolyte, and generating power to meet design parameters. This electrical current is supplied to loads.

TECHNICAL SPECIFICATIONS	
Parameter	Range
Diameter	30 – 132 mm
Height	47 – 280 mm
Voltage	7 – 128 V
Duration	Upto 2550 seconds
Activation Time	Less than 500 m.sec
Average Power	Upto 4000 Watts
Operating Temperature	-50°C top +71°C
Activation system	Electric Igniter
Storage / Service Life	15 – 20 Years

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Organisation Profile

Our company Sagar Defence Engineering Pvt. Ltd. is a highly skilled start-up, founded with an aim to provide new innovations and complete Unmanned Vehicles solutions in Commercial, Defence and Scientific sector

SDE USV's



Product Description

Unmanned surface vessel with advanced multi-mission capabilities

The SDE unmanned surface vessel (USV) system provides naval forces with significant tactical advantages in underwater and surface warfare .

Naval force multiplier: Multi-mission payloads

Capability to integrate modular and switchable mission payload suites with advanced sonars and subsystems, the fully autonomous SDE USV's can be deployed for multiple manned and unmanned missions. The SDE USV's has the capability to integrate with mine detection, submarine detection, diver detection, maritime security(MS), electronic warfare (EW) and other advanced systems and technologies.

The only vessel of its kind that integrates with all operational modes on one platform, the SDE USV's enables conducting ASW, MCM, EW, MS, hydrography and other operations from a single mission control system. The SDE USV's complies with all international maritime and Mil-Spec standards.

Key Features

- Advanced sonar technologies and systems
- Integration capability
- Line-of-sight and SATCOM data links
- Modular payloads
- Mission control system for multiple vessels

Key Benefits

- Multi-mission capabilities
- Manned/unmanned modes of operation
- Low-risk operations
- Reduces naval procurement and operating costs
- Transportable

SDE USV-3



SDE USV 3 trial image

Product Description

Unmanned surface vessel with advanced multi-mission capabilities

Operational capabilities and systems The fully autonomous SDE USV's can operate at cruising speed for more than 24 hours at sea and is equipped to perform extensive missions. Comprised of composite and aluminum materials, the vessel incorporates removable floats and dynamic positioning.

The SDE USV's is easily deployable from port or mother ship and can be transported with ease.

Underwater systems and sensors: The SDE USV's will provide high-performance operational capabilities with integration capabilities with leading sonar technologies, including towed sonar systems.

Weapon systems: The SDE USV's has a payload capacity upto 1000 kg which enables to mount multiple weapon systems on board.

Advanced Mission Control System: The SDE USV's can be operated in manned and unmanned modes using line-of-sight and SATCOM data links and an integrated navigation, sailing

and safety suite. The Mission Control System (MCS) can be located on a mother ship, headquarters, or land vehicle. Featuring integrated C4I capabilities, the MCS can control

multiple vessels simultaneously.

Mine Counter Measures: The SDE USV's MCM has the capability with multiple MCM suites which enables detection, classification, localization, identification of bottom, moored and drifting sea mines and navigation out of the minefield.

Anti-Submarine Warfare: The SDE USV's can performs lowrisk ASW missions while in motion, with enhanced detection capabilities.

Technical Specifications

- Hull Length: 3.2 Meters
- Hull Width: 1.3 Meters
- Hull Weight : 86 Kg
- Payload Capacity: 110 Kg
- Speed : 4 -7.5 Knots
- Endurance: 7 - 12 Hours* (Customizable as per requirements)
- Control Range: 5 Km* (Customizable as per requirements)
- Craft Std: JSS 55555 Std/ Mil Std 810f and IP67
- Operator Control: Heading control, Boat tracking on map ,Navigation chart, arc charts & Uploading facility of video extracting the video, Follow predefined path, collision avoidance(Optional).
- Third party software integration capability

SDE USV-4





SDE USV 4 Trial Images

Product Description

Unmanned surface vessel with advanced multi-mission capabilities

Technical Specifications

- Hull Length: 4.2 Meters
- Hull Width: 2.2 Meters
- Hull Weight : 150 Kg
- Payload Capacity: 250 Kg
- Speed : 6 -12 Knots
- Endurance: 7 - 12 Hours* (Customizable as per requirements)
- Control Range: 5 Km* (Customizable as per requirements)
- Craft Std: JSS 55555 Std/ Mil Std 810f and IP67
- Operator Control: Heading control, Boat tracking on map ,Navigation chart, arc charts & Uploading facility of video extracting the video, Follow predefined path, collision avoidance(Optional).
- Third party software integration capability

SDE USV-RHIB



SDE USV RHIB image

Product Description

Unmanned surface vessel with advanced multi-mission capabilities

Technical Specifications

- Hull Length: 7.1 Meters
- Hull Width: 2.5 Meters
- Hull Weight : 800 Kg
- Payload Capacity: 500 Kg
- Speed : 12 -15 Knots
- Endurance: 7 - 12 Hours* (Customizable as per requirements)
- Control Range: 20+ Km* (Customizable as per requirements)
- Craft Std: JSS 55555 Std/ Mil Std 810f and IP67
- Operator Control: Heading control, Boat tracking on map ,Navigation chart, arc charts & Uploading facility of video extracting the video, Follow predefined path, collision avoidance(Optional).
- Third party software integration capability

SDE USV-15





SDE USV 15 trial image

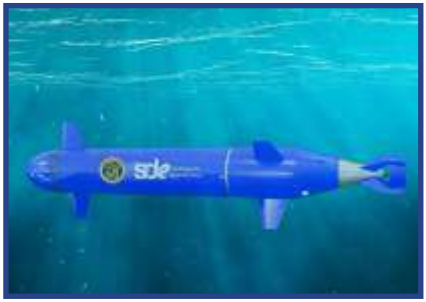
Product Description

Unmanned surface vessel with advanced multi-mission capabilities

Technical Specifications

- Hull Length: 14.8 Meters
- Hull Width: 4.1 Meters
- Hull Weight : 1986 Kg
- Payload Capacity: 1000 Kg
- Speed : 20 -35 Knots
- Endurance: 7 - 12 Hours* (Customizable as per requirements)
- Control Range: 20+ Km* (Customizable as per requirements)
- Craft Std: JSS 55555 Std/ Mil Std 810f and IP67
- Operator Control: Heading control, Boat tracking on map ,Navigation chart, arc charts & Uploading facility of video extracting the video, Follow predefined path, collision avoidance(Optional).
- Third party software integration capability

SDE AUV



Product Description

The SDE Autonomous Underwater Vessel (AUV) system provides naval forces with significant tactical advantages in underwater and surface warfare.

Naval force multiplier: Multi-mission payloads

The SDE AUV is indigenously designed, developed and manufactured for various missions: Intelligence, Surveillance and Reconnaissance (ISR),Mine Counter Measures (MCM), Anti-Submarine Warfare(ASW) ,hydrographic and oceanographic data acquisition, homeland security (wreck localisation, port and coastal security). SDE AUV is having swarming capabilities which enables multiple missions at low capex and opex. With modular architecture of SDE AUV the vehicle can be configured to customer specific requests with various payloads as well as size of battery. The SDE AUV can be customized based on user requirements and specific features depending on different environments.

