FICCI

Recognizing Excellence in Water Management & Conservation



Compendium *of* Best Practices

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This report is a compilation of best practices received as part of the 7th Edition of FICCI Water Awards. The case studies of the awardees are published in the report.

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Acknowledgements

FICCI acknowledges the eminent members of the Jury for their exceptional guidance in the final selection of the awardees. FICCI also acknowledges the valuable contributions of the Expert Screening Panel in assessing and evaluating each nomination. We also extend our gratitude to the organizations who participated under the various categories of the 7th Edition of FICCI Water Awards.

Team's Contribution to the FICCI Water Awards and Compendium

The entire process of the FICCI Water Awards and development of Compendium has been executed by the FICCI Water Mission Secretariat- Rita Roy Choudhury, Assistant Secretary General, FICCI; Kirtika Arora, Senior Assistant Director, FICCI.

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Compendium *of* Best Practices


7th Edition of FICCI
WATER
AWARDS
2019



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FOREWORD

With increasing water scarcity, efficient management of water is critical for industry. Building future resilience in view of this looming scarcity and conflicts that would arise from shortage, depends largely on a strong impetus for reuse and recycle, and focusing on the circular economy of water.

Water scarcity and pollution present a significant risk to companies, with the potential to disrupt their operations and supply chains in many ways. Financial investors are increasingly requiring companies to invest in effective water management. Applying circular economy principles to water management is an important step in mitigating and preventing a water crisis and risks therein. Instead of disposing of wastewater, a recovery-based closed loop system will help address water scarcity issues. Intensive efforts are being made by businesses to enhance water use efficiency, reduce their pollution potential and conserve water in its ecosystem.

To recognize excellence in water management and conservation, The FICCI Water Mission was constituted in 2011 to promote awareness, thought leadership, policy advocacy and best practice sharing in sustainable water management with

special focus on water use efficiency, urban wastewater management and corporate water stewardship. The annual Water Awards instituted by the mission recognizes exemplary contribution in all these areas.

The 7th Edition of the FICCI Water Awards assessed a wide range of entries across five different categories - Industrial Water Use Efficiency, Community Initiatives by Industry, Innovation in Water Technology, Initiatives by NGOs and Urban Wastewater Management. The Awards acknowledge businesses and NGOs for their exemplary initiatives and endorsing their efforts in the way they use and manage water in their businesses, going beyond compliance and providing benchmarks for others to follow.

This Compendium of Best Practices is a collection of the award-winning case studies which exemplify water use efficiency and sustainable water management. It also aims to raise awareness on the scale and urgency of the water challenges facing business and industry in India and enables the engagement of new players in the discourse on the future management of water.

I am extremely grateful to the eminent Jury of the FICCI Water Awards for their invaluable contribution. I would also like to thank the Expert Screening Panel for their scrutiny and technical evaluations. Last but not the least, I would like to thank all the organisations who sent their nominations for the Awards and applaud the winners for setting high benchmarks for others to emulate. Although awardees can only be a select few each year, the Awards process enlightens us through all nominations, with the plethora of good work being undertaken by businesses and NGOs in India. Each nomination serves as a case study for the positive difference being made by enlightened companies towards water sustainability in India.

Naina Lal Kidwai

Past President, FICCI
Chairman, FICCI Water Mission



SPECIAL MESSAGE

India is a land of extraordinary innovativeness. But our pioneers do not always get the recognition due to them because of which they are unable to take their work to scale and the nation does not benefit from their contributions the way it should. This is the gap the FICCI Water Mission seeks to fill through its Annual Water Awards.

The water solutions India has adopted since Independence are all based on the 20th century paradigm of water resource development, which is now reaching its limits and causing more problems than it solves. We urgently require a multi-pronged paradigm shift in the way we manage our water resources. We need to decisively move towards a trans-disciplinary approach to water that focuses on demand-side solutions rather than endlessly trying to increase supply.

There are many unsung heroes who are making brilliant contributions in this direction. This compendium will give you a glimpse into some of this work, which is showcased here after a very

rigorous process of scrutiny and appraisal. The aim of the Water Awards jury has been to reward those efforts that embody truly cutting-edge innovation, while also providing the best chances of replication on a large scale.

I heartily congratulate the winners and hope that FICCI Water Awards will continue to make this invaluable contribution in moving India towards a 21st century paradigm of water management.

Dr Mihir Shah
Chair of Jury – FICCI Water Awards 2019
President, Bharat Rural Livelihood Foundation



MESSAGE

The impending global water crisis can't be tackled effectively without industry playing a critical role in water conservation. In fact, national and regional planning must have an integrated approach to deal with climate change and water management. The international community is committed to expanding global cooperation and capacity building on water and sanitation-related activities and programmes in accordance with the Sustainable Development Goals.

Governments are moving towards supporting local communities in improving water usage and effective water management. On the other hand, the citizens' awareness on the need to save water resources for our survival and growth is growing. This has led to the promotion of water conservation efforts across the spectrum of water users. Industry is playing a proactive role in sustainable water management through various innovative approaches and technologies. However, larger awareness needs to be created on the positive steps being taken to encourage wider engagement of stakeholders towards ensuring water sustainability in India.

FICCI has always been at the forefront of driving the dialogue on water sustainability in industry. Our water mission was constituted to initiate a dialogue, and work with the Government on policy changes and increasing private sector participation in urban and industrial water governance.

FICCI Water Mission accords highest priority to increasing private sector participation in urban and industrial water. The India Industry Water Conclave and FICCI Water Awards recognize excellence in water conservation and sustainable water management practices. FICCI believes corporate sector engagement can help promote efficiencies in achievement of targets set out by the government.

The Awards instituted by FICCI acts as a platform for recognizing and awarding water stewardship, promoting awareness, sharing of best practices and thought leadership in the area of water-use efficiency and policy advocacy. Over the years, it has also helped generate a knowledge base on sustainable water management practices adopted by different stakeholders and disseminate best practices for encouraging their adoption. This compendium provides a number of additional insights on activities and innovative approaches used by stakeholders in industry which could add value to others for similar adoption. I congratulate the winners of the Awards this year for their exemplary work. It is through their work that we draw inspiration for others in Industry and urban environment.

I thank the Expert Screening Panel for their immense effort in the scrutiny and assessment of each nomination. I am grateful to the Jury for their valuable time to this initiative, for elevating the understanding of excellence in sustainable water management, and for showing the direction towards making meaningful contribution to all stakeholders through the learnings of FICCI Water Awards.

