8th FICCI INDUSTRY 4.0 e-NEWSLETTER

Theme: Industry 4.0 for Efficient Ecosystem and Supply Chain

CONTENT

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Ministry of Commerce & Industry
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Foreword

The logistics sector is the backbone for Indian economy beside being one of the major sectors providing employment in the country. With the advent of new age, logistics sector is now adopting the latest technologies to drive efficiency in the sector and economy. Tech-enabled logistics will amplify the supply chain ecosystem's reliability and assist businesses in reducing the total logistics costs. Sustainable supply chain practices reduce supply chain costs by 9–16%. India's visions to become a self-sustaining economy through "Make in India" efforts, as well as its central goal to be a prompted partner in the international marketplace, will be heavily reliant on technology advancements in its supply chain.

Indian government through National Logistics Policy (NLP) has laid a roadmap for development of Indian logistics sector. The goal of the policy is to build a logistics ecosystem in India that is technology-enabled, integrated, cost-effective, self-reliant, feasible, and dependable. This will help India grow quickly for everyone. With the NLP, India will try to get its logistics costs down to the same level as world standards by 2030 through necessary integration of Industry 4.0.

The government has also planned new centers of development with the help of the Multi-modal Logistics Park. The strategy aims to strengthen whole-of-the-government approach -PM GatiShakti National Master Plan for holistic development of logistics infrastructure including seamless multimodal and intermodal infrastructures to economic zones. Industry 4.0 and smart supply chain ecosystem will play an important role in Logistics Performance Index which will boost India's rank to be among top 25 countries by 2030.

NLP also lays down the action to achieve three targets (i) to reduce cost of logistics in India to be comparable to global benchmarks by 2030; (ii) improving the Logistics Performance Index ranking and (iii) creating data driven decision support mechanism for an efficient logistics ecosystem; as Comprehensive Logistics Action Plan (CLAP). It will also support smart supply chain and efficient ecosystem through Integrated Digital Logistics Systems. This will enhance time and cost efficiency, interoperability, minimize handling risks, undertake process optimization, and improve ease of doing business eventually; and play a catalyzing role for realizing the outcomes of Industry 4.0.

After pandemic, the course of business has changed entirely. I am glad to learn that FICCI in its initiative is creating awareness about the integration of these new age digital technologies in core sectors. This will support in creating an efficient stakeholder ecosystem. I wish them great success.

(S.K.Ahirwar)

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Message by

Mr. Suprakash Chaudhuri
Chairman, FICCI Industry 4.0 Committee and
Executive Vice-President &
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Adverse supply chain events can have volatile outcomes for manufacturers and their customers. For example, the Covid pandemic, semiconductor chip shortages, along with wood, steel, and magnesium, escalated quickly to an unprecedented crisis. Other factors like weather, trade barriers, and economic wars, have continued to affect the manufacturing industry. In turn, businesses were searching for ways to resolve this predicament through local sourcing versus global sourcing, realigning supplier networks, ramping up inventories etc. One promising outcome amongst many others was the acceptance that technology and in particular Industry 4.0 solutions can have a larger role in the solving challenges in the global supply chain ecosystem.

As more companies adopt new technology and digitalize their operations, their supply chain will become more adaptive and resilient. Let us look at some of the technologies that are helping shape the future of supply chain and logistics.

Improved IT/OT collaboration

Secure communication, resulting in a secure exchange of data between Operational Technology (OT) and Information Technology (IT), is the backbone of digitalization. IT-OT convergence means combining the real world of automation with the digital world of information technology – as seamlessly and completely as possible. Breaking up information silos by combining IT and OT helps companies significantly boost their performance, productivity, flexibility, and sustainability.

Industrial engineers suggest that modern businesses need a proactive, cross-functional and collaborative approach, assimilating the best of both the IT and OT domains, to realize truly digitalized supply chain operations. It calls for joint development and adoption of systems and processes with universal applications. It treats the network as the strategic backbone for optimizing the flow of data - the lifeblood of a digital enterprise.

This collaborative approach has resulted in the incorporation of a wide variety of IT technologies, adapted to address various supply chain roadblocks.

Internet of Things (IoT)

In today's market, data is essential to achieve production and logistic goals: speed, efficiency and reliability. The starting point is to digitize the myriad processes. A data stream that flows into digital

applications and functions – that automatically performs tasks such as bundling, analyzing, and evaluating information will ensure end-to-end supply chain visibility. This kind of smart digital technology yields early-warning systems that provide a solid foundation for making impactful decisions. With the data, the manufacturer can also paint a picture of how their products are being used by customers. They can also better understand any issues within the value chain and what the customer is experiencing and identify opportunities for improvements. The result is a supply chain that is not only more resilient, it's also strong enough to cope better with unpredictable events.

Contrary to widespread belief, implementing an internet of things (IoT) strategy and leveraging digital transformation do not require significant up-front investment. Companies can start small and allow their business cases to drive the use of technology.

Digital Twin in Logistics

The Internet of Things (IoT) is ideal for a digital twin. A digital twin has a comprehensive database for optimizing objects or processes, combined with plant and machine data variations. In turn, this provides experimental values about a product's life or maintenance cycles – providing more value for networking in IoT.

The digital twin concept allows today's logistics experts to use an intelligent simulation and consulting model that runs through possible scenarios for the supply chain from start to finish, illustrating all resulting consequences on the basis of real corporate data. For example, what effect would a site relocation have on existing procurement and distribution processes? What consequences would the product assortment have on delivery frequency? How can the existing resources in a company be used in the best possible way? This is because a digital twin is a detailed virtual copy of the real network and the processes used there. It connects the operational level with the strategic decision level.

A digital twin is an essential element to the crucial building block of digitalization in logistics, for better utilization of resources, concept planning and reliable goal attainment.

Artificial Intelligence (AI)

Supply chain processes are strongly affected by digital transformation. The ultimate goal of digital transformation in this field is to create largely autonomous supply chains, with the ability to regulate themselves and decide how to react to events and changes. A key factor in this perspective is the systematic implementation of Artificial Intelligence in the supply chain. This is due to its wide applicability, and its ability to proactively deal with complex business problems along the entire chain.

AI makes it possible to exploit the value of data, and simultaneously highlight any critical issues present along the chain before they occur. It can also recommend prescriptive actions for a smarter and more agile supply chain. Going deep into an analysis of the impact of Artificial Intelligence in business production processes, we can include the ability to optimize stocks by increasing the accuracy of reordering policies; the predictive distribution to improve demand production planning; the automation of daily operations decisions; and finally cost reduction.