Key Features

- Mission Swarming Capabilities
- Multiple Sensor Integration Capabilities
- Modular payloads
- Payload Carrying Capability
- Mission control system for multiple vessels

Key Benefits

- Multi-mission capabilities
- Unmanned Patrolling saving lives out at sea
- Threat perception with live actionable insights
- Low-risk operations
- Reduces naval procurement and operating costs
- Man Portable

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Organisation Profile

Saif Automations Services LLP, also known as Saif Seas, is a pioneering defense technology startup that has ventured into the realm of Unmanned Surface Vessels (USVs). Leveraging its expertise in in-house design and development across various domains such as marine platforms, electronics, electronic controls, and battery management, the company has made significant strides in the advancement of USV technology.

Saif Seas has successfully undertaken several prestigious projects in collaboration with the Indian Navy, showcasing its commitment to innovation and excellence in maritime defense solutions. Through its dedicated research and development efforts, the company continues to push the boundaries of USV capabilities, offering cutting-edge solutions for a wide range of naval applications.

With a focus on precision engineering, robust performance, and advanced autonomous capabilities, Saif Seas is poised to make a lasting impact in the field of unmanned maritime operations, contributing to the defense and security needs of the nation while maintaining a strong commitment to technological innovation and customer satisfaction.

SAIF SEAS LIFE





Product Description

Saif Seas™ **- Life - Is** a promising advancement in Water Rescue Technology, offering a fast and reliable solution for saving lives in aquatic emergencies. Its design emphasizes both the speed of response and the safety of those being rescued, making it a valuable addition to rescue operations.

HAWK - 2300



Product Description

Saif Seas:- Hawk - 2300 is a remarkable and highly specialized vessel custom-designed for the Indian Navyunder the iDEX VII - Sprint Challenge. This unique vessel is set to be among the very few in the world with the capability to autonomously conduct beach surveys, providing critical data to guide naval operations. It is a specialized vessel designed to revolutionize beaching operations for the Indian Navy. Its autonomous survey capabilities provide crucial data for safe and precise beaching, ensuring the safety and success of naval missions. This vessel exemplifies the spirit of innovation and tailored solutions in the field of maritime technology."

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SHREE HANS ALLOYS LTD

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Organisation Profile

Shree Hans Alloys Limited (SHAL) founded in 1984, located in Dholka (Gujarat, India) is recognized as leader in manufacturing of Steel and Stainless Steel Sand Castings in high integrity alloys with a casting range from 30 kg to 10 tonnes and is a leading manufacturer of Non-Ferrous Sand & Centrifugal Castings offering a size range up to 600mm OD and a length of 3.8 mtrs and a maximum cast weight of 2 tonnes.

The group offers vertically integrated manufacturing capabilities and will supply either proof machine castings, along with our ability to finish machine and test to exacting tolerances, this makes us the supplier of choice across many sectors including Fluid Control, Naval/Defence, Marine propulsion, Oil and Gas, Steel, Paper and pulp and many general industrial sectors with the accreditations to match.

The Materials include Copper based alloys (Bronze/Brass/Copper Nickel) high integrity steels, (Stainless Steel, Duplex and Super Duplex, Inconel) etc.

We also have extensive machining capabilities for Sand, Centrifugal and Continually cast materials up to 1.5m OD and a length of 4 Mtrs

We are approved with BV MARINE & OFFSHORE & DGQA Approved Vendor.

ENGINEERED SOLUTIONS FOR STRATEGIC NAVAL DEFENCE SUPPLY CHAINS



Centrifugal Castings of:

- Tin Bronze / Phosphor Bronze
- Various Gun Metals
- Aluminium Bronze
- Any Other Copper alloys as per customer specifications

Characteristics of Equipment

- Solution and supply chain focused engineering business with the core competence of high integrity casting manufacture
- Dedicated supply chain team offering engineering solutions to naval & defence, petrochemical and offshore oil & gas strategic customers

TYPICAL NAVAL APPLICATIONS



Product Description

Surface Ships

- Shaft Liners [Sleeves]
- Shaft Seals and Bearing assemblies
- Rudder Stock components
- Deck Fittings
- CPP Hubs and Blades
- Pump and Valve components
- Anchor Castings

Submarines

- Propulsor Hubs and Blades
- Shaft Liners
- Shaft Seals and Bearing assemblies
- Hydroplane components
- Main Condenser Headers
- Heat exchanger Headers
- Pump and Valve components

MELTING FURNACE & CAPABILITIES

MELTING SHOP

Induction Furnace:

1. 1500 Kgs.
2. 2000 Kgs.
3. 3500 Kgs
4. 750 Kgs.
5. 500 Kgs.
6. 300 Kgs. X 2 Nos.

MAIN APPROVALS

- ISO 9001:2015
- NORSOK M650 Approved
- PED 2014/68/EU
- BV MARINE & OFFSHORE
- IBR Well-known Foundry

Ferrous Sand Castings

Maximum Single piece capability from 30 Kgs - 10,000 Kgs.

Non-Ferrous Sand Castings

Maximum Single Piece capability up to 2000 Kgs.

Type of Alloys (Only for Centrifugal Castings):

Bronzes, Aluminium Bronze, Copper Nickel, Coppers, Stainless Steel, Inconel etc.

Our Group cast over 50 different alloys with specific focus on Cu-based; Ni-based and Special Steels.

Each alloy requires careful control of chemistry and critical foundry variables to guarantee a high integrity cast product

HIGH INTEGRITY FINISH MACHINED SAND CASTINGS



NAB Main Condenser Return end header assembly for a nuclear powered submarine



NAB Main shaft bearing assembly used on a nuclear powered submarine shaft line



Copper Nickel propeller shaft seal housing used on a nuclear powered submarine

Product Description

- Complete supply of high-integrity Non-Ferrous Sand Castings up to 2000 kgs maximum dressed weight
- Defence Standard and International Naval Engineering Standard materials including Nickel Aluminium Bronze, Cupro Nickel Chrome and all other heat, wear and corrosion-resistant alloys Figure 3
- Routinely providing third party witness inspection and radiographic examination
- Machining, assembly & pressure testing from one of two on-site machine shops