Dilip Chenoy
Secretary General
FICCI





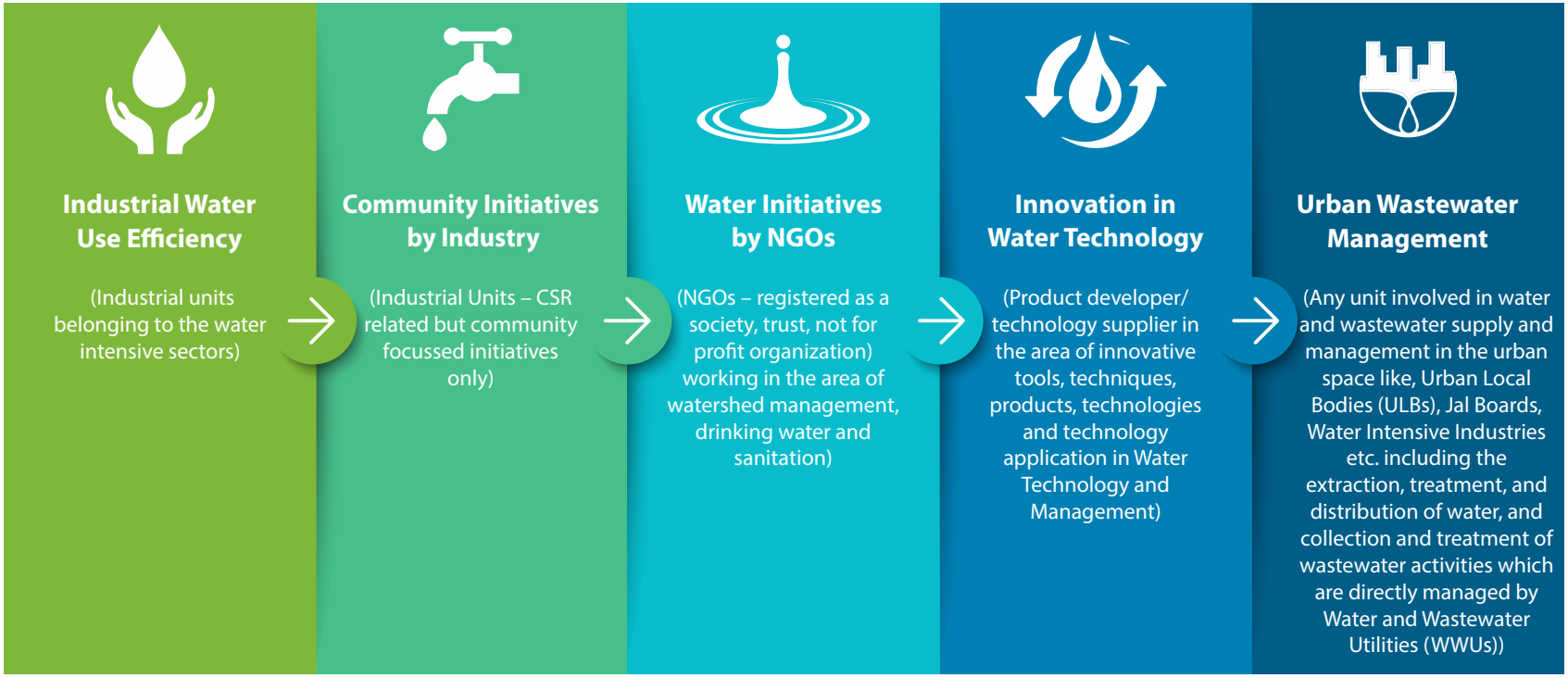
FICCI WATER AWARDS

FICCI WATER AWARDS

FICCI launched the Annual Water Awards in 2012. The awards were initiated with the following objectives:

- To recognize efforts and leadership in the area of water efficiency and conservation; and
- To develop a knowledge base on sustainable water management practices adopted by different stakeholders and disseminate best practices for encouraging their adoption.

AWARDS CATEGORIES



SELECTION PROCESS

PHASE 1

CALL FOR APPLICATION

The call for awards is put up through print and online advertisements, and nominations for the different categories are received. A standard template for sending information is developed for every category.

Through its network and database, FICCI Water Secretariat reached out to organizations working in the areas of water and wastewater management, based on the eligibility criteria.

PHASE 2

PRELIMINARY SCREENING

Initial screening by the FICCI Water Secretariat, to ensure adherence to eligibility criteria.

PHASE 3

EXPERT SCREENING PANEL

An Expert's Panel was formed to screen each category and check the authenticity of the data and information presented. This was carried out before the first Jury meeting.

PHASE 4

JURY MEETING

Each application under all the five categories were presented by the Expert's Panel to the Jury.

Jury upon thorough review and discussion, shortlisted applicants to make presentation to the Jury and answer additional questions.

PHASE 5

FINAL AWARDEES SELECTED

Post the presentation with the shortlisted applicants, the Jury finalized the winners in each category. FICCI Water Secretariat reached out to inform them and invite them to the awards.



WATER AWARDS THROUGH THE YEARS

2018













1. ITC Maurya (1st Prize) in the Industrial Water Use Efficiency Category
2. HSBC (1st Prize) in the Community Initiatives by Industry Category
3. Transchem Agritech Private Limited (1st Prize) in the Innovation in Water Technology Category
4. WATSAN Envirotech Private Limited (1st Prize) in the Innovation in Water Technology Category
5. NTPC Ltd (3rd Prize) in the Innovation in Water Technology Category
6. Surat Municipal Corporation (1st Prize) in the Urban Wastewater Management Category

Winners of the Water Awards being felicitated by Shri U P Singh, Secretary, Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, Government of India; Dr Mihir Shah, Chair of Jury - FICCI Water Awards 2018, President, Bharat Rural Livelihood Foundation, and Former Member, Planning Commission; Ms Naina Lal Kidwai, Chairman, FICCI Water Mission, and Past President FICCI and Ms Rita Roy Choudhury, Assistant Secretary General, FICCI.


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November 1, 2018 - New Delhi

2017

1. Sterlite Copper Vedanta Ltd (1st Prize) in the Industrial Water Use Efficiency Category
2. Aga Khan Rural Support Programme (1st Prize) in the Water Initiatives by NGOs Category
3. Akhil Bhartiya Samaj Sewa Sansthan (2nd Prize) in the Water Initiatives by NGOs Category
4. Hindustan Ecosoftt Pvt Limited (1st Prize) in the Innovation in Water Technology Category
5. Technorbital Advanced Materials Pvt Limited (2nd Prize) in the Innovation in Water Technology Category
6. SM Sehgal Foundation (3rd Prize) in the Innovation in Water Technology Category

Winners of the Water Awards being felicitated by Shri Parameswaran Iyer, Secretary (DWS), Ministry of Drinking Water & Sanitation, Government of India, Dr Amarjeet Singh, Secretary, Ministry of Water Resources, Government of India; Dr Mihir Shah, Chair of Jury - FICCI Water Awards 2017, President, Bharat Rural Livelihood Foundation, and Former Member, Planning Commission; Ms Naina Lal Kidwai, Chairman, FICCI Water Mission, and Past President FICCI and Ms Rita Roy Choudhury, Assistant Secretary General, FICCI













2016













1. ITC Ltd. Saharanpur, Winners, Industrial Water Efficiency Category
2. TATA Motors Ltd., 1st Runner - Up, Industrial Water Efficiency Category
3. ITC Ltd. Jalahobli, 2nd Runner - Up, Industrial Water Efficiency Category
4. ITC Ltd., Winners, Community Initiatives by Industry Category
5. Self Employed Women's Association (SEWA), Winners, Water Initiatives by NGOs Category
6. Group Photograph for the FICCI Water Awardees for 2016

Winners of the Water Awards being felicitated by Shri Shashi Shekhar, Former Secretary, Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India; Dr Mihir Shah, Chairman of Jury, FICCI Water Awards 2016; Ms Naina Lal Kidwai, Past President, FICCI; Dr Didar Singh, Former Secretary General, FICCI; Ms Rita Roy Choudhury, Assistant Secretary General, FICCI.

2015

1. ITC Munger (1st Prize), Industrial Water Use Efficiency Category
2. Ambuja Cements Ltd (2nd Prize), Industrial Water Use Efficiency Category
3. Infosys Limited, Bangalore (3rd Prize), Industrial Water Use Efficiency Category
4. Ambuja Cements Foundation (1st Prize), Community initiatives by the Industries Category
5. Ultratech Cement Ltd (2nd Prize), Community initiatives by the Industries Category
6. Ramkrishna Jaidayal Dalmia Seva Sansthan (1st Prize), Initiatives by NGOs Category
7. SIRUTHULI and Watershed Organization Trust (joint 2nd Prize), Initiatives by NGOs Category
8. Sanjeevani Institute for Empowerment and Development (3rd Prize), Initiatives by NGOs Category

Winners of the Water Awards being felicitated by Ms Jyotsna Suri, Past President, FICCI.

