Software for Advanced Planning and Scheduling (APS)

In traditional manufacturing processes, production decisions are made in the planning stage. This is where choices are made about which items to produce and how often based on knowing which products will be

impacted by capacity issues and mitigating any impact of potential overstocks and disruptions to the release of the product. When this detailed step is missed, the most common result is higher inventories of some products and a lack of inventory for others. With Advanced Planning and Scheduling (APS) software in place, planning takes capacity into consideration to generate healthy stock levels and mitigates lost income from back-ordered, out-of-stock items. For early APS software adopters, this represents a substantial opportunity to rise above the competition and realize the benefits.

The circular economy

For a long time, logistics was all about one thing: the destination. But in the circular economy, the destination is just the beginning. For manufacturers, retailers, and logistics service providers alike: Processes previously focused on shipping, storage, and logistics services are converging into an industrial circular economy that also encompasses reuse, recycling, and related services. Logistics is now becoming the very heart of the circular economy with its digital tools and its inherent role as a hub for data and processes. The circular economy will only magnify the flood of data that supply chains need to steer into the right channels as traditional shipping data is augmented by details on the product's manufacturing process, recycling stage, or use history. This means a wealth of new product data that is then augmented, processed, or shared as needed. Manufacturing enterprises will need to develop tools for an efficient and transparent circular economy—from the sustainable extraction of raw materials to proper recycling—tracking the entire product lifecycle and all its value-added stages.

India situation The Government of India recently launched the National Logistics Policy. The policy is aimed to achieve three key goals:

1. Reduce the cost of logistics in India to the global average by 2030
2. Logistics Performance Index ranking – endeavor to be among the top 25 countries by 2030
3. Create data-driven decision support mechanism for an efficient logistics ecosystem

Amongst this, point number 3 is the most interesting as it involves marrying technology to the supply chain ecosystem. Blockchain, sensors, artificial intelligence (AI), satellite imaging and other technologies have emerged to help make supply chains more responsive, resilient, transparent and sustainable. These technologies are increasingly being integrated to digitize manufacturing and supply chains under the umbrella of Industry 4.0.

Technology can accelerate change—improving cost, reliability and customer satisfaction, yet knowing how and what to invest in may be tricky to navigate. With data integration with the overall production process as the backbone, enterprises can reliably answer questions relating to the future and take decisions to perform successfully in the market.

Message by

Mr. Rajeev Singh
Co-chairman, FICCI Industry 4.0 Committee and
Partner Management Consulting
Deloitte Touche Tohmatsu India LLP

Adoption of Industry 4.0 (I4.0) technologies continues to increase efficiency and reduce costs in the supply chain. The implementation of AI and ML algorithms is enabling companies to make real-time decisions based on data, resulting in improved supply chain management and reduce waste. The use of technologies like blockchain is improving transparency and accountability, allowing companies to track the movement of goods more easily and reducing the risk of fraud and counterfeiting. Bringing supply chains online is helping enterprises reach the next level of operational effectiveness and realize significant cost reductions.

Recent disruptions to the supply chain have acted as an accelerator, and according to a report, 42% of supply chain enterprises have fast tracked their digital transformation plans due to Covid and 90% of the companies have started their digital journey. Supply chain businesses that have already embraced technology are likely to face minimal interruptions and can steer ahead of their competitors.

Industry 4 and digital supply chain is increasing efficiencies across many dimensions, and the same is demonstrated through some real-world examples

- Data driven vehicle monitoring and optimization: An Australian freight company used data mining to implement analytics-based safety and fleet optimization. This led to a reduction in fleet costs of 9-17 % through fuel economy and reduced idling along with a 90% reduction in safety incidents.
- Improved efficiency and decision-making across the supply chain: A large consumer packaged goods company integrated automated data feeds, daily updates, and key metrics across multiple data sources to achieve end-to-end supply chain visibility. This gave them the ability to predict and prevent future disruptions across functional silos, leading to $13 million in revenue growth in just six months through improved customer service.
- Cost Reduction in Operations: A leading automotive OEM implemented an IIoT-based factory intelligence platform across their manufacturing plants in the US. The global infrastructure enabled a scalable application platform, enterprise insights, data streaming, and workflow

automation. The company started small by launching pilot projects in three key plants and saved US$4.8 million in one year.

- Blockchain-based tracking: A shipping company used blockchain to manage freight tracking. Through collaboration with customs authorities, the shipping company streamlined the approvals process by creating a secure record of transactions and approvals and reduced the time needed to transport goods.

Presently in India, the supply chain ecosystem in I4.0 is growing, and supply chain stakeholders have huge potential to tap into and create value from the ecosystem, The ecosystem will help in building synergies amongst various business functions, leading to faster implementation of actions and creating a more efficient, flexible, and agile system that can respond quickly to changing market conditions and customer demands. Digital supply chain ecosystem is also opening avenues for creating new revenue sources through data monetization, personalized products and services, predictive analytics, improved customer engagement, and new business models.

The integration of I4.0 technologies into the supply chain in India presents both opportunities and challenges. While it has the potential to improve efficiency and reduce costs, it also requires a significant investment in digital infrastructure, skilled workers, and technology. Challenges related to interoperability, data security and lack of a reference standard also hinder the adoption of these technologies

The Indian government has been taking steps to improve the country's digital infrastructure and has launched several initiatives to improve internet connectivity and brought in policies to promote the development of the digital economy. The government has also set up several training and skilling programs to help bridge the gap in the availability of skilled professionals.

The FICCI Industry 4 committee is also playing a key role in the adoption of Industry 4.0 in Industry by identifying focus verticals and clusters to promote adoption of I4.0 technologies, increasing awareness about Industry 4.0, creating a platform for sharing best practices and use cases amongst the industry and bringing the ecosystem together. The Industry 4.0 committee also plans to address the other challenges faced by industry by creating reference standards, architectures, norms, bringing in a legal framework and ensuring the security of networked systems

This FICCI newsletter explores the role of I4.0 for efficient supply chain and ecosystem. I hope this newsletter will help spread awareness on building predictable and efficient supply chain systems and will take Indian industry one step closer to realizing their digital vision

Efficient Industry 4.0 Ecosystem in Textile Sector

Mr. Manmohan Singh
Chief Marketing Officer, Grasim Industries and Director, Birla Advance Knits

Textile Industry: At the Cross Roads

Textile Industry has gone through significant change since beginning of Industrial revolution in 18th century. Every phase of the industrial revolution has seen significant technological transition in the textile industry across the value chain. The textile industry is at the cross roads and the transition to Industry 4.0 for has been faster than ever, to respond consumer preferences and at the same time needs to be more efficient and sustainable across the ecosystem of the entire textile value chain from Spinning, Weaving, Finishing and Garmenting.