SPECIALISTS IN CENTRIFUGAL CASTINGS



NAB water lubricated bearing assemblies for commercial surface ships



NAB column pipe assemblies for offshore oil rig and petrochemical plant



Gunmetal tail shaft liner assembly for naval and commercial propulsion systems

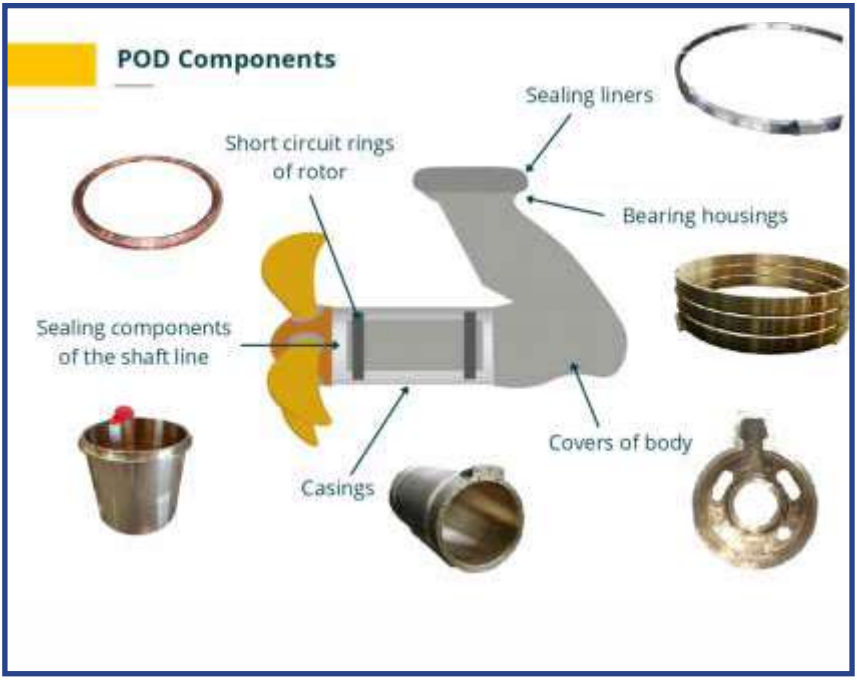
Product Description

- Centrifugal components in heat, wear and corrosion resistant materials with particular specialization in naval and complex alloy castings
- Complete package supply of class one components utilizing centrifugal manufacturing to ensure high integrity and close grain structure for critical applications including submarine and surface ship propulsion system liners, offshore oil platform column pipes and water lubricated bearing assemblies
- Machining, assembly and pressure testing Capabilities

Other systems:

- Bearings & shaft liners for stabilisators
- Rudder stock systems: liners & bearings
- Sonar housings & bodies
- Countermeasure housings
- Net pick-up systems
- Pistons & bodies for Torpedo launching systems
- Tubes for submarine masts
- Hand wheel
- On-board pumps components
- Gas pipes

POD COMPONENTS



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Organisation Profile

We at Sree Sreenidhi Engineering, strive to provide a better and more cost-effective solutions in the vertiles of Electrical, Automation and Instrumention. We have aquired expertise over a period of time in applying Mechatronics in Design and Devlop customised Machines which are required for Particular application.

We are pioneers in Design, Develop and commissioning of Automation Solutions in various applications of Pharma, Steel, Ship Building, Defense, Paper, Power, Oil & Gas, etc. We develop soution through ruggedised and Innovative Designing. We do not deviate our commitment to safety, reliability, and efficiency in delivering quality products and solution. We promote a team-based culture, which aims to consistently provide products and services which meet required standards, achieve continuous improvement and enhance customer satisfaction.

SUNLUX TECHNOVATIONS PVT LTD

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Website	:	www.sunluxtechnovations.com

Organisation Profile

Sunlux ISO 9000 2015 company. Have been working with Indian defense, Space and industrial projects.

Focused on R&D have worn many Awards for innovative development and Intellectual Property .

Worked on multiple projects for Indian Navy and currently working indigenous development of CO_2 Absorbers for underwater vessel.

SECRA CONTROL SYSTEM



Product Description

- Fault tolerant Control systems with Operator Station , RS485 , Processors in Dual Data Communicator redundancy.
- Remote and Local operation.
- Data Logging, reporting.
- Audio Visual alerts.
- JSS55555 and Shock Qualified.
- MIL 461 E Qualified.
- Third-party Software Verification

SHIP MOTION CONTROL UNIT (SMCS9)



Product Description

SMCS9 is used for measurement of angular positions of FIN and AFT planes and Vertical RUDDER. This is being deployed on all new objects . Its water tight enclosure (IP68) design has ensured continuous operation even in submerged conditions. It has undergone rigorous environmental and quality testing as per JSS-55555 and shock tests on K200 shock test facility. Key part for SMCS 9 is the resolver based measurement with a sensor accuracy-0.3° within 30° CW and ACW & 0.6 above 30° for the navigation feedback.

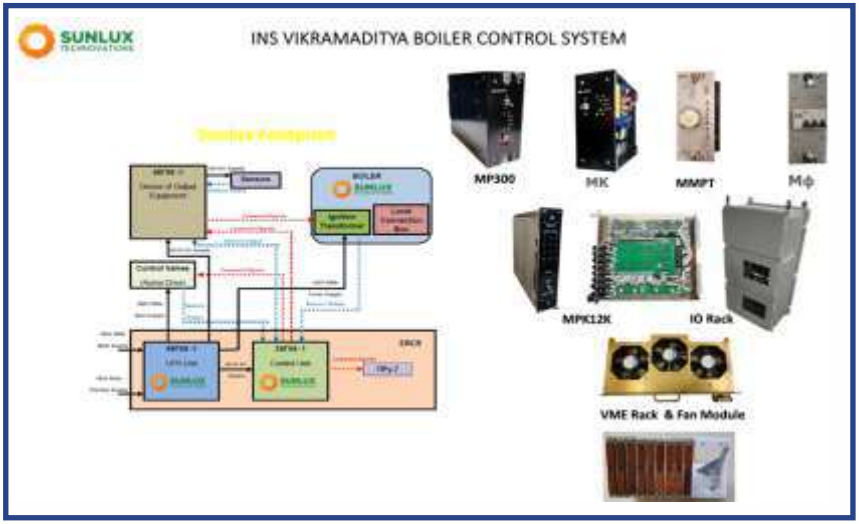
Characteristics of Equipment

$\theta = \sin^{-1}(\sin Vrms/TRxV_{Exicitation})$

$TR=\sqrt{\ }(\sin\theta)2+(\cos\theta)2/V_{Exicitation}$

- JSS55555 and Shock Qualified.
- MIL 461 E Qualified.

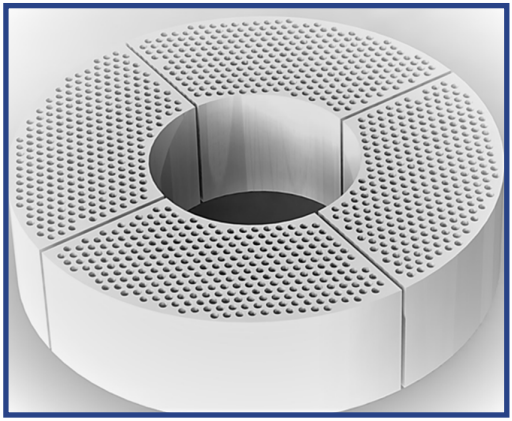
BOILER CONTROL SYSTEM MODULES FOR INS VIKRAMADITYA



Product Description

INS Vikramaditya's Boiler Control Modules were indigenised in a short span of 4-6 months' time. This requirement was on a war footing as the Indian Navy had a urgent necessity and had to set to work urgently for sailing. Sunlux Successfully indigenised and refurbished few modules and the ship could sail in 4 months time.