2013

1. Noamundi Iron Ore Mine - Tata Steel Limited, Winners, Industrial Water Use Efficiency Category
2. ITC Ltd – Bangalore, 1st Runner-Up, Industrial Water Use Efficiency Category
3. JSW Steel Limited, Vijayanagar Works, 2nd Runner Up, Industrial Water Use Efficiency Category
4. Ambuja Cement Foundation, Winners, Community Initiative by Industry Category
5. ITC Limited, 1st Runner Up, Community Initiative Category
6. Vikram Cement Works, 2nd Runner Up, Community Initiative by Industry Category
7. IRRAD (An Initiative of S. M. Sehgal Foundation), Winners, Initiatives by NGOs Category
8. Watershed Organisation Trust, 1st Runner Up, Initiatives by NGOs Category
9. KGDS RE Pvt. Ltd., DST & NIOT, Winners, Innovation in Water Technology Category
10. Ortho Clinical Diagnostic, J&J Company, 1st Runner Up, Innovation in Water Technology Category

Winners of the Water Awards being felicitated by Shri Montek Singh Ahluwalia, Former Deputy Chairman of the Planning Commission, Government of India, Ms Naina Lal Kidwai, Chairman, FICCI Water Mission, and Past President, FICCI and Mr Atul Singh, Group President, Asia Pacific, The Coca-Cola Company.





















2012

1. Essar Steel India Limited, Hazira, Winner, Industrial Water Use Efficiency Category
2. ITC Limited, 1st Runner Up, Industrial Water Use Efficiency Category
3. Tata Chemicals Limited, Winners, Community Initiatives Category
4. Hindustan Unilever Limited, 1st Runner Up, Community Initiatives Category
5. HSIL Limited, Winners, Innovation Category

Winners of the Water Awards being felicitated by Shri Montek Singh Ahluwalia, Former Deputy Chairman of the Planning Commission, Government of India, Smt Shiela Dikshit, Former Chief Minister of Delhi, Ms Naina Lal Kidwai, Chairman, FICCI Water Mission, Past President, FICCI and Dr Arbind Prasad, Former Director General, FICCI.













FICCI WATER AWARDS 2019



JURY



Dr Mihir Shah
Chair of Jury



Prof AK Gosain
Member of Jury



Mr VK Madhavan
Member of Jury



Dr Himanshu Kulkarni
Member of Jury

EXPERT SCREENING PANEL



Dr Dipankar Saha



Dr Manoranjan Hota

CHAIR OF JURY, FICCI WATER AWARDS 2019



Dr Mihir Shah
Chair of Jury – FICCI Water Awards 2019
President, Bharat Rural Livelihood Foundation
Former Member, Planning Commission

Dr Mihir Shah has spent the past three decades living and working in remote, central tribal India, forging a new paradigm of inclusive and sustainable development, and strengthening Indian democracy through initiatives for people's empowerment, led by women.

From 2009 to 2014, he was Member, Planning Commission, Government of India, holding the portfolios of Water Resources, Rural Development and Panchayati Raj. He is the youngest ever Member of the Planning Commission. Dr Shah was chiefly responsible for drafting the paradigm shift in the management of water resources enunciated in the 12th Five Year Plan. He also initiated a makeover of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), the largest employment programme in human history, with a renewed emphasis on rural livelihoods, based on construction of productive assets.

In 2015, the Government of India invited him to chair a Committee on Restructuring the Central Water Commission and Central Ground Water Board and also to chair a Committee to draft the National Water Framework Law and the Model Groundwater (Sustainable Management) Bill. These are currently under the active consideration of the Government of India. In 2017, he was invited by the Government of Karnataka to Chair the Task Group set up to draft the State Water Policy.

Dr Shah graduated in Economics from St Stephen's College, Delhi University (where he won the prestigious KC Nag Economics Prize) and did his post-graduation from the Delhi School of Economics (where he was Merit Scholar) in the 1970s, before going on to complete a much acclaimed doctoral dissertation at the Centre for Development Studies, Kerala.

He is the first President of the Bharat Rural Livelihoods Foundation, set up by the Government of India to support innovative civil society action in close partnership with state governments. Dr Mihir Shah has spent the past three decades living and working in remote, central tribal India, forging a new paradigm of inclusive and sustainable development, and strengthening Indian democracy through initiatives for people's empowerment, led by women. His papers have been published extensively in pre-eminent journals such as Economic and Political Weekly, Current Science, Ambio, Hydrogeology Journal, Journal of Hydrology, Contributions to Indian Sociology, Review of Development and Change, Seminar and Indian Journal of Labour Economics.

Dr Shah has addressed audiences on his life's work all over the world from Stanford University to the World Bank in Washington, the OECD in Paris, the Arctic Circle in Iceland, Chatham House and University College, London; UNESCO-IHE at Delft, International Institute for Applied Systems Analysis in Austria, the EAT Forum, Stockholm; the Himalayan University Consortium in Chengdu, China; International Water Management Institute in Colombo and the Singapore Water Week.

JURY MEMBERS



Prof A K Gosain

Professor, Department of Civil Engineering
Indian Institute of Technology- Delhi

Prof Ashvani K. Gosain, is an Emeritus Professor in the area of Water Resources Engineering and GIS

Technologies, in the Civil Engineering Department, IIT Delhi. Prof Gosain pioneered the climate change impact assessment on Indian water resources that was incorporated in the NATCOM I & II – two National Communications made to the UNFCCC. He has also been reviewer for AR4 and AR5 of IPCC.

Prof Gosain has served on many prestigious assignments within and outside the country. Twenty three students have completed their Ph.D. under his supervision. Prof Gosain contributed to the formulation of the Ganga River Basin Management Plan (GRBMP), of which he was the Team Leader of the Water Resources Management group. He has also formulated the Drainage Master Plan of NCT of Delhi for the Delhi Government. He is also part of the expert committees appointed by the National Green Tribunal to suggest solutions to deal with the ever increasing pollution levels in Ganga and Yamuna. Prof Gosain has his distinction in the formulation of the Ganga Act on behalf of the Ministry of Water Resources, River Development & Ganga Rejuvenation, as a member of the committee.



Mr VK Madhavan

Chief Executive
Water Aid-India

Following a Master's in International Politics from Jawaharlal Nehru University in 1991, Madhavan commenced working with the Urmul Rural Health Research and Development Trust in Bikaner district, Rajasthan where he worked in various capacities till 1998. Subsequently, Madhavan worked with ActionAid and The Hunger Project in New Delhi following which he spent eight years working in the Kumaun region of Uttarakhand with the Central Himalayan Rural Action Group (Chirag). In his years as a development professional, Madhavan has worked on an integrated approach to rural development - community health, primary education, natural resource management, on and off-farm livelihoods and investing in young people. Prior to assuming his role as Chief Executive of WaterAid India in 2016, Madhavan was Managing Director of Skills Education Private Limited, a company that provides youth with access to information, skills and opportunities leading to employment.



Dr Himanshu Kulkarni

Executive Director and Secretary Advanced Center for Water Resources Development and Management (ACWADAM)

Dr. Himanshu Kulkarni heads ACWADAM, India's leading NGO working on groundwater management and governance. With 35 years of experience of working on the transdisciplinary aspects of aquifers and communities, Dr. Kulkarni has shaped ACWADAM's work across India's diverse typology of aquifers, while also extending the work to other developing regions of the world.

Dr. Kulkarni, chaired the Working Group on Sustainable Groundwater Management for India's 12th Five Year Plan and was instrumental in shaping the "aquifer mapping – participatory groundwater management" agenda under this plan. More recently, he was member of the committee to develop water sector reform and to restructure the top water institutions under the Ministry of Water Resources (MoWR), Government of India. He was also part of the team that drafted the Draft Water Framework Legislation and the Draft Groundwater Management Bill for Government of India. He was part of the team that drafted out the Karnataka Water Policy recently. He is currently part of the advisory committee, helping Government of MP to draft a water right legislation and a strategy for water management in the state. He has been recently invited to be part of the drafting committee for the National Water Policy of India.