Mega Trends in Textile & Apparel Industry driving adoption of Industry 4.0

The new fashion trends have been inclined towards automation and efficiency in production as well as gaining scale in advance material, robotics, nanotechnology, AI, IoT. The mega trends mentioned below are key drivers to adopt to Industry 4.0 for Textile and Apparel Industry.

Change in Consumer Fashion trends

Fashion preferences of consumers are changing at fast pace which was earlier influenced by seasonal changes. It is now more personalized and customized resulting in offering new design in short duration and frequent change of garments at the retail self. This shift towards personalized fashion has helped in adoption of smart manufacturing technology focusing on 3 C's - cost, competitiveness and closeness in manufacturing and supply chain. Consumption patterns are constantly shifting and some truly disruptive models such as subscription or pay-per-use systems for a broad range of consumer products will impact the textile and clothing sector. The rise of the collaborative or sharing economy enabled by collaboration platforms will provide new opportunities for textile and clothing businesses.

Change in business model: B2B2C/ D2C

Fashion industry is moving to a shorter shelf life with frequent and faster launches of SKU's. It has forced

the brands to shift from SKU's depth to SKU width. This leads to higher number of changes over and a result operational performance face multiple challenges; lower efficiency, lower yield and higher COP and on the other hand margin pressure, sustainability matrix. It is dilemma which is expected to continue.

Digitisation of design, manufacturing, distribution, consumer/end user interaction or even the product itself has the potential to upend established business models or turn traditional supply chains on their head. Online distribution and direct virtual channels to the consumer reduce the need for middlemen (agents, wholesalers, shop assistants etc.) and enable designers and producers to collect direct feedback from end users and provide value-adding services around their products.

Transparent Supply Chain

Transparent supply chains which demonstrate compliance with environmental, health and social legislation, standards and best practices will have to become the norm. Consumer want to know the entire sourcing journey on geo map about what is getting? and from where it is being sourced? carbon foot prints? environmental foot prints? ethical practices followed by Brands etc.

Sustainability and Circularity

Sustainability, with its economic, environmental and social dimensions, challenges many of today's operations in the textile and clothing industry. Greater efficiency and responsibility in the use of resources whether they are materials, water or energy will have to be managed and proven by companies of all sizes. Fast changing fashion trends where manufacturing is adopting to Industry 4.0 technologies like robotics, AI, machine learning, there is a clear focus to achieve sustainability not just limited to the manufacturer and brands. There is huge traction with consumer awareness about the impact of product lifecycle on the environment.

Interconnected: Traditional Business Model & Digital Technology

Traditional fashion business models were based on design, for which industry 4.0 technologies can create smart networks. digital technologies help to enable the interactions among co-workers through platforms and thus, different fashion producers can easily exchange knowledge which is considered as on-site production business models. Furthermore, transition towards innovative smart manufacturing changes textile industry system from market-driven to the ready-to-wear model which also increases the interaction between companies and consumers.

Digitization @ Birla Cellulose

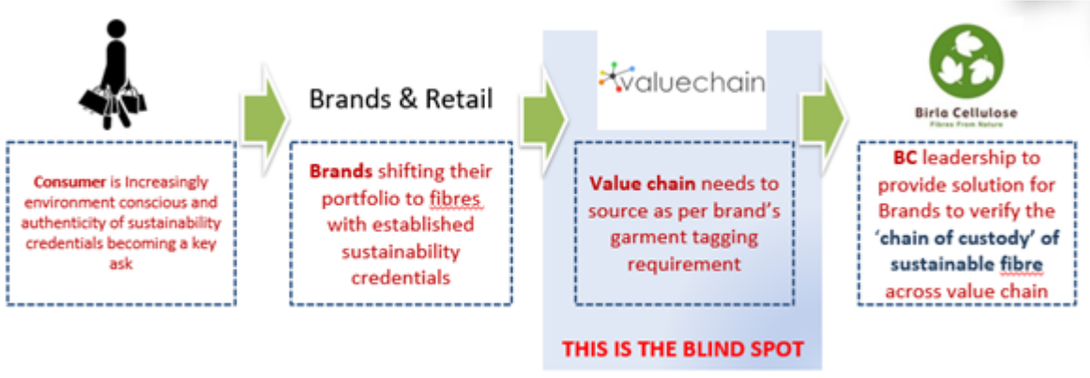
Birla Cellulose is at the fore front of using “Smart factory” and “digitization”. We at Birla Cellulose adopted 5 principles to build long term strategy with a vision to adopt “Smart Manufacturing” principles. Responsible Sourcing, Responsible Manufacturing, Sustainable Products, Valuable Partnerships and Social Responsibility.

Birla Cellulose Solution: End to end traceability to our consumers through block chain technology

Consumer is increasingly conscious to use fashion that has least environmental impact and naturally

sustainable, this is leading to demonstrate sustainability credentials of garments for the consumer's satisfaction instantly. To provide highest level of transparency on how the garment is made and it will have end of life cycle, fashion brands are demanding the textile value chain to provide complete transparency and verification credential across the value chain of the garment.

To meet the requirement of consumer, Birla Cellulose designed and initiated inhouse Chain-of-Custody traceability solution across value chain – Green Track™. Green Track™ platform captures complete traceability of the value chain starting origin of the fresh pulp source to final garment in a transparent manner through block chain technology.



Green Track™ Flow:

brand orders are onboarded to the Green Track™ platform. Consumer can track fibre to garment through a QR code provided in the garment tag.

We were recognized in NASSCOM CoE Excellence award and Forbes Top 50 Blockchain based solutions in the world in 2021.

Game changers and long shots beyond 2025

Below mentioned innovations trends are truly game-changing and it will enable paradigm technological shift in the textile and clothing sector

- Introduction or scale up sustainable / renewable fibres which can offer similar attributes / credentials against natural fibres as natural resources are limited.
- Development of efficient on-demand production units for yarns to fabrics, fully digitised and equipped with a highly versatile modular material feeding system, similar to cartridges of a digital printer or capsules of a coffee machine. This would enable on-demand lot size production of personalised fashion products.
- Fully integrated, automated and digitised production units for clothing, bags, accessories and other assembled textile-based consumer products at the point of sale or use. This will allow rapid design, textile production or at least colouration and finishing, product assembly, packaging and delivery of single piece personalised fashion products very near to where the end consumer lives, works, shops or travels. It will replace slow, complex and wasteful global supply chains for such products.
- Distributed small-scale textile recycling systems for rapid and cost-effective separation, disassembly, dissolution, biodegradation or other transformation processes of end-of-life textile products into valuable inputs for a next productive lifecycle, enabling a truly circular economy at local scale.
- Complete virtualisation of the human-textile interaction allowing realistic digital communication of all aspects of a textile or clothing product including visualisation, fabric behaviour, fit and haptic sensation.

