



GCIP India 2016 Cleannovators - II



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कलराज मिश्र
KALRAJ MISHRA



सत्यमेव जयते



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भारत सरकार
नई दिल्ली - 110011

Minister
of
Micro, Small & Medium Enterprises
Government of India
New Delhi-110011

MESSAGE

The Ministry of Micro, Small and Medium Enterprises (MSME) is promoting sustainable industrial development for Indian MSMEs, employment generation and the Indian MSME sector should realize the need for clean technology adoption in industries so as to ensure fulfilment of committed goals of moving towards green growth.

The Ministry has been actively engaged in promoting efficient use of energy in manufacturing clusters with an aim to improve the financial health of the MSMEs, reduce emissions which is responsible for local and global environmental benefits. One such initiative is "GEF UNIDO Cleantech Programmes for SMEs in India", which aims at identification and promotion of clean technology innovations in the SMEs.

The Project part funded by the Global Environment Facility and co-financed by this Ministry, in partnership with UNIDO during the past three years has contributed towards the promotion of clean technology innovations on energy efficiency, renewable energy, waste to energy and water efficiency that address some key challenges which SMEs and Indian society face by providing solutions that are unique, cost effective and economical.

This e-book which is the second in the series, is the compilation of the innovations in the field of Cleantech nurtured in 2016, which have been identified and mentored under the programme, is an important resource to learn about the depth, breadth and quality of Cleantech innovations occurring in the Indian SME sector as well as challenges being addressed by these innovations.

I hope, this e-book will be able to target and catalyze our development sector professionals, policy makers, financial institutions and researchers to understand, create and encourage many more valuable innovations on the application of clean technologies in the MSMEs across various sectors.


(KALRAJ MISHRA)

Foreword

The Global Cleantech Innovation Programme (GCIP) - India for SMEs has now reached the third and final phase of its journey. Over the past three years, GCIP India has reached out to more than 500 innovators, of these 69 semi-finalists were shortlisted via a competitive process. The programme trained and mentored the semi-finalists through a network of 93 Indian mentors for guidance on various aspects of the sustainability and viability of their technology and business models. Our International knowledge partner, Cleantech Open USA, has been a constant support from guiding the semi-finalists through webinars on the commercialization of their product, to providing them a global platform for exchange of ideas and learnings.



GCIP-India has worked towards developing an ecosystem which has the capacity to enable transformations in the cleantech space through innovations. While start-ups in India are coming to the center-stage of the economy and policy frameworks, the clean technology start-ups have not received the same attention as others, such as e-commerce start-ups. GCIP has been working towards building a platform which enables the cleantech start-ups to gain due recognition. Government of India's Make in India, Stand-up India, Start-up India, and other such initiatives are in line with GCIP's project objectives which is to create a platform to encourage the emergence of a formalized, structured, enabling ecosystem for promoting innovations in the SME sector. Moreover, considering that India recently ratified the Paris Agreement on Climate Change, GCIP could not have surfaced and gained credence at a better time and place. As the GCIP Journey comes to an end early next year, we hope that the ecosystem that has been created will leave its mark on the Clean Energy Future of India and the World.

This edition of Cleanovators Volume-II is an effort to bring together the innovations and efforts of GCIP 2016 semi-finalists to the fore. GCIP India, 2016 supported the shortlisted cleantech companies and continuously monitored and assessed their progress over a period of one year. The final winners have now been chosen and will be brought together to the Cleantech Open Global Forum in Silicon Valley, California for recognition, awards and connections to potential partners, customers