EXPERT SCREENING PANEL



Dr Dipankar Saha
Former Member (HQ), Central Ground Water Board,
MoWR, RD & GR, Govt. of India
Former Member Secretary, Central Ground Water Authority

Dr Saha is a former of Member (Head Quarters), Central Ground Water Board, under Ministry of Jalshakti, Government of India. He had also served as Member Secretary, Central Ground Water Authority and Head of National Ground Water Training and Research Institute, Raipur. He spearheaded the National Aquifer Mapping and Management Programme, the largest ground water mapping endeavour in the world, as National Coordinator. He obtained PhD on Ground Water Management from IIT-ISM, Dhanbad.

He has authored more than 50 papers in International Peer Reviewed Journals and delivered more than 300 lectures and key note addresses in national and International Seminars. He is professionally trained from Asian Institute of Technology, Bangkok and from JICA, Tokyo. He represented the country and presented papers in World Bank session at Kathmandu, International Atomic Energy Agency at Ho-Chi Minh City, and Vienna, World Water Week – Stockholm, India-UK Water Security Exchange- Wallingford, Oxfordshire, IAH Congress in Dajeon, Korea, Lincoln University UK and led the Govt of India Delegation to Myanmar.

He is the recipient of National Geoscience Award – 2010 conferred by Ministry of Mines and Excellence in Ground Water conferred by International Association of Hydrogeologist-Indian Chapter in 2014. He is presently Secretary of International Association of Hydrogeologists Indian Chapter and Adjunct Professor IIT Kharagpur in School of Water Resources.



Dr Manoranjan Hota
Former Advisor
Ministry of Environment, Forest and Climate Change, GoI

Dr Hota has professional experience in the field of Chemicals & Waste management, Environmental Impact Assessment, Pollution Control, Project management in pollution control and waste management, Environmental Health, Environmental Management & Environmental Audit, Sustainability and Environmental governance, Policy planning, Research, Life Cycle Assessment, Biosafety, Environmental Law enforcement, monitoring and Compliance.

Besides, He was the UNEP Regional Advisor for Biosafety Clearing House and also has experience of other Multilateral Environment Agreements (MEAs) in chemicals and wastes by representing India in negotiations in the Minamata Convention, Rotterdam Convention, ICCM.

He was the Regional Coordinator for Strategic Approach for International Chemicals Management (SAICM) for the Asia-Pacific region; Member, Chemicals Review Committee, Rotterdam Convention of Prior Informed Consent on international trade of hazardous chemicals; Chair, UNEP Asia-Pacific Mercury Storage Programme Member, UNEP Mercury Global partnership programme and represented India in the UNEP Intergovernmental Negotiating Committee meetings on Mercury.

He has experience with the implementation of Cartagena Protocol on Biosafety. He was the National Focal Point for the Biosafety Clearing House for the CBD Secretariat of the Cartagena Protocol on Biosafety and represented India in negotiations in the CoP meetings. He has experience in serving as an International Biosafety System Expert in many countries particularly with the Asia-Pacific Countries.

7th Edition of FICCI
WATER
AWARDS
2019



Awardees 2019

CITATION FOR THE AWARDEES

CATEGORY

Industrial Water Use Efficiency

1st Prize

Arvind Limited

Arvind Limited is being awarded the first prize in this category for demonstrating its commitment to reducing its consumption of fresh water use during textile production, by adopting latest technologies that use less water for every metre of textile production. The initiatives include foam dyeing technology which uses 95% less water during the denim dyeing process and various water efficiency measures as well as technology upgradation.

CATEGORY

Innovation in Water Technology

1st Prize

SSP Private Limited

SSP Private Limited is being awarded the first prize in this category, for introducing a technology that presents a solution to treat reject saline water and in the process recovering potable water that was being wasted away and high grade salt and other salts namely Magnesium Chloride, Magnesium Sulphate, Potassium Chloride, Br2, Boron etc. that can be sold in the market to make it a profitable project with 2/3 years ROI.

CATEGORY

Water Initiatives by NGO

Joint 1st Prize

WASH Institute

WASH institute is jointly being awarded first prize in this category for the Mobile Treatment Unit (MTU) which is an onsite faecal sludge treatment technology. The technology works on the principle of treating the septage effluent on the spot and discharging the hazard free liquid into the environment upon complying with the standards set by Government.

Pratiks Enviro Foundation

Pratiks Enviro Foundation is jointly being awarded first prize in this category for Bio Sewage Treatment Plant which does not require electricity and very low maintenance. It reduces 90% cost of maintenance and does not require any manpower to maintain it. It runs and treats wastewater by Gravity pressure with their unique design.



WATER AWARDS 2020

Category: Industrial Water Use Efficiency



1st PRIZE

Arvind Limited Santej

ARVIND
FASHIONING POSSIBILITIES



Mr Punit Lalbhai
Executive Director
Arvind Limited

"Sustainability has always been at the core of our business philosophy at Arvind. We are committed to eliminate the usage of freshwater from the textile production process. Our Santej manufacturing campus is a Zero Liquid Discharge facility, not only recycling all the effluent, but also using only waste water to make up the process evaporation losses. Recently we partnered with GAP Inc to launch a new water treatment facility at our Naroda campus which eliminates the use of freshwater from the facility as well. It is estimated to save 6 million litres of fresh water per day or about 2 billion litres of water annually, thereby preserving the local community's vital freshwater resources. In last decade through our waste-water treatment company Arvind Envisol, we have supplied technology to over 150+ installations globally, thus taking our water saving impact beyond our own manufacturing, and beyond textiles to various other industries. We believe that sustainability is a key thread in the way a company must operate, innovate and grow."

Arvind Limited – Sustainable Water Conservation Agenda

At Arvind, we have two fold strategy for sustainable use of water:

- To reduce water use during textile production, latest technology is adopted in order to reduce water use for every meter of textile produced. In this direction, we have recently implemented foam dyeing technology, which uses 95% less water during the denim dyeing process. We expect that through various water efficiency measures as well as technology upgradation, our water consumption per meter of fabric production can come down by 30-35% over the next 5 years.
- Secondly, our key goal is to reduce freshwater use for textile production. We would either recycle 100% of waste water, or source waste water from municipality for use in the production process. These two approach would also be used in combination, as is the case with our Santej facility. We have already made significant progress in this direction by implementing water recycling technologies at our ETPs.

We believe that with the advent of modern technologies it is possible now to drastically reduce the use of freshwater in industrial production and to preserve freshwater resources for community use and agricultural applications.

Initiative

Arvind Limited is a textile manufacturer and the flagship company of the Lalbhai Group. Our headquarters are in Ahmedabad in Gujarat and it has units at Santej (near Kalol). Arvind Limited is a global leader in apparel manufacturing which is also transforming water management. Arvind Limited, Santej unit was established in the year 1998 with concept of Zero Liquid Discharge plant capacity of 10000 m3/day. It is upgraded adopting advance technologies up to 17000 m3/day.

In conventional dyeing process, the fabric web is immersed in a water bath containing a dilute dispersion of the dyes and or chemicals. We at Arvind, have recently implemented foam dyeing technology, which uses 95% less water during the denim dyeing process. This process has an added advantage over other processes, as it involves treating a fabric with foam at low wet pick-ups. We have also put in place various water efficiency measures like Reverse Osmosis, desalination to recover both water and salt and capturing drinking water from steam condensation and open evaporation, etc. Cooling water is reused. Installation of SCADA system to monitor all data has led to streamlining and in all we have succeeded in reducing water use for every metre of textile produced.

Production Sector and Capacity: Cotton Textile Composite Unit

- Shirting fabric - 80 lakh metre/month
- Knits fabric- 1000 metre/month
- Bottom weight fabric - 40 lakh metre/month
- Denim fabric- 20 lakh metre/month

Main Source of Water: Municipal Sewage/Treated Sewage Supply, Groundwater Withdrawal and Rainwater Harvesting

Water Conservation Measures

1

- Process water separated from protruding fibre /fluff by gyro screen, this water is filtered and again used in Cooling water.
- Designed the over flow system so that water would only go in to drain when recovery pump fails. Installed recovery system to save water.