Advantage India

India is in very high advantageous position to adopt the changing trends and textile value chain is inherently frugal and capable to produce and deliver smaller MOQ with high quality of global standard. To register next growth downstream value chain, need to be cost competitive by reducing local logistic cost (fragmented value chain) and at the same time fast forward the latest technology adoption specific to downstream value chain.


NATURALLY
FLUID
NATURALLY
YOU
NATURAL ORIGIN FABRICS FROM LIVA!
liva
natural fluid fashion
LOOK FOR THE LIVA TAG IN ALL LEADING APPAREL BRANDS

Industry 4.0 for Efficient Ecosystem and Supply Chain

Mr. Sunil Kumar Chaturvedi
Chairman and Managing Director,
Gainwell Commosales Pvt. Ltd.

We live in a VUCA (volatile, uncertain, complex and ambiguous) world that is constantly evolving and becoming more unpredictable each day. Historical forecasts and past experiences are relevant but not sufficient for forecasting. At the same time, an increasing number of events are testing the resilience of businesses. From an evolving geo-political landscape, a technology revolution taking hold, to the transforming nature and pace of our working environment in the aftermath of the global pandemic - we see elements continuing to disrupt businesses, changing traditional supply chain models and relationships.

The global digital transformation market is expected to grow from USD 470 Billion in 2020 to USD 1 Trillion by 2025, at a CAGR of 16.5%. Within this, the Asia Pacific region is likely to have the highest CAGR of 20.7%. Businesses have increased their focus on digitisation which has transformed the supply chain ecosystem, enabling organisations to become more efficient, responsive, and competitive in a rapidly changing business landscape. Intelligent supply chains are enabling stakeholders across organisations to make informed decisions based on the same data. This real-time transparency is enabling companies to respond more swiftly to disruptions and minimize risk.

According to a recent study by McKinsey & Company, Industry 4.0 is expected to have a major impact on the global economy in the coming years. By 2025, the adoption of Industry 4.0 technologies can result in a 20-25% increase in productivity and a 15-20% reduction in supply chain costs. These projections indicate the tremendous potential of Industry 4.0 and its ability to transform various industries.

Enablers like IoT devices and sensors capture and share data, which is stored and organised in the cloud, where analytics and AI are applied to improve business decisions. This is enabling organisations to progress from 'what is happening now', to 'what will happen next', to finally addressing 'what should happen next'.

Digital technologies can play a crucial role across the logistics value chain to bring in operational efficiencies, enhance safety and transparency and rationalise costs. Globally, many experiments of implementation of smarter technologies such as autonomous vehicles, drones, and robots are changing the way businesses are procuring and transporting inputs used on job sites. Autonomous and semi-autonomous haulage systems are being used to transport materials, reducing the need for manual intervention and increasing safety on job sites. Drones are demonstrating a potential use case for inspections and surveying of sites, providing real-time information and reducing the need for manual inspection.

As a capital equipment solutions provider, we have been contributing to India's infrastructure build-up over the last 8 decades. To take our company Gainwell's example, on the principle of Internet of Things (IoT), over 90% of our assets today are fitted with equipment management sensors used to monitor asset health and operation in real time throughout the value chain. Based on the real-time data received from these assets, we have designed predictive models that forecast demand for parts and services, level of utilisation of equipment and detect risks pertaining to impending failures. This helps us plan parts and service delivery well in advance. Our shipments are GPS tracked and RFID tagged to support on-time and reliable delivery. The next generation of touch, voice and graphical user interfaces on mobile platforms are also transforming our future offerings and customer interface. We are working on our next generation platform- 'Gaincare' where we intend to leverage artificial intelligence to create digital twins of our assets on ground and provide our customers on-demand real time insights on asset quality, remote service delivery and inventory management.

Procurement operations are also undergoing a massive transformation with the advent of Industry 4.0. The traditional methods, which involved manual processes and paperwork, are being replaced by digital procurement systems. These systems use big data and sophisticated machine learning algorithms to analyse data, forecast demand, and make informed purchasing decisions. We are increasingly using deeper layers of data at Gainwell to analyse procurement trends, manage inventory and take pre-emptive action to improve forecasting accuracy.

Digital transformation is not merely a strategy to maintain competitive advantage; it is a survival kit in this ever-evolving global environment. More agile supply chains are the need of the hour and delivering smart customer experiences is critical. While the upfront investment required to implement Industry 4.0 levers is high, the payoffs are worth it. It is imperative for organisations to incubate the right capabilities to transform digitally, foster a culture of innovation and invest in the right technological stack, enabling them to take the digital leap.

Case Study

Rashid Hashim
Vice President & Head Manufacturing

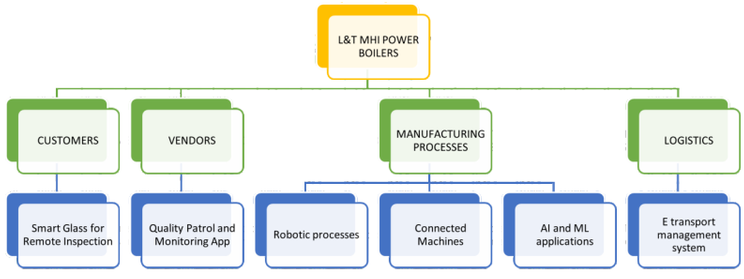
L&T MHI Power Boilers Pvt. Ltd. – Hazira, Surat – Manufacturing Facility

Customer centricity has now become a way of life for business sustenance

Developing and adopting innovations that add value to the customer at every stage of the supply chain is the need in an era of knowledge. This has become a way of life for us at L&T MHI Power Boilers Pvt. Ltd., (LMB)a joint venture between Indian conglomerate Larsen & Toubro Ltd. and Mitsubishi Heavy Industries – Japan and engaged in design, manufacture and construction of Ultra supercritical power plants, having our works at the A M Naik Heavy Engineering complex, located at Hazira, Surat. The complex houses several other units of L&T and serves the Petrochemical, Hydrocarbon, Defence, Nuclear and Green Energy businesses.

At LMB Hazira, we are constantly and continuously adopting various technologies that are adding value to our processes. In 2017, we launched a massive Digitalization drive to improve our overall efficiency. The team had a thorough study of various day-to-day activities and identified mundane activities that can be automated, digitalized with Industry 4.0 of technologies. Usage of Industry 4.0 technologies has led us to leverage our skills, build in agility and at the same time bring in transparency and trust among the stakeholders.