CO_2 ABSORBENT CAKES AND ABSORBER



Product Description

The Carbon Absorber (CA) is used for the removal of CO_2 by means of a regenerative chemical-based absorbent in an enclosed area. The CO_2 concentration by volume in the air to be purified is between 0.05% and 2.0%. The Absorber had to maintain CO_2 level of 0.4% to 0.5%. The CO_2 Absorbent Material is based on potassium bicarbonate ,SLA and binder. The CO_2 Absorber material is in the form of quadrants(Cakes) .The absorbent cakes were made with 192 holes for increasing the surface area. Absorption capacity 35 gm per Kg of the Material was achieved.

The requirements for the cakes was very urgent as the cakes on INS Arihant had completed their run time . Importing them involved very long timelines and cost.. Sun lux was assigned this work during COVID pandemic first phase . We were given permission to work despite of total lockdown. We were lucky got the recipe in 4 months and made the jigs and factures with help from our partners to mould the absorbent cakes. For our recipe and the process we got patent recently.

CO_2 ABSORBERS



Product Description

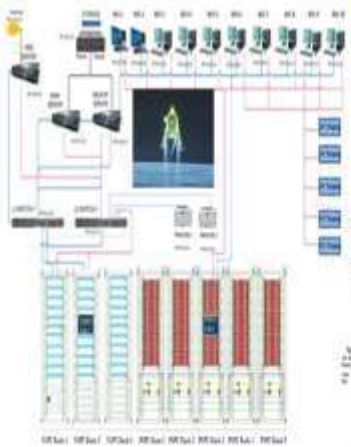
Co_2 Absorbers are required to maintain the CO_2 levels in submarines as the CO_2 levels goes above 1% with 70 +people breathing with activity. Above 0.8% is not suitable for habitat.. The CO_2 absorbers are used to maintain concentration levels of 0.4% (v) with the air temperature in the range of 20 to 35 °C and Relative Humidity of 45 to 70%. The CO_2 Absorbers have to be regenerative as the objects are under water for 25 +Days. So we developed the Chemical based regenerative Absorbers. The Absorbers work in three modes.

- Absorption 2 h 55 min
- Release time of 1 h 40 min with heating up to 140° C.
- Cooling of 25 mins. To bring down the temperature to 40-60°C
- CO_2 Absorber are of 200 LPH of CO_2 Absorption Capacity. For meeting this requirements 16 cakes are used, each weighing 2.7 kg. The absorption capacity is 35 gms of CO_2 per Kg of absorbent material .

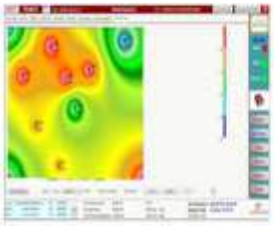
INDIGENISATION FOR SPACE ORGANISATION

Fault Tolerant Supervisory Control and Data Acquisition System for Thermo Vacuum Chamber Test

- All the Satellites are tested for endurance to withstand Space condition before being launched for 3 weeks .The system allows to test as per thermal profile for heat and cool cycles as decided by Thermal requirements
- 2000 Channel Physical Data Points
- 5000 Virtual Data
- Server redundancy
- Network redundancy
- Controller redundancy
- Auto PID Algorithm
- Temperature control within .5Deg C
- 300 Programmable Power supplies
- 1000 Channel Temp Data Acquisition
- Reporting
- EMAIL alerts
- DASH BOARD
- 3 D Temperature Heat map
- Printing
- Complete auto Operation .
- Test Input validation
- Thermal Run protections
- Working at SAC and URSE for last 10 Years
- Chandrayana 1, 2 , 3 and Mangalyaan
- tested with this systems



Ramachandra Kerur
Managing Director
Sunlux Technovations Pvt Ltd
Bangalore





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TARA UAV PVT LTD

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Organisation Profile

At TaraUAV, we understand the importance of training in the rapidly growing UAV industry. As technology continues to advance and new applications for drones emerge, it is essential that pilots are well-trained and equipped with the necessary skills to operate drones safely and effectively.

Our DGCA authorized pilot training programs are designed to provide a comprehensive understanding of UAV technology, flight operations, regulations, and safety procedures. Our courses are taught by experienced instructors who are experts in their fields and are committed to ensuring that each student receives the highest quality training.

LEO MK-I AND LEO MK-II







Product Description

Exhibiting at the Expo are the ingenious LEO MK-I and LEO MK-II, two cutting-edge drones that represent the ultimate in drone technology. These unmanned aerial vehicles (UAVs) have a unique design with a robust single rotor that is positioned on top of the drone to provide better lift and control, allowing for proper movement.

The Coastal Guard version, known for its distinct functions, is represented by the LEO MK-I, which is specifically designed to fulfil the demands of coastal monitoring. With improvements to excel in military applications, the Army version, the LEO MK-II, takes centre stage in the meanwhile. These models provide a peek into the future of aerial reconnaissance and tactical operations, demonstrating the adaptability and cutting-edge capabilities inherent in UAVs.

Characteristics of Equipment

- LEO MK – I: A VTOL UAV used for coastal guard monitoring.
- LEO MK – II: An army version with all MIL standard components.
- Ground Control Station: The controller used for the operating the UAV's.

Contact Person

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TSC TECHNOLOGIES PVT LTD

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Organisation Profile

CIPHOR [TSC Technologies Private Limited] is a startup specializing in the aerospace and defense industries headquartered in Bangalore, India. We've earned our place at the forefront of these sectors through our pioneering solutions and bold initiatives. Our flagship accomplishment includes the successful deployment of the UNITYsat (Constellation of 3 Satellites) via the PSLV C51 Mission. This achievement illustrates our robust capabilities and has solidified our position as a credible collaborator in the space industry.

Further extending our portfolio, we've forged a strong alliance with the Indian Innovations for Defense Excellence - Defense Innovation Organization (iDEX -DIO). We've secured four crucial contracts under iDEX DISC #7, encompassing a broad spectrum of applications. These include AI-empowered noise cancellation Underwater Vision System, Radar cross- section measurement devices, COMINT systems, and advanced AESA Radar. Each contract, specifically intended for the Indian Navy, not only bolsters our operational capabilities but also reinforces TSC's standing as a dependable technology ally in the defense sector.

PORTABLE RCS MEASURING DEVICE





Product Description

P-RCS is a cost-effective and flexible radar cross-section measuring system. This system can measure airborne, shipborne, and ground-based platforms or even scale model measurements can be performed indoors in an anechoic, partial anechoic, or non-anechoic environment, or outdoors in suitable test areas.