Reduction in Water Consumption

1. Cooling Water Saving 150 m3 /day
2. Processing Water saving 50 m3 /day

2

Karl Mayer Technology : Modification

We use dry star liquid indigo vat 40% solution which is a patented pre - reduced indigo ready for use on the dyeing range. Taking help of Karl Mayer Technology, we have been able to implement a consolidated optimized solution and resource savings related to the process of indigo dyeing.

Reduction in Water Consumption

Water Reduction -	30 % (150 m3/day)





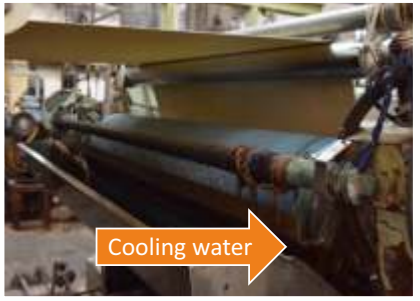
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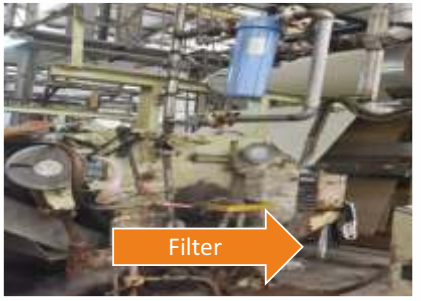
Sunforise:

Cooling water used to reduce the temperature of the rubber blanket is recirculated and is again reduced in same operation.

Reduction in Water Consumption

Water Saving -	100 m3/day





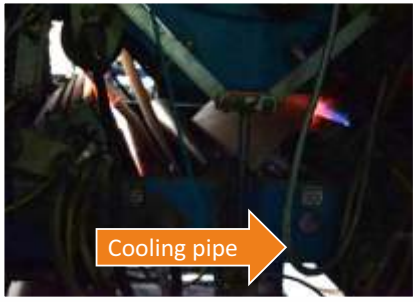
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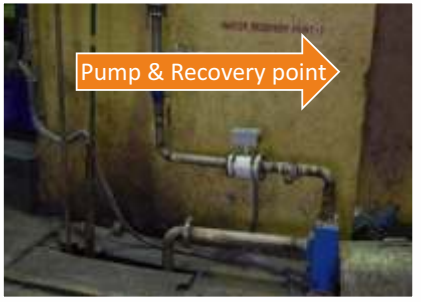
Singeing machine:

Water is recovered from singeing machine which was earlier going into drain. This recovered water is stored in holding tank and used for cooling purposes.

Reduction in Water Consumption

Water Saving -	150 m3/day





5

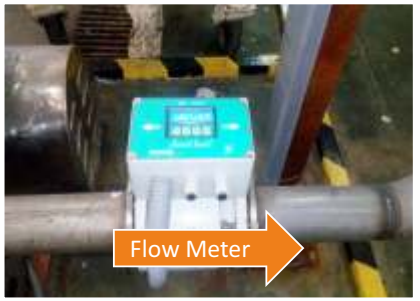
Goller Soaper Machine:

Water flow optimized to 6 kl /hr instead of 12 kl /hr by controlling the valve.

Reduction in Water Consumption

Water Saving 90 m3 /day



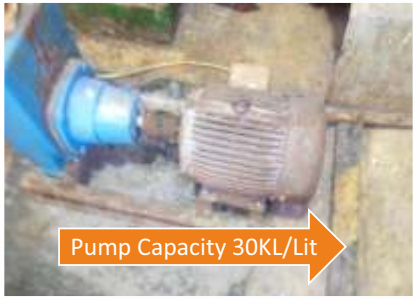


6

Installed High Capacity pump of 30 kl/hr instead of 15 kl/hr at both singeing and sanforiese machine which led to reduction ion cooling losses up to zero.

Reduction in Water Consumption

Water Saving 100 m3/day





Rainwater harvesting and its use:

Total rainwater harvesting potential is 7000 m3. Two Groundwater recharge wells with capacity 5700 m3 and 9000 m3 has been constructed to store the rainwater. The stored rainwater is used in processing areas for Humidification plant, Machine cleaning as well as in Boiler plants. 70% of the water is used in plant processing whereas 30% water is used for groundwater recharging.

Awareness generation and Capacity Building:

Awareness among the employees, business partners, vendors, nearby village people created through trainings, competitions etc. As a part of Capacity building, IR/HR and safety team has organized and conducted various training and awareness program of our FLM's like swathi santha sudhi, spandan financial inclusion, post office, etc.

Arvind Limited Santej



ETP



RO



Display of SCADA for Monitoring Water Data



Mechanical Vapour Recompression Evaporator (MVRE)



Multi Effect Evaporation (MEE) Plant



Jashpur Sewage



Arvind Sewage



Arvind Sewage



Category: Innovation in Water Technology



1st PRIZE

SSP Private Limited



Tapas Chaterjee
Managing Director
SSP Private Limited

> The technology to recover 140% more water from desalination reject is a sustainable solution to meet the water requirement in coastal belts.

SSP Private Limited

We at SSP always strive to bring innovative technologies to the Industry. We have innovated in many sectors of the Industry. For the water sector, we plan to work on Drinking Water and Sanitation. We have already 2 technologies in the pipeline that the government can adopt and going forward we also plan to collaborate with them to tackle any challenges they face to serve the society. After all SSP has innovation at its core, which makes us want to keep working continuously for the country and the society.

Innovation

SSP has been at the forefront of technological development in the fields of food, pharma, chemicals and waste processing technologies for over forty years. Yet we keep exploring new frontiers through creative team of professionals and a unique full scale R&D facility extracting valuable products from various sources. In this process we develop new technologies while reducing energy costs for our client's benefit. Precisely for these reasons hundreds of businesses have put faith in SSP's well engineered solutions which has delivered over 2000 processing plants and units all over the world and touching billions of lives through reliable purity of products.

SSP's R&D Centre





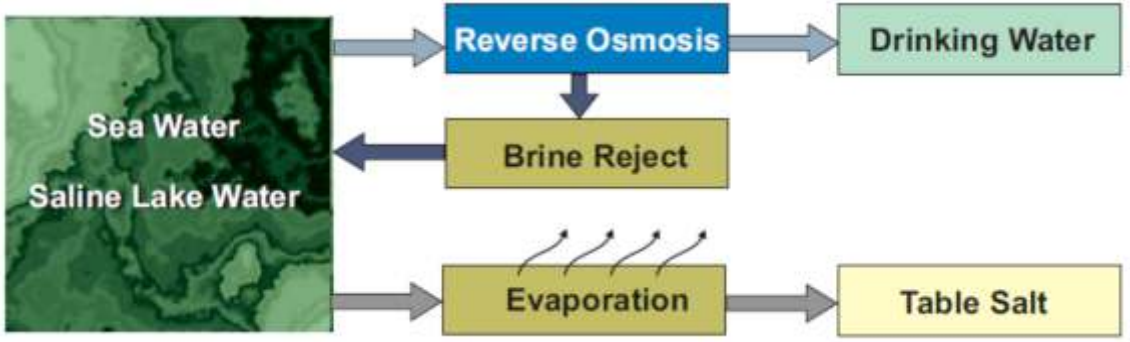


Desalination Reject - Global Environmental Challenge

Worldwide drinking water production is shifting to Reverse Osmosis (RO) technology in the coastal areas. Typically about 60% of the water pumped into a RO plant is discharged to environment as high salt laden reject brine stream. This is damaging to the environment. Also, hundreds of tons of good quality water is lost to open evaporation in the process of salt production.