Industry 4.0 use cases in Eco-system of L&T MHI Power Boilers:



Smart Glass for remote inspection by customers:

The imposition of lockdowns and travel restrictions during the COVID-19 pandemic limited the traditional inspections methods. We had to go an extra mile to take our customers into confidence with “You see, what I See - through a pair of Smart Glasses”. Smart Glasses have replaced our conventional method of inspection and these maturing technologies are fundamentally transforming the inspection process. There was no wait or delays caused due to unavailability of customer representatives or inspectors. This has helped us achieve stringent project deadlines despite disruptions. Plant wide wifi availability ensured our adoption unhindered.

ENSURING CUSTOMER DELIGHT

ZERO-MINUTE OUTAGE ON INSPECTION FOR CUSTOMER HOLD POINTS EVEN DURING THE PANDEMIC

Quality Patrol Application at Vendor and Shop Floors:

As part of stringent quality standards, structured Audits are conducted by our Quality team to ensure adherence to standards and processes at our shop and vendor works. The conventional Patrolling involved a lot of documentation, photo compilation and close monitoring of the corrective actions. Hence our team has curated a web-based application “The Quality Patrol Application (QPA)” to make the Patrolling process smart. The Quality Patrol Audits through QPA on inspectors' hand-held devices ensures real time data capture to keep our processes under control. This adoption has led to cross knowledge sharing and real time data available in dashboard formats to evaluate objectively the performance.

Robotic Operations at Shop Floors:

One of the critical operations in boiler manufacturing is the welding of High pressure (due to high operating pressures in the range of 260 bar) piping and other components. These were traditionally welded by highly skilled welders who are trained and reach the desired competency levels after about 8/10 years. Adoption of robotics in such welding has given us an opportunity to reduce the dependency on highly skilled welders and the consequential health related problems. A unique bespoke welding robot was developed in collaboration between our team and the Equipment supplier. This has yielded a 60% improvement in productivity along with deskilling of the operator. This Nozzle welding robot is IOT enabled and the first of its kind to suit the 3D contour of our design.

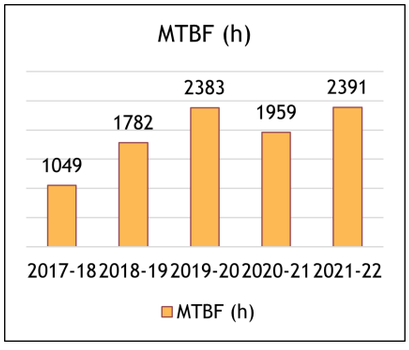
SYSTEM DESCRIPTION

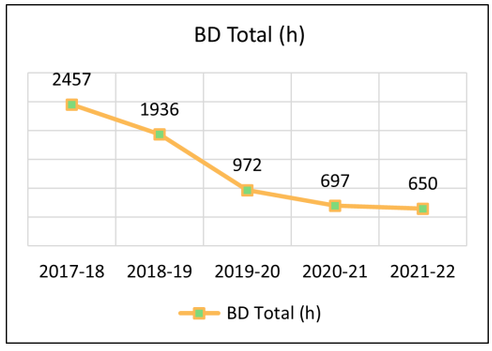
- Robot, Positioner, Linear Track
- IOT enabled Lincoln welding power source
- 9 Axis system
- Range of Job weight:
- Max. - 10 MT
- Range of Length of Pipe:
- Min. - 750mm.
- Max. - 6000mm.
- Range of Diameter:
- Min. - 219mm.
- Max. - 1000mm

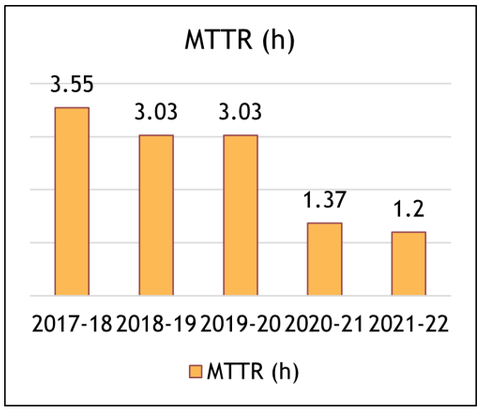
Connected Machines at Shop Floors:

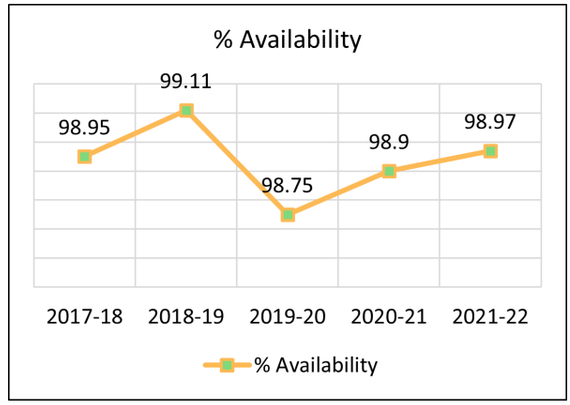
The factory has several machines whose availability was in the range of 98% due to a robust maintenance program and the culture of TPM. A paradigm shift from Preventive to Predictive Maintenance was strongly felt and we embarked upon the journey of Connected machines. So critical machines are set up with sensors to track, monitor its key parameters and real time data capturing. This includes a home-grown technology that will connect all the machines, record key parameters, which in turn gets analyzed to form a condition-based monitoring system of machines. Here a multi-faceted approach is deployed which monitors the performance, gives manufacturing analytics, and predicts breakdowns based on machine learning models. The following graphs depict the availability and performance of machines over the years.

Use of Machine Learning at Shop Floors:

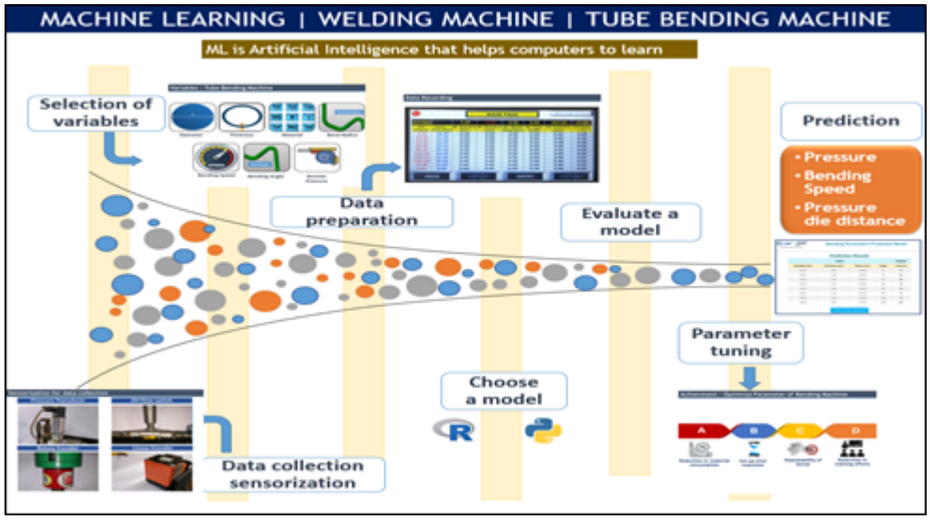








Various processes in shops and machines require First off trials on the sample job for obtaining desired parameters prior to mass production clearance . Usually this is done by experienced and skilled machine operators, who are trained in the process or machine. One such case is of bending machines where the trials taken to achieve the desired dimensions and quality standards were skill based. With past data and results obtained, AI and ML model was developed to predict the values of parameters to achieve the best possible result. This methodology of ML and model development is also applied in estimating the cost of new enquiry of products. This involves specific rules and is accurately predicted for ensuring profitability in a project.