P-RCS is a far-field measurement system. The measurement procedure has been fine-tuned to provide optimal balance, sensitivity, and high-speed operations comparable to traditional compact and far-field ranges.

Operation and Performance

- Can be used indoors and outdoors to measure and characterize airborne, shipborne, and ground-based targets and scale models.
- Supports background clutter removal for outdoor measurement.
- Supports multiple modes of operations like monostatic, bi-static, and multi-static configurations.
- FPGA and DDS-based system for high-speed, accurate RCS measurements.

Modes of Operation

- Fixed target, Moving Platform
- Fixed target, Fixed platform, Scanning antenna
- Fixed target, Stabilized platform
- Passive Listening mode
- Fixed platform, Moving target

UNDERWATER VISION SYSTEM



Product Description

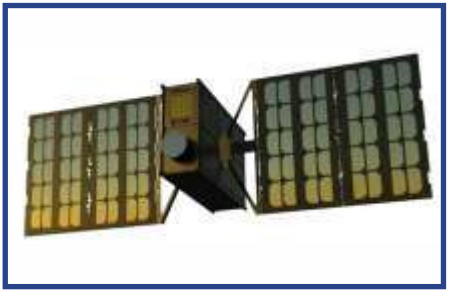
Introducing our state-of-the-art Underwater Vision System, the definitive tool for every underwater enthusiast. Discover a world where clarity meets precision, and innovation meets exploration.

Elevate your underwater explorations with the pioneering Underwater Vision System. Boasting 4K clarity, a 2K wide-angle view, and dynamic sonar capabilities, dive up to 100 meters with unmatched precision. Enhanced with AI noise cancellation and encrypted data security, our system seamlessly integrates with ROVS for a truly autonomous experience. Illuminate the depth with natural white and IR lights, while maintaining connectivity through two-way communication. Dive deeper, see clearer, and explore smarter with the Underwater Vision System. Dive into tomorrow, today.

Operation and Performance

- 4K Primary Camera
- 2K Wide-Angle Camera
- High-Performance Sonar
- Dual Illumination Systems – White and IR
- Integrated Sensory Suite - Temperature, Pressure, Water Leak, Humidity, Echosounder, Altimeter, Metal Detector
- Live AI Noise Cancellation
- User Friendly Software: mission planning, live video processing, encrypted sensor data.
- Surface Control Unit: compact yet robust battery pack integrated communication system that allows for effortless communication between divers and the surface.
- Communication – Diver Comms. Earpiece for 2-way communication
- Neutrally Buoyant Tether – Up to 300 meters.

SATELLITE BUS WITH CUSTOMIZED PAYLOADS



Product Description

Ciphor [TSC Technologies] is dedicated to providing scalable and compact small satellite development solutions, offering a wide range of options for satellites weighing all the way up to 150Kgs. Prepare to embark on a transformative journey into space with our advanced capabilities. Tailor-made for Your Mission: Our customizable small satellite platforms empower you to design the perfect satellite for your specific needs. We offer flexibility in size and payload capacity, allowing you to optimize your satellite's performance and achieve your mission goals.

Endless Possibilities

With our small satellite development solutions, the possibilities are limitless. Whether you are a research institution, a startup, or a large corporation, we provide the ideal platform for your space missions. From Earth observation, remote sensing to communication and scientific research, our small satellites can accommodate a diverse range of payloads.

Reliability and Performance

Our commitment to quality ensures that every small satellite we develop meets the highest industry standards. We understand the demanding nature of space exploration, which is why our satellites are built to withstand the harshness of the space environment, ensuring reliability and optimal performance throughout your mission Unleash Your Imagination: The sky is no longer the limit with our small satellite development solutions. Let your imagination soar as you leverage our expertise to push the boundaries of space exploration. Whether you' reembarking on a groundbreaking scientific mission or revolutionizing communication networks, our small satellites are your gateway to new frontiers.

Contact Person

Jegan R Mani, CTO, CIPHOR TSC

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VECTOR WINGS TECHNOLOGIES

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Organisation Profile

At Vector Wings, we are not just shaping the future of manufacturing in the Drone industry; we are defining it. With a relentless pursuit of excellence, a commitment to innovation, and an unwavering focus on customer satisfaction, we are poised to lead the way in revolutionizing the landscape of manufacturing solutions. Choose Vector Wings, and experience the pinnacle of quality, precision, and innovation.

DRONE SYSTEM



Weight MTOW	Below 35 kg
Propulsion	Battery 6S 32000 mAh
Without Battery and Pay Load	16 kg
Wing Span	3500 mm
Length	2500 mm
Height	750 mm
Maximum Pay Load	5 Kg
Endurance with Pay Load	90 Minutes
Cruise Speed	60 kmph
Operation Altitude	4000 m
Complete System Weight	60 Kg
Range	25 Km
Landing	Scan and land on QR Code

Characteristics of Equipment

- **Camera:**

Stabilize and optimize 3-axis gimbal payload with pinpoint-precise motor rotation with 30X Optical zoom.

- **Optical Features**

Sensor EO sensor and IR sensor

Gimbal 3 Axis

Still Image Day camera 30 megapixels

EO / IR 10 Megapixels / 640 x 512 pixels

Zoom Day camera: At least 30x optical & 40x digital zoom EO/IR: 4x digital zoom.

Video Resolution Day: 4K

Night: 640 X 512; 30fps

Storage Recording and storage facility (1 TB SDD).

Moving target tracking up to 3 targets at a time.

Payload freedom 90^{0} on either side, Capability of pan and tilt in flight across vertical axis

Target detection1000m standoff slant range

Port for data USB C-Type transfer from GCS

Video stabilization Mechanical and digital stabilization

- **GCS Features:**

Tablet Based GCS IP rated for all weather operation.

1. **GCS components:**

- Joystick with antenna set up.
- Video screen to view live video stream and map screen.
- Separate GCS slave display for Tactical

Command Center

- Secured/ encrypted uplink and downlink.

2. **Display:**

- Distance between GCS and slave display shall be more than or equal to 20m (in unwired connection)
- MIL-STD 810H, 6ft operating drop rating, IP66 certified, and optional salt fog resistant
- 12th Generation Intel® Core™ Processor and 1 TB SSD storage facility.
- Display with more than 1,000 nits and capacitive touchscreen
- Enhanced enterprise security and multi-factor authentication options
- Thunderbolt port for superior transfer speed and performance

3. **Flight Modes**

- Autonomous verticaltake-offandvertical landing.
- Autonomous vertical take-off and vertical land from a boat/ floating platform.
- Hover at defined waypoint.
- Autonomous waypoint navigation (predefined as well as dynamically adjustable waypoints during flight).
- Remotely piloted mode for video-based navigation (RPV mode).
- Real time target tracking or designated static and moving targets.
- Dynamically update home point automatically.