Brine is technically a concentrated salt stream. The types of salts in brine depend on the source of water like sea water mostly containing NaCl or the table salt. However other water sources like certain lake waters will have dissolved salts from the local geological rock formations. That may include certain salts that have industrial value.

Presently the processes used for drinking water and salt production from saline water are shown below that are set to change:



For every 100 m3 raw water pumped to a RO drinking water plant, only 40 m3 drinking water quality is produced. This technology will help recover the balance 60% water also which is 140% more drinking water production over the standard capacity.

The Technology Impact

This technology changes the business dynamics of drinking water production. It utilizes the brine solution to extract drinking quality water and salts leaving no residual waste. While producing salts of high market value, the salt refineries are able to produce drinking quality water which was otherwise lost in open evaporation. The wastewater is also recovered through the desalination process making it environmentally friendly.

Impact of this technology is multifold, environmental and economic:

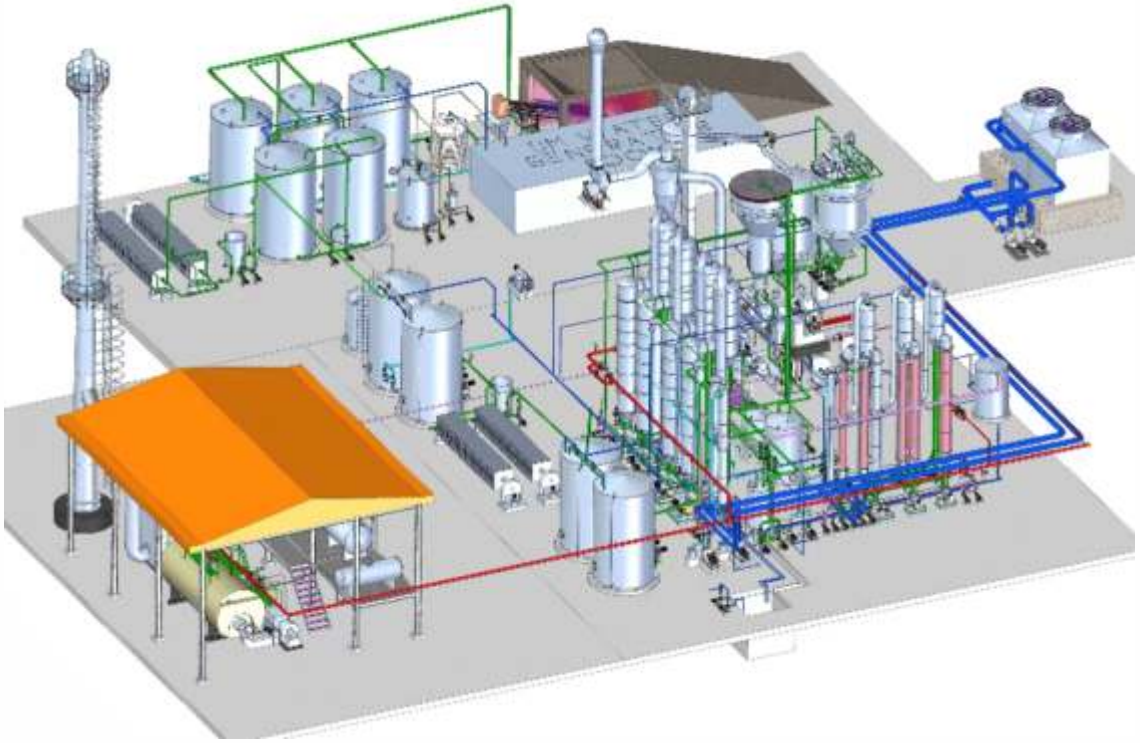
1. Protection of marine life and bio-diversity
2. Increased drinking water production from RO plants while avoiding cost of brine disposal system.

3. Production of drinking water in salt production facilities, improving salt purity and reducing land requirement for salt pans.
4. Produces over 99.5% purity table salt (NaCl).
5. Separation of many industrial salts like Magnesium Chloride, Magnesium Sulphate, Potassium Chloride, Bromine, Potassium Sulphate (fertilizer) having good market potential.
6. Provides a Zero Liquid Discharge process for RO systems.

A Case Study

This newly developed technology of producing drinking water from brine along with salt has been tested at industrial scale at the Kensalt facility in Mombasa, Kenya which had been producing salt from solar pans. The salt production facility required 7 days of solar pan evaporation for crystallization under local conditions. This required large space and the process was dependent on weather conditions. Kensalt was looking for a more reliable and robust system that's when they contacted SSP. The technical team visited the plant location in Mombasa and came up with the idea of setting up salt crystallizer unit that also produced quality drinking water that was locally needed. Their solar pan process was replaced by SSP's new technology. A plant for production of 120 MT of high purity salt per day was commissioned by SSP which also produces 3,10,000 Ltrs of potable safe bottled water making the entire project a highly profitable one.