E Transport management system at Logistics:

For any business to excel, its supply chain needs to be flexible and agile. A lot of effort is required in the communication and data collection for logistics purpose. Placement of the right vehicle, tracking and ensuring timely delivery are challenges often faced. A home grown E transport management system – where in an integrated system involving request generation, compilation, location based sequencing, and

other logical functions are done has helped reduced the burdens associated in transportation and reduced cost.

Industry 4.0 adoption has made us agile and responsive:

The few cases mentioned in this article are a reflection of the adoption of technology requiring a Leadership vision and the team`s dedicated efforts. It is pertinent to mention here that the development has been achieved by our own employees by learning and acquiring new skills. An eco-system of human capital coupled with adoption of emerging technologies is ensuring that value is added to the end customer at every stage.

Global News Articles Industry 4.0

MicroEJ, Schneider Electric accelerate software-defined energy infrastructure

MicroEJ, the leading independent provider of software containers for IoT and embedded devices, announced today that Schneider Electric, the leader in the digital transformation of energy management and automation, chose MICROEJ VEE software container to expedite the creation of software-defined energy infrastructure by leveraging software containerization in Schneider Electric's Industrial IoT (IIoT) products.

Link - https://www.businesswire.com/news/home/20230207006060/en/MicroEJ-and-Schneider-Electric-Accelerate-the-Software-Defined-Energy-Infrastructure

Identiv, STMicroelectronics partner to offer NFC services

Identiv, Inc., a global provider in digital security and identification in the Internet of Things (IoT), has announced an expansion of its partnership with STMicroelectronics (ST) to offer new near-field communication (NFC) inlays for luxury goods, wine and spirits, healthcare, pharmaceutical, medical devices, consumer packaged goods, apparel, and smart packaging applications for any industry.

Every day, millions of people use NFC technology to connect physical objects to the surrounding digital world, setting data in motion – reading and writing data to an embedded NFC tag. The technology has evolved to something people rely on daily to navigate the world via NFC-equipped smartphones and wearables. Identiv now offers specialised NFC and high frequency (HF) designs with cost-effective ST25TN Type 2 NFC chips from ST, strengthening Identiv's position as a global provider in RFID/NFC technology.

Link - https://www.iot-now.com/2023/02/14/127772-identiv-stmicroelectronics-partner-to-offer-nfc-services/

Kigen, Skylo bring eSIM, satellite connectivity to expand the potential of 5G IoT

Kigen, a global security provider in IoT enablement with its SIM, eSIM, and iSIM technology solutions, and Skylo, a satellite network or non-terrestrial network (NTN) operator focused on connecting anything, anywhere, are together making satellite connectivity integration for device makers, allowing for transitions between cellular and satellite connectivity via Skylo's SIM profile.

This combination is particularly for devices used in challenging environments, where relying on terrestrial cellular networks alone can be problematic, and is being adopted by market providers in rugged technology, Bullitt.

Link - https://www.iot-now.com/2023/02/14/127783-kigen-skylo-bring-esim-satellite-connectivity-to-expand-the-potential-of-5g-iot/

Slashing power consumption with more informative energy bills

Seamless mobile coverage is integral to the effectiveness of the Internet of Things (IoT) when integrated with energy management systems, as Stuart Waine of Spry Fox Networks explains.

Over the last few years wholesale gas prices have increased by a factor of 14, and electricity prices by a factor of 8. Increasing demand, limited supplies, a shortage of storage space and the conflict in Ukraine mean energy prices are still skyrocketing and bills are causing real angst for households and businesses alike. Moreover, Centrica (owners of British Gas) has warned that energy price volatility in the UK is likely to continue for the foreseeable future and there is serious concern that many commercial organisations will soon be reaching the end of their existing fixed price contracts. Some have already seen their energy costs rise by more than 100%. With energy inflation set to continue, never has there been a more compelling need for business owners to better understand their energy usage simply to retain the bottom line.

Link - https://www.iot-now.com/2023/02/09/127642-slashing-power-consumption-with-more-informative-energy-bills/

Winners of the 2023 IoT Global Awards Announced

The 2023 IoT Global Awards programme has been unlike any other. In a year of unprecedented turmoil and change, enterprises and individuals across the Internet of Things (IoT) sector have stepped forward, using their expertise and ingenuity to combat many business challenges, including those presented by the Ukraine war. Now, the IoT Global Awards have become an industry benchmark for excellence in the Internet of Things, honouring the most innovative companies, products and individual talent in 11 IoT industry categories.

Link - https://www.iotforall.com/press-releases/winners-of-the-2023-iot-global-awards-announced

Using IoT Data to Generate Recurring Revenue Opportunities

The Internet of Things (IoT) has been forecast to be larger and more significant than the emergence of laptops, mobiles, and tablets, all put together. However, in spite of the IoT's enormous popularity and growth, most organizations fail to cash in on the service revenues from their IoT solutions. You need to bear in mind that the IoT is all about data; it is the services model that will help organizations monetize and build successful recurring revenue models. In this blog, you will learn how just monetizing the IoT is not enough, but building recurring revenue billing models can help you gain the maximum benefits from all that the IoT has to offer. Read on to find out more.

Link - https://blog.externetworks.com/using-iot-data-to-generate-recurring-revenue-opportunities/

How can IoT manufacturers benefit from adopting Rust?

The Internet of Things (IoT) domain is at the forefront of global technological growth. However, many companies still face many barriers stopping them from adopting IoT technologies. Referring to a Bain & Company Technology Report 2022, 39% of 490 survey respondents chose information technology (IT) / operation technology (OT) integration as the biggest obstacle in 2022, hampering them from full-blown IoT adoption. Basically, IT/OT integration is about smooth interaction between hardware (OT) and software (IT) components, which is sometimes difficult to achieve and requires lots of effort.

Link- https://www.iot-now.com/2023/02/06/127517-how-can-iot-manufacturers-benefit-from-adopting-rust/#:~:text=Since%20Rust%20has%20a%20fast,new%20devices%20all%20the%20time

European Commission wants Industry 5.0 with 'human touch'

The European Commission has spelt out what it wants from Industry 5.0 with the help of IoT. Antony Savvas reports.

At this week's IoT Solutions World Congress in Barcelona, which IoT Now is attending, Sean O'Reagain, deputy head of Industry 5.0 at the Commission, demanded a replacement for Industry 4.0 with a “more human touch”.

O'Reagain said in a keynote to attendees, “We want to future-proof industry by making sure it chimes with our green deal industry plan and our net zero targets.

Link- https://www.iot-now.com/2023/02/01/127380-european-commission-wants-industry-5-0-with-human-touch/

Why ESG is important for big players in the IoT world and how IoT can help to achieve ESG goals

ESG stands for Environmental, Social, and Governance. It's a framework to assess an investment's sustainability and societal impact on a company or organization.

Companies, investors, analysts, and rating agencies use ESG analyses to evaluate a company's overall sustainability and potential for long-term growth and its exposure to environmental, social, and governance risks. Investors can better understand a company's operations, risks, and opportunities by considering these three areas.

Link - https://www.iot-now.com/2023/01/27/127207-why-esg-is-important-for-big-players-in-the-iot-world-and-how-iot-can-help-to-achieve-esg-goals/#:~:text=ESG%20and%20IoT%20%E2%80%93%20How%20IoT%20can%20help%20to%20achieve%20ESG%20goals&text=Energy%20efficiency%3A%20IoT%20sensors%20or,emissions%20and%20lower%20energy%20costs

India News Articles Industry 4.0

Würth Elektronik Joins Hands with Crypto Quantique for IoT Security

Global electronic manufacturer Würth Elektronik recently signed a partnership agreement with Crypto Quantique, a leading player in quantum-based cyber security in the Internet of Things (IoT), to enhance security for Würth's wireless modules.

The partners believe that combining Crypto Quantique's QuarkLink security software platform with Würth Elektronik's wireless modules enables automatic and secure connection of thousands of sensor nodes to local or cloud-based servers. The official note mentioned that the platform allows device provisioning, onboarding, security monitoring, renewal and revocation of certificates and keys, performed with a few keystrokes on a GUI. It further said that the users have all the functions at their disposal required to manage IoT devices in their lifecycles.
Link –https://www.electronicsb2b.com/important-sectors/internet-of-things/wurth-elektronik-joins-hands-with-crypto-quantique-for-iot-security/

eInfochips leads in 2022 Zinnov Zones Engineering R&D Services ratings

eInfochips, a provider of product engineering and digital transformation services, announced on Friday that it has been named a leader in the overall Engineering Research & Development (ER&D) and Internet of Things (IoT) Industry 4.0 and Semiconductor segments in the recently released 2022 Zinnov Zones ratings.

Link - https://economictimes.indiatimes.com/small-biz/sme-sector/einfochips-leads-in-2022-zinnov-zones-engineering-rd-services ratings/articleshow/97792196.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Union Budget 2023: Centre bets big on Artificial Intelligence, IoT

In Budget 2023, the Centre proposed a series of measures like Centres of Excellence for Artificial Intelligence to unleash the potential of our economy and realise the vision of "Make AI in India and Make AI Work for India".

Three such centres will be set up in top educational institutions. Leading industry players will partner in conducting interdisciplinary research, develop cutting-edge applications and scalable problem solutions in the areas of agriculture, health, and sustainable cities, Finance Minister Nirmala Sitharama said during her Budget Speech.

Sitharaman added that the National Data Governance Policy will enable anonymised data and the KYC process will be simplified by adopting a risk-based system.

Link- https://www.business-standard.com/budget/article/union-budget-2023-centre-bets-big-on-artificial-intelligence-iot-123020100505_1.html#:~:text=In%20Budget%202023%2C%20the%20Centre,up%20in%20top%20educational%20institutions.

Internet of Things (IoT) Internship In Surat At Anantkaal

Anantkaal is for anyone who wants to explore themselves and the talent they possess. And if this place helps even one person fall in love with art, or uncover their passion, it would have all been worth it.

We are a community of artists, thinkers, dreamers, travelers, storytellers, and anyone with a groove in their souls for building something at scale, anyone filled with joie de vivre, and anyone with a passion for creative things.

We want to bring art into our daily lifestyles, with the software and hardware products that we create with our sub-ordinate clients.

Link- https://internshala.com/internship/detail/internet-of-things-iot-internship-in-surat-at-anantkaal1674808602

Chennai-based Denvik Technology Raises Undisclosed Fund For Global Expansion

Denvik Technology, a Chennai-based provider of cutting-edge IoT solutions raises a strategic investment round led by CI Hub, an investment firm that invests growth capital in high potential Indian companies to help them accelerate their global expansion.

The investment will be used by Denvik to expand their customer base for Industrial IoT solutions further in Europe and the MENA region (Middle East, North Africa), scale the team and accelerate market adoption of their latest IoT-driven smart solution for the global poultry farming market.

Link- https://bwdisrupt.businessworld.in/article/Chennai-based-Denvik-Technology-Raises-Undisclosed-Fund-For-Global-Expansion/26-01-2023-463383/

Indian IoT provider Quantela targets US smart cities with T-Mobile NB-IoT bundle

India-based IoT provider Quantela has signed a deal with T-Mobile in the US to bundle the carrier's cellular IoT airtime with its smart-city solutions. Quantela is focused on cities and utilities in the US, it said, particularly in the smart street-lighting space.

The firm said the partnership will enable a more competitive IoT offering in the U.S. market. Quantela's NB-IoT street light controllers will be connected to T-Mobile's NB-IoT network in the US. Its management platform offers reduced capital and maintenance costs for street lighting networks, it reckons, via lower energy consumption and truck-rolls, as well as greater network security and coverage versus non-smart LED lights.

Link - https://www.rcrwireless.com/20230103/carriers/t-mobile-us-inks-iot-collaboration-quantela#:~:text=India%2Dbased%20IoT%20provider%20Quantela,the%20smart%20street%2Dlighting%20space

MediaTek Expands IoT Platform with Genio 700 for Industrial and Smart Home Products

Ahead of CES 2023, MediaTek has announced the latest chipset in the Genio platform for IoT devices, the octa-core Genio 700 designed for smart home, smart retail, and industrial IoT products. The new chipset will be featured as part of a demo at MediaTek's booth at CES 2023.

With a focus on power efficiency, the MediaTek Genio 700 is a N6 (6nm) IoT chipset that boasts two ARM A78 cores running at 2.2GHz and six ARM A55 cores at 2.0GHz while providing 4.0 TOPs AI accelerator. It

comes with support for FHD60+4K60 display, as well as an ISP for better images.