4. **Real time video**

- UAV coordinates
- Target coordinates and range from UAV
- True north indicator
- Distance from home
- Artificial horizon indicating UAV altitude
- Target tracking
- Moving target indicator
- Battery/Fuel capacity
- Control/ Telemetry signal strength
- AIS Data (contacts) overlayed on map

5. **Surveillance**

- Geographic map
- UAV location
- UAV trajectory
- Camera view
- Waypoints
- Flight plan
- Tracking selected target on display and holding it in the center of the screen.

6. **User Attributes**

- Set altitude of UAV
- Way-point navigation

- Dynamic flight plan adjustment
- Point payloads to ground coordinate
- Turn ON/OFF recording
- Turn ON/OFF nav lights
- Turn ON/OFF indicative/ cautionary sound signals
- Kill switch to erase onboard data

7. Fail Safe Features

- Return to home on communication failure
- Return to home/ land on low fuel/battery level after taking into consideration distance from home position
- Multiple GPS onboard for GPS failure redundancy
- High wind indication
- Anti-collision light (can be switched off)
- Autonomous flight termination system

8. Explosive Payload

- 5kg explosive payload with steel balls.
- Explosive upon impact.
- 3 Label safety system in built.
- Completely Indian designed and build design with micro processor and software.

Contact Person

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VIMAL FIRE CONTROLS PVT LTD

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Mobile	:	+91 9821089265
Email	:	falgun@vimalfire.com, vfcplmumbai@vimalfire.com
Website	:	www.vimalfire.com

Organisation Profile

Since 1982, Vimal Fire Controls Pvt. Ltd. has been a leading and innovative fire safety manufacturing company in India. Supported by a state-of-the-art manufacturing plant and Asia's largest R&D facility located in Vadodara, Gujarat (India), we continually push the boundaries of innovation to provide cutting-edge solutions to provide a complete bouquet of fire and safety products and services that cater to diverse needs. We take pride in our NSDC approved Training Academy - IMSAFE Academy, which offers comprehensive live firefighting and disaster management training in a fully-equipped facility near Vadodara. We stand apart as we ensure rapid and efficient assistance in critical situations being the only Asian Company providing Emergency Response Services during catastrophic fire disasters in India and abroad by chartered cargo flights with our Hi-tech equipment and professionally trained manpower.

Our focus on quality is unwavering, as reflected in our ISO 9001:2015, 14001:2015, and 45001:2018 certifications, ensuring adherence to international standards. Meticulously designed manufacturing processes and operations guarantee that each product meets the highest levels of reliability and safety. Our products are approved by prestigious global bodies like UL, FM, VdS, LPCB, CE, BIS, EIL, and MES.

In our continued commitment to providing the latest available technologies to the various industries including Indian Armed Forces, we are now registered with DGQA for various unique and wide range of fire protection equipment.

Our Designed, Manufactured and Installed Wireless Emergency Robot Vehicle - (water/ foam /camera/detector/ rescue), Linear Detection System, Automatic Intelligent Addressable Linear Heat Sensing System, Aspirating Smoke Detection System, Clean Agent Based Fire Suppression System, CO2 Gas based Fire Suppression System, Nitrogen Injection Fire Prevention and Extinguishing System, Integrated Fire Detection System, Auto Fire Detection and Suppression System for vehicles, Surveillance and Sensor Solutions along with our illustrious world's only UL listed 10500 USGPM FOAM MONITOR are some of our products that save lives and secure assets and empower businesses at various industries.

WIRELESS EMERGENCY ROBOT VEHICLE (WATER / FOAM / CAMERA /DETECTOR / RESCUE)



Product Description

All terrain Firefighting BOT is an unmanned ground vehicle controlled by using Remote. Suitable for Firefighting, Rescue, disaster handling operations, Surveillance etc. in conditions where humans cannot reach. Sturdy Robot to fight any fires as it can move in congested area/space and can be controlled from a distance up to 500 meters (Line of Sight) or beyond to avoid heat radiation.

Characteristics of Equipment

- Equipped in-built self water-cooling system
- Features: Fire Fighting Monitor, Visual Infrared Detection System, Smoke Extractor, Thermal Camera, Heat Sensor, Road Block Remover (Push or Pull) arrangement, Medium Expansion Foam Generator, Water Mist etc.
- Can operate and reach inaccessible areas and high-risk fire hazardous areas.
- Applications: Plant Areas & Critical Areas where Fire Fighters cannot reach
- Two variants – Battery and Diesel operated

SCBA



Product Description

The SCBA has been designed to be fully compatible with the established electronic signal and warning unit. Real-time monitoring of time to whistle (based on current air consumption) and cylinder pressure is communicated via a lightweight, handheld electronic gauge.

Characteristics of Equipment

- Light weight carbon composite cylinder with PESO approval
- Real time monitoring of breathing air and cylinder pressure (based on current air consumption)
- Safety features for firefighters with add-on communication system
- Man-down alert system and distress alarm system
- Face mask shall be equipped with lighting equipment; it shall be easy to operate in the dark

NEW-GEN "SHOOTFIRE" FIRE FIGHTERS FIRE SUITS



Product Description

Multi-layer material FIRE SUIT build to protect firefighters from flash fires. The suit is provided with Drag Rescue Devices System (DRD), Tested as per NFPA 1971 requirement. DRD is used to rescue downed firefighter.

Characteristics of Equipment

- Light weight Fire fighter suit with breathable material
- High abrasion resistance reinforcements at sensitive areas for protection from burns
- High strength para-aramid fibers and a filament reinforcement fabric provides outstanding tear and break resistance
- A combination of microporous barrier provides resistance to chemical penetration
- Our product provides incredible THL, TPP and helps fire fighter stay cooler

FIRE SUPPRESSANT CORD AND STICKER





Product Description

The Fire suppression stickers are placed strategically in enclosed compartment or electrical distribution boxes and on electrical appliances which may catch fire or where there is a risk of fire. After installation, if a fire does ignite, the fire suppression stickers will quickly extinguish the fire without it catching and spreading.

Characteristics of Equipment

- Compact size, can be customized based on requirement.
- Standalone unit.
- Residue free, doesn't damage equipment viz., engines, electrical or electronic devices.
- Quick and easy installation by a competent person.
- Maintenance free and non-toxic, non-hazardous to environment.

UL LISTED WATER CUM FOAM MONITOR



Product Description

Vimal Fire Controls have an exhaustive range of UL listed Long Range Foam monitors from 500 USGPM to 10500 USGPM capacity. Our latest offering is a technological marvel and a brilliant product for fighting big. We are the manufacturer of World's FIRST 10500 USGPM capacity monitor. It's unmatched power and range is its biggest asset while dealing with big fires.

Characteristics of Equipment

- The monitor is sturdy and solid in construction. Manufactured from high grade Stainless steel.
- Our monitors also provide manual/ Remote online flow management
- The nozzle construction allows the maximum discharge range of delivery. Horizontally from 45 m to 110+ meters at 35° nozzle elevation
- The monitors can be mounted on stand post/ Trolly/Trailer/ Vehicle etc.
- Operation through a flameproof/ non-flameproof wireless remote controller have feather touch buttons to operating range of 75m to 100 m from the receiver.