The System



Plant Equipments





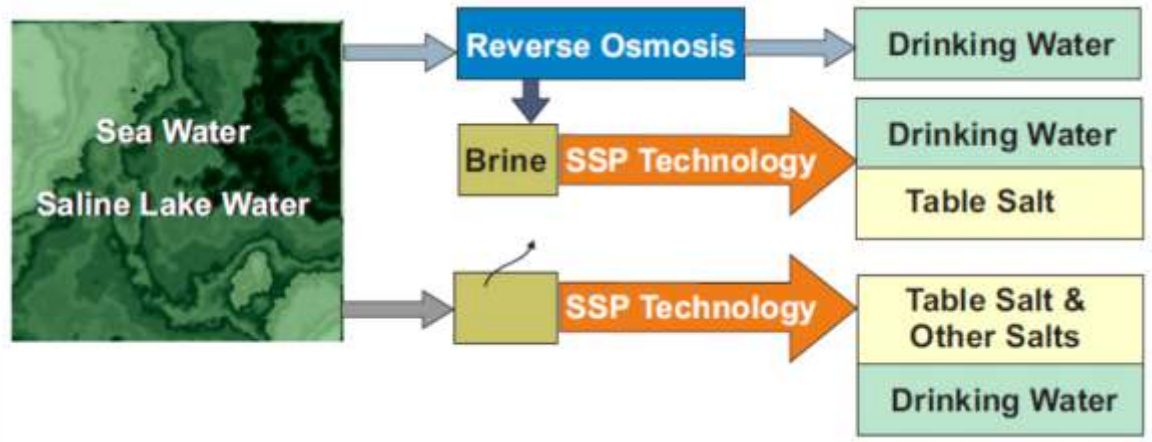




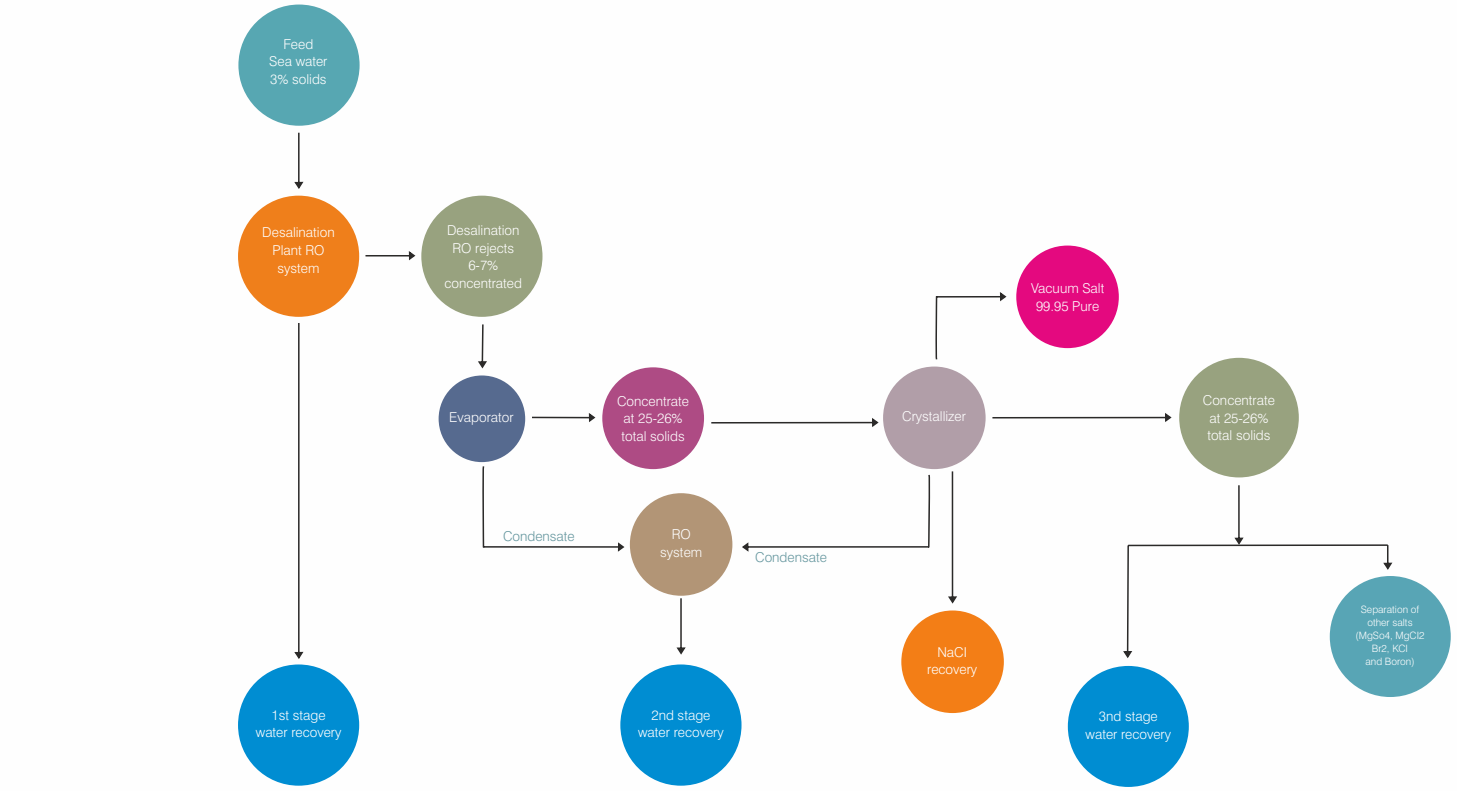
Brief project data is stated below:

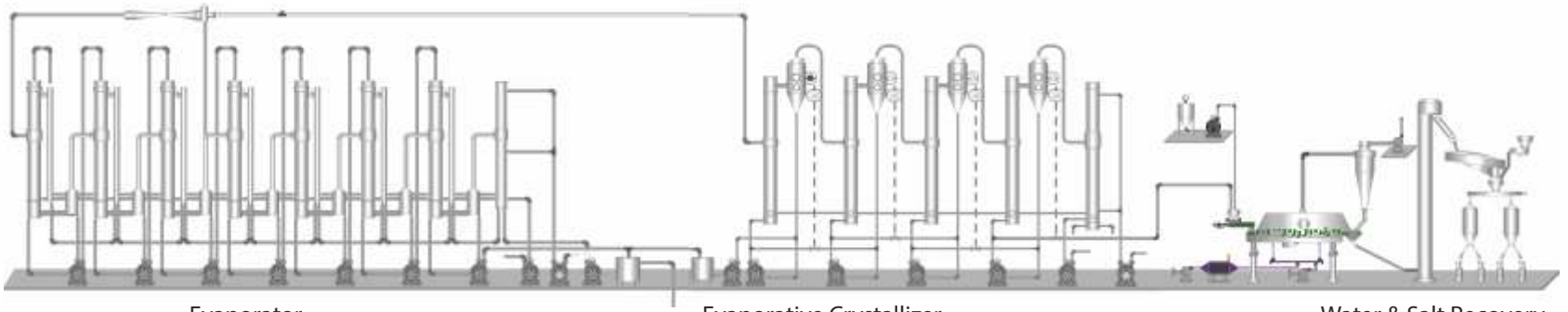
Company Name	:	M/s Kensal Limited, Kenya
Project Name	:	Vacuum Salt Refinery
Capacity / Salt production	:	120 ton/d
Drinking Water	:	310000 L/d
Project Value	:	USD 1.26 Million
Plant Location	:	Mombasa
Quality of produced salt	:	more than 99.5% pure
Power Consumption	:	63 Kwh per ton of finished product
Fuel Oil Consumption	:	80 kg per ton of finished product

Depending on composition of water the newly developed process allows separation of valuable salts like MgCl2, MgSO4, KCl, Bromine, Potash Fertilizer (K2SO4), etc. apart from production of drinking water. In case of RO reject brine, with addition of SSP technology, additional by products are drinking water and high purity table salt produced from brine reject stream as seen below:



This is a unique innovation that prevents large scale environmental degradation, provides high purity drinking water and salts and also makes businesses more profitable.





Evaporator | Evaporative Crystallizer | Water & Salt Recovery





Category : Water Initiatives by NGO

Joint 1st PRIZE

WASH Institute



Arumugam Kalimuthu
Program Director

"WASH Institute through its grassroots level program has intervened in some of the water scarce regions of India by enabling the deprived population access to safe water for potable and non-potable uses. While water conservation, rainwater harvesting, traditional water bodies rejuvenation, drinking water supply and reuse/recharge structures have remained and will continue to remain key areas of intervention, intensive efforts will be made in proper management of water structures through rigorous community participation."

Mobile Septage Treatment Unit (MTU) Dindigul, Tamil Nadu

The Initiative/Innovation: The Mobile Treatment Unit (MTU) is an onsite faecal sludge treatment technology developed by the Water, Sanitation and Hygiene Institute (WASH Institute). It is a treatment system mounted on the bed of a small truck which is able to treat the contents of the septic tanks. The MTU treated septage effluent thus discharged into the environment, complies with the 2017 norms of CPCB. The on-site mobile treatment unit works with the concept of solid-liquid separation, sludge thickening and effluent treatment processes. While the liquid is separated from the solid, the effluent passes through the treatment process and disposes the treated effluent. The sludge thickening process helps to further reduce the moisture content in the sludge. The operational capacity of the MTU varies from 3000 to 6000 litres/hr. The total cost of each mobile treatment unit is much lower than the septage emptying trucks used by the private operators. This mobile unit is easy to operate, and the operational and maintenance cost is also lower. In general, the septage consists of higher volumes of liquid than solids and most of the truck operators have to carry the entire septage (solid and liquid) to the treatment/disposal sites. This puts extra burden on transportation cost. The higher flow rate of MTU helps to empty and treat higher numbers of septic tanks per day. This brings down the truck operational cost, especially fuel cost, and maximizes profit. If the truck operators pass on this benefit to the households/customers, then customers end up paying less for desludging services. This also benefits the treatment facilities by decreasing their plant load.

Impact

- The expected impact of this technology is that it will facilitate a safer environment by preventing discharge of contaminated seepage into the open environment and water bodies, thereby reducing the sanitation related diseases. This will allow more livelihood opportunities in the desludging business.

- In its efforts to improve the deteriorating sanitation situation in Kerala in aftermath of heavy rainfall and flood, WASH Institute in close partnership with UNICEF intervened in the districts of Alappuzha, Pathanamthitta, Thirssur and Ernakulam for a period of 50 days. The technology mounted on trucks, During the emergency flood relief response, the organization sent a Relief Team of 12 members for a period of 50 days to the target districts. The technology mounted on four trucks treated a total of 9,18,222 litre of septage from the septic tanks in 156 locations across 60 camps that benefitted 34, 965 beneficiaries directly.
- The technology is designed in such a way that it is replicable and scalable across regions due to low CapEx and Opex.