Link- https://www.smarthomeworld.in/mediatek-expands-iot-platform-with-genio-700-for-industrial-and-smart-home-products/#:~:text=Ahead%20of%20CES%202023%2C%20MediaTek,MediaTek's%20booth%20at%20CES%202023

World's Smallest LTE-M/NB-IoT Connectivity Platform

Skyworks and Sequans have jointly developed the SKY66431, the world's smallest LTE-M/NB-IoT connectivity platform for IoT Communication Systems. The SKY66431 is a highly integrated multi-band, multi-chip SiP supporting 5G Massive IoT platforms, offering high-performance connectivity with ultra-low power consumption. The SiP can reduce the design complexity while providing high-performance end products, reducing the cost of development and accelerating time-to-market. The IoT platform is suitable for use in utility meters, asset trackers, security and alert systems and other battery-powered devices such as wearable medical and fleet management.

Link - https://www.electronicsforu.com/news/new-products/worlds-smallest-lte-m-nb-iot-connectivity-platform

Samsung R&D Institute Launches Innovation Campus Program

Samsung R&D Institute Bangalore (SRI-B) recently inaugurated the Samsung Innovation Campus program at the Cambridge Institute of Technology (CIT) in Bengaluru to upskill youth in future tech domains such as Artificial Intelligence, Internet of Things, Big Data and Coding & Programming. As a part of this initiative, Engineers from Samsung R&D Institute Bangalore will mentor the faculty at CIT to bridge the industry-academia gap. This initiative, stated the company, strengthens Samsung's commitment towards the Government's Skill India initiative as part of its vision of #PoweringDigitalIndia.

Explained: What is Matter, the new standard for smart home IoT devices

The Connectivity Standard Alliance (CSA), which creates and evolves universal open standards for Internet-of-Things (IoT) devices, on November 3 announced Matter. It is a new protocol created to have a common standard for the interoperability of Internet of Things (IoT) devices. The idea of Matter was first discussed in 2019, and now there are more than 200 member companies – including Apple, Google, Samsung, Ikea – backing the new standard

Link- https://www.business-standard.com/article/technology/explained-what-is-matter-the-new-standard-for-smart-home-iot-devices-122110700526_1.html

Tata Comm to 'Hive Off' Its Non-network IoT Business

Tata Communications has entered into a business transfer agreement (Agreement) for sale/transfer/hive-off of the Company's non-network Internet of Things business comprising of Device, Application, Platform and Managed Services components (identified business undertaking) to its wholly-owned subsidiary, Tata Communications Collaboration Services (TCCSPL) as a going concern on 'slump sale' basis.

Link- https://www.business-standard.com/article/news-cm/tata-comm-to-transfer-its-non-network-iot-biz-to-tata-communications-collaboration-services-122121400307_1.html

Hardware security: A vacuum to be filled by Indian startups in the IoT era

A group of researchers at the head office of the Data Security Council of India (DSCI) located in a cozy

neighborhood of Noida are generally busy dissecting various smart devices from an automated table fan to a smartwatch, to name a few. They aim to find out the security vulnerabilities of the chipsets used in these devices.

Link- https://www.business-standard.com/article/technology/hardware-security-a-vacuum-to-be-filled-by-indian-start-ups-in-the-iot-era-122120700786_1.html

EY, Software AG to help organisations digitise and transform using BPM, IoT and integration platforms

The EY organization has announced an alliance between Ernst & Young LLP (EY India) and Software AG, a enterprise software and technology company with a suite of products across business process management (BPM), integration and application programming interface (API) management and Internet of Things (IoT). The EY-Software AG Alliance helps organisations improve growth through digital.

Link - https://www.iot-now.com/tag/ey-2/

How Agritech Startups Are Leveraging AI & IoT To Reinvent Agricultural Sector

Over the last decade, the Indian agri ecosystem has gone through a rapid transformation. This feat was made possible due to the advent of the agritech segment, by creating investment opportunities and increasing production and logistics efficiencies.

Advances in agritech are hugely relevant to India's economy today. The agriculture sector, which is worth $370 Bn, continues to remain the primary source of livelihood for more than 40% of the population while contributing 19.9% (FY 2021) to the national GDP.

Link- https://inc42.com/resources/how-agritech-startups-are-leveraging-ai-iot-to-reinvent-agricultural-sector/#:~:text=Crop%20%26%20Soil%20Health%20Monitoring%3A%20Businesses,pest%20attacks%2C%20and%20the%20likes

2ND FICCI INDUSTRY 4.0 AWARDS 2023

Last date of submitting application:
15TH APRIL 2023

ANNOUNCEMENT

FICCI Industry 4.0 committee under its digital initiative of spreading awareness & competitiveness in industry 4.0 technologies is rolling out the application for
2nd FICCI Industry 4.0 Awards 2023

ABOUT INDUSTRY 4.0 AWARDS

FICCI i4.0 Awards are presented to organization for the recognition of their commitment towards digital journey of their projects/ workplace. The purpose of the awards is to benchmark successful digital practices along with robustness of the digital systems to enable domestic industry and MSMEs to stand up to emerging global challenges in the area of Smart Manufacturing and Industry 4.0.

ELIGIBILITY AND AWARD CATEGORIES:

Applications are invited from organizations (Manufacturing including Oil & Gas sector, Construction, Mining, Power & Services sector) which are on the path of digital transformation and would like to show case their achievements. Multiple units of the organizations can apply for these awards. The categories for the awards are as follows:

A. Overall digital transformation program (Site specific)

B. Focused digitalization projects

- Smart Product (Intelligent Product)
- Smart Services
- Smart Operations
- Smart Supply-chain
- Smart Customer Experience
- Smart Business Functions

THREE STAGES OF ASSESSMENT:

The assessment process of applications will be led by a team of domain experts as follows:

1. Application Evaluation- Category-wise document assessment
2. On-Site Audit for qualifying units (Please note that plant audit expenses of auditors related to traveling and accommodation will be borne by the qualifying unit. Also, each audited unit need to pay an additional fee of Rs 10,000 /- per man day (Exclusive of GST of all taxes) to FICCI as the auditor fee for the on-site assessment of its unit)
3. Jury Selection by the presentation of Qualifying sites after on-site assessment

APPLICATION FEES:

Large scale organizations	Medium Scale Organization	Small Scale organization
₹ 40,000 (Exclusive of GST)	₹ 25,000 (Exclusive of GST)	₹ 15,000 (Exclusive of GST)

FOR PARTICIPATION IN THE AWARDS, PLEASE CONTACT:

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Industry's Voice for Policy Change