CLEAN AGENT BASED FIRE SUPPRESSION SYSTEM: NOVEC 1230 / FM 200/IG-541/IG-55.



Product Description

Clean Agent Fire Suppression are also called as gaseous fire suppression where use of inert gas or chemical agents are used to Extinguish fire. These agents are governed by NFPA - 2001. The system typically consists of the extinguishing agent, storage containers, agent release valve, fire detectors, control panel piping and agent dispersal nozzle.

Characteristics of Equipment

- Gas-based Fire Suppression system for Manned areas, Quick Application based on triggering by a Detection System/Alarm (Automatic) or Manual, Harmless to the Human Being.
- Extinguishing Agents: NOVEC 2130, FM-200, IG-541, IG-55 etc.
- Certification: UL/FM/VdS approved
- Applications: Machinery spaces, Control rooms, server rooms, Paint Store etc.

CO_2 GAS BASED FIRE SUPPRESSION SYSTEM



Product Description

Out of all the Gases, the most widely used Gas Based Fire Suppression today in the world is CO2 Gas Based Suppression System. CO2 is most likely the gaseous extinguishing agent that has the greatest number of installations worldwide. We are the system integrator for Design, supply, Installation and commissioning the CO2 system as per NFPA-12.

Characteristics of Equipment

- Features: Gas-based Fire Suppression system for Unmanned areas, Quick Application based on triggering by a Detection System/Alarm (Automatic) or Manual allows for longer pipe runs.
- The extinguishing agent is electrically non-conductive and therefore suitable for protecting electric system components.
- Extinguishing agent: CO_2 gas
- Applications: Machinery spaces, Control rooms, server rooms, Paint Store etc.

Contact Person

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Head : Praveen Bhaniramka

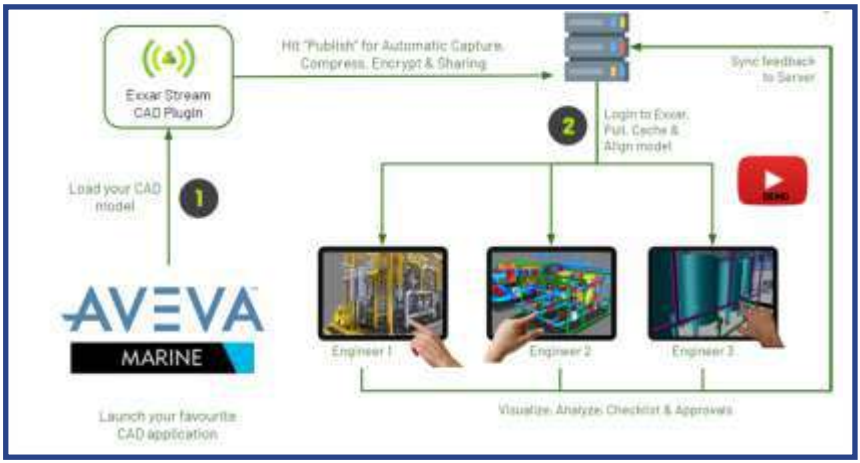
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Website : www.vizexperts.com

Organisation Profile

VizExperts has been a pioneer in Virtual & Augmented Reality technologies, delivering Immersive solutions to large corporates, government & international clients for over 12 years.

EQUIPMENT CATALOGUE



Product Description

Exxar is a VR/AR platform for Ship Design, Production Validations, QA/QC & Inspections, Maintenance & Operations Training. The platform provides a truly collaborative interface for all teams to perform design reviews and ship construction inspections, ship operations training, with interactive true-to-scale VR/AR meetings on top of lossless CAD & 3D data sets.

Characteristics of Equipment

- Oculus Quest 2 - 2 Nos
- Apple iPad - 2 Nos
- Microsoft HoloLens 2 - 2 Nos
- Laptops - 3 Nos
- Mobile Phones
- Banner Display
- Cables and Connectors

Contact Person

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ZEAL-TECH INDUSTRIES PVT LTD

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Website	:	www.zeal-tech.com

Organisation Profile

Zeal Tech Industries Pvt. Ltd. is a leading defense production company committed to providing cutting-edge solutions for Indian Naval Defense Ships.

With a rich history of innovation and a dedication to quality, we specialize in the design, development, and manufacturing of advanced Electrical & Electronic defense products.

Zeal Tech Industries Pvt Ltd. have been able to Desing, Develop and Patterned various products for Indian Defense Naval Ships. Further we have bagged the maximum orders from various Naval Material Organizations PAN India and have been able to fulfill the supply chain with our mass production capabilities.

We also have the capabilities and team for undertaking entire electrical turnkey projects for refit ships. We have been working with shipyards PAN India for delivering the required scope of work during IN Ship Refits.

Our Mission is to empower defense force worldwide with state-of-the-art solutions, ensuring national security through innovation, reliability, and excellence in manufacturing.

LIGHTNING & ACCESSORIES



Product Description

Zeal Tech Industries Pvt Ltd. have been able to Desing, Develop and Patterned following products for Indian Defense Naval Ships.

- MIL STD LED Light Fixtures 22 Types
- MIL STD Automatic Emergency LED Light 1Type
- MIL STD Hand Held Battery Operated Lamp 1 Type
- MIL STD Switch Sockets 10 Types
- MIL STD Control Panels
- MIL STD LED Ceremonial Garland Light
- MIL STD UPS 30 Types
- MIL STD Transformers

Characteristics of Equipment

- JS 55555 and EMI/EMC 419 E/F Military Standard approved Products

Contact Person

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ZEN TECHNOLOGIES LTD

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Organisation Profile

Zen Technologies Limited, incorporated in 1993, designs, develops manufactures world-class, state-of-the-art training simulators. Its mission is to provide its customers quality products and services. It has ISO 9001:2015 (QMS), ISO 14001:2015 (EMS), ISO/IEC 27001:2013 (ISMS) certifications. Zen Technologies appraised at the highest maturity Level 5 of the Capability Maturity Model® Integration for CMMI®-DEV 1.3 (Development).

Zen is at the forefront of applying new technologies and developing new products. It is actively involved in indigenization of technologies, which is beneficial to Indian Security Forces. Now Zen is the leader, offering Firearms, Tank, Driving, and Unmanned Aerial Vehicle (UAV) simulators & 30 products.

We provide a unique training solution the Combat Training Centre (CTC), wherein we provide a full training solution for the armed forces for obtaining perfection individually & as a team. Our solution assists in mission planning as well as provides a War gaming solution for the senior commanders.

Zen is into the vertical of Anti-Drone solutions. Anti-Drone System - works on drone detection, classification and tracking on passive surveillance, camera sensors and neutralization of the threat through jamming the Drone communication. It has both the options of Hard kill and soft kill of the Drones.

ZEN ANTI-DRONE SYSTEM



Product Description

Zen Anti Drone System (Zen ADS) works on drone detection, classification and tracking on passive surveillance, camera sensors and neutralization of the threat through jamming the Drone communication.