Conventional STP vs. MTU

Conventional FSTP/STP	Mobile Treatment Unit [MTU]
The land requirement is critical	The whole treatment unit is setup on the truck's Bed
The O&M cost is very high compared to FSTP/STP.	O&M Cost of MTU is very less when
The per capita treatment cost is high	The per capita treatment cost is almost half of FSTP's.
The construction of FSTP/STP is expensive and time consuming	The whole unit can be assembled in less than a month.








Joint 1st PRIZE

Pratiks Enviro Foundation



Dakshayani S Dalavai
Managing Trustee

"When well is dry, we will know the worth of water."

Pratiks Enviro Foundation

At Pratiks Enviro Foundation, we continuously work towards promoting our technology to replace existing STP/new STP requirements. Our technology ensures 70% of fresh water savings and have huge impact on water consumption. We are also monitoring existing clients where bio STP plants has been installed for sustainability.

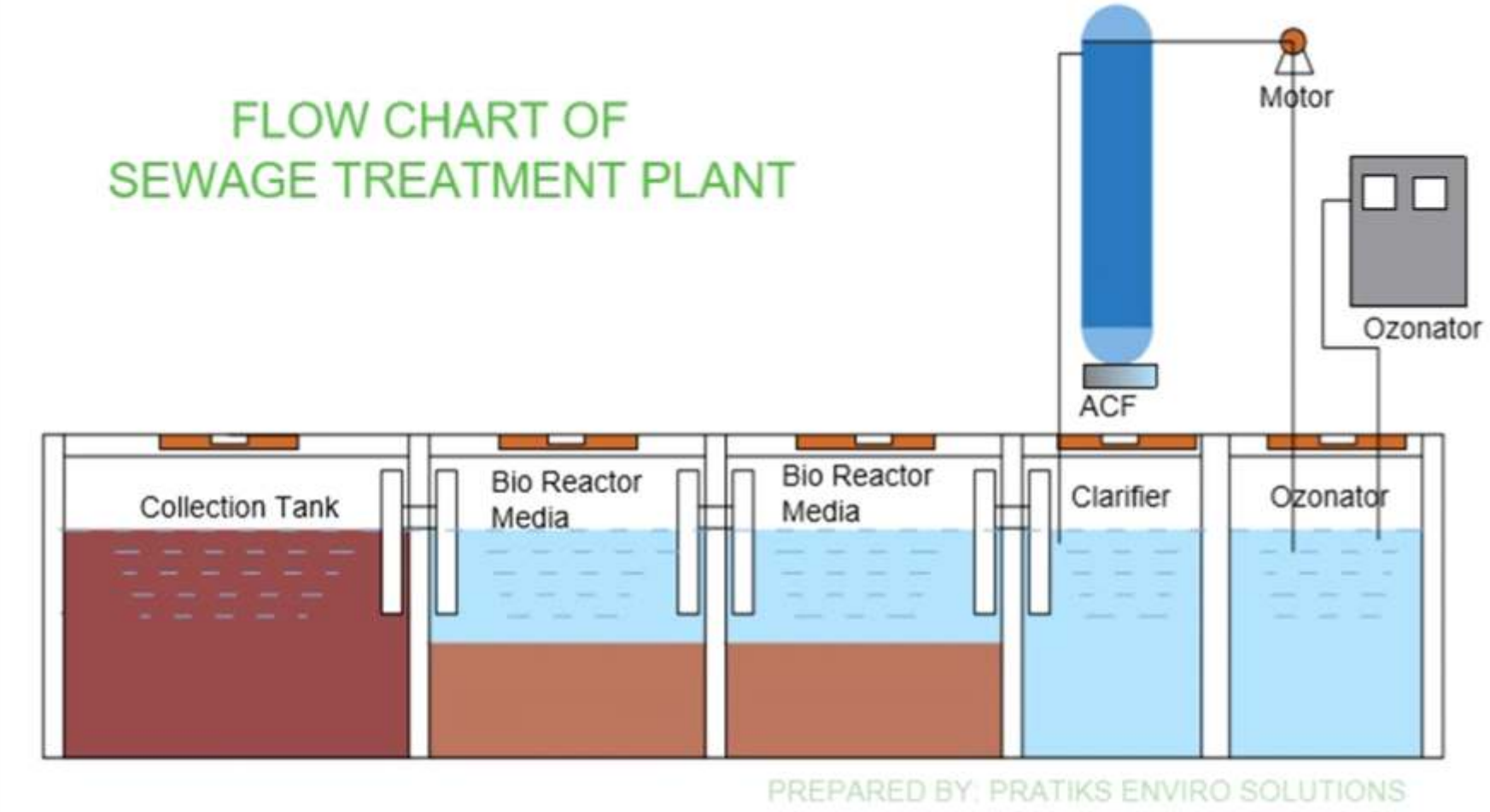
Initiative - Bio Sewage Treatment Technology

Pratiks Enviro Foundation specializes in water and wastewater management and has designed the least expensive, least complicated and longest lasting type of sewage treatment system / septic system.

The BioSewage Treatment Technology uses anaerobic and anoxic process together to achieve high treatment efficiency, high levels of carbon, nitrogen and phosphorous removal in a natural way. It requires 48 hours of hydraulic retention time in the system, thereby resulting in a high quality treated water without having external energy. The final tertiary treatment system also includes in-built ozonation disinfection unit and activated carbon, making the treated effluent fit for secondary purposes like car washing, gardening, landscaping, general cleaning and toilet flushing.

The process is used for industrial or domestic purposes to manage waste water. It does not require electricity to treat wastewater and it is very cost effective and no manpower is required to manage the plant. It is one time investment with very minimal maintenance.

Process Flow – Bio Sewage Treatment Plant



Positive Outcomes of the Technology

- Achieves recovery of more than 90% wastewater
- Lesser generation of sludge
- Low capital and operating cost
- Owing to its ROBUST design, no odour and no sludge generation from the core treatment process, the BIO STP solution is setting new standards for green and blue buildings
- It can be scaled from 1 KLD plant to 1000 KLD

Sewage Treatment Plant at Chennai Metro Rail Limited (CMRL) by Pratiks Enviro Foundation




CHENNAI METRO RAIL LIMITE
CAPACITY : 10 KLD
PROJECT DONE

FICCI Water Mission

FICCI constituted a 'Water Mission' in 2011, to promote and provide thought leadership in the area of water efficiency. It aims to facilitate the sharing and dissemination of best practices across industry sectors in order to encourage corporate and industry players to imbibe a culture of water conservation within their organizations. The Mission focuses on industrial water use efficiency, PPP in urban wastewater and corporate water stewardship.

The Mission is working to create awareness on the existing situation pertaining to water scarcity, quality and generate a discourse on sustainable use of water amongst various users. With growing and extensive depletion and pollution of our water resources, our current work is being restructured to bring this issue back in focus to provide a sense of urgency to the debate of water management.

The objectives of the Mission are:

- To advocate policy direction towards sustainable water management
- To document and disseminate best practices on water conservation, management, reuse and recycling across various sectors and create a forum to facilitate exchange of information and experiences in the country
- To promote through leadership and policy advocacy on sustainable water management including market for wastewater

FICCI Water Awards & India Industry Water Conclave

The FICCI Water Mission has instituted the India Industry Water Conclave and Awards on annual basis to recognize excellence in water conservation and sustainable water management practices. The Conclave and Awards brings together diverse stakeholders from the corporate sector, government, academia, non-governmental organizations, civil society, and financial institutions to showcase best practices, deliberate on policy issues, and propose solutions to surmount challenges in sustainable water management.

FICCI Water Mission Secretariat



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