ZEN INFANTRY VIRTUAL TRAINING SIMULATOR SYSTEM (ZEN IVTSS)



Product Description

A small area of 3 meter x 5 meter will be covered as a dark room with projector system, sound system to display the virtual firing on the projection screen.

ZEN TACTICAL ENGAGEMENT SIMULATOR (Zen TacSim®)



Product Description

The components of the Tactical Engagement Simulator will be displayed on a table as shown in the picture

ZEN CSWS TRIKAAL



Note: This is a Weapon System and not a weapon which is an accessory for a weapon to fix the weapon inside for firing

Product Description

Zen CSWS Trikaal is synonymous to shooting without risk of exposure to retaliatory shooting by adversary. It is amplified by ability to manoeuvre behind a shield or protection thereafter fire for effect. These systems are necessary and are force multipliers in encounters with terrorists and insurgents in wide ranging situations from battles in built up areas to hostage situations.

ZEN CONTAINERIZED TUBULAR SHOOTING RANGE

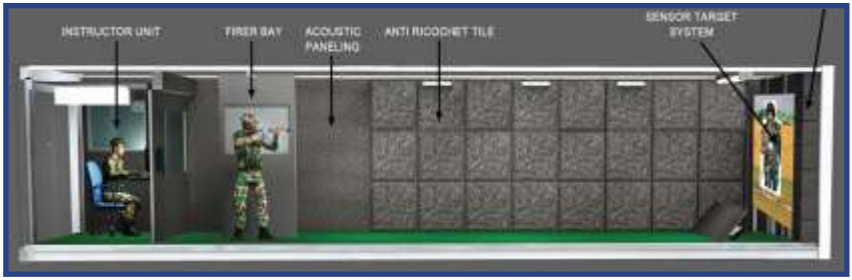


Note: A scaled model of the above system (approximately sized 2mX2m) will be displayed at the event

Product Description

Zen CTSR is a secure indoor substitute for live firing. It is self-contained, transportable and reduces considerably the area required for a range. It can also be used to test weapons or as a forensic ballistic test facility..

CONTAINERISED INDOOR SHOOTING RANGE



Note: A scaled model of the above system (approximately sized 2mX2m) will be displayed at the event.

Product Description

Zen CISR is a self-contained, transportable, live-fire shooting facility. It is designed and built to include the target retrieval system/firearm judgmental training video simulator or to serve as a forensic ballistic test facility

ZEN ARMOUR COMBAT TRAINING SYSTEM



Note: The components of the Armour Combat Training System will be displayed on a table as shown in the picture

Product Description

The Zen ACTS is designed to meet the training requirements of the Mechanised Forces in field craft, battle drills, and tactical & gunnery procedures. It is ideal for force-on-force tactical training including simulated battle engagements.

The system seamlessly assimilates retrofitted Laser Unit and Sensor Unit with Exercise Control, Interface Unit, Base Station, Transparent Display Unit, Commander Display Unit and Umpire Gun to function and deliver training value. It is modular in design, easy to fit and remove and does not require any modifications on the tank. All the modules are independently battery-powered and wirelessly connected.

ZEN SHOOT HOUSE



Note: A scaled model of the above system (approximately sized 2mX2m) will be displayed at the event.

Product Description

Zen Shoot House is a safe indoor facility, built to meet the training needs of security personnel involved in operations to eliminate enemy/terrorist threat in closed environment of a built-up area. High-end safety and security system and fire-retardant materials are in place. Aspects such as ventilation/air-circulation, varied lighting and sound suppression have been addressed.

REMOTELY CONTROLLED WEAPON SYSTEM (RCWS)



Product Description

A mockup LMG will be put on stand to display the system which will be shown as dummy firing

D-BAHTS SYSTEM



Product Description

A Dummy Drone system will be displayed on a table to show the functioning of the system

Contact Person

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Organisation Profile

At Zulu, we aren't just making drones. We are focused on engineering purpose-built drones specifically designed for national security. Our team brings together a wealth of experience in the aviation, drones, AI & software industries. Over the years, we have made significant progress in the field of civil drones and drone delivery in India. With the advancement of technology and the revamping of regulations since 2014, we find ourselves on the brink of enabling meaningful impact on drones across various use cases. At Zulu, we understand the importance of national security and the role that drones can play in enhancing it. Our drones are meticulously engineered to meet the unique requirements of this critical electronic warfare sector. We prioritize the development of cutting-edge technologies that can address the ever-evolving challenges in the field of national security. We are committed to pushing boundaries and revolutionizing drones for nations in tomorrow's electronic warfare by providing innovative and reliable drone technology and solutions.

RECON90



Product Description

RECON90 offers 90 mins of endurance with EO, EO with Starlight and EOIR options featuring advanced AI for target location, Trading & identification. It is a versatile surveillance solution tailored for tactical application, ensuring effective reconnaissance and intelligence gathering operational scenarios.

Characteristics of Equipment

- AUW upto 7Kg
- 1110 x 1200 (prop tip to tip) x 330 mm size
- 90 mins of flight time
- 30x Zoom camera with AI features
- Range of 15KM (LOS)
- Min setup time of less than 10 mins

DRAP



Product Description

DRAP is a combat-ready drone designed for swift deployment and target neutralization with its ability to carry a substantial payload within its warfront, Drap ensures quick and precise strikes on the warfront. Its exceptional speed and combat capabilities makes it a formidable asset in military operations

Characteristics of Equipment

- Offer Agile Maneuvours
- AUW upto 1 kg
- 320x320x370mm
- Precise Target neutralization

HOVER BEE



Product Description

HOVER BEE is a compact quadcopter engineer for stealth operation, Boasting 40 mins of endurance. Its features on FPV camera, telemetry for live coverage upto 2 Kilometer and the unique capability to launch from a soldiers palm. Ideal for tactical deployments, it ensures discret and effective reconnaissance missions.

Characteristics of Equipment

- AUW upto 250g
- 40 mins endurance
- FPV cam with 2km live range
- Min noise levels < 50db
- Can be launched and recovered in a palm

Contact Person

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About FICCI

Established in 1927, years ago, FICCI is the largest and oldest apex business organization in India. Its history is closely interwoven with India's struggle for independence, its industrialization, and its emergence as one of the most rapidly growing global economies.

A non-government, not-for-profit organization, FICCI is the voice of India's business and industry. From influencing policy to encouraging debate, engaging with policy makers and civil society, FICCI articulates the views and concerns of industry, reaching out to over 2,50,000 companies. FICCI serves its members from large (domestic and global companies) and MSME sectors as well as the public sector, drawing its strength from diverse regional chambers of commerce and industry.

The Chamber with its presence in 14 states and 10 countries provides a platform for networking and consensus-building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community.

Disclaimer:

The information given in this catalogue is only indicative and cannot be quoted as authority. For specific equipment related queries, kindly reach out to the contact person given in the respective equipment brief page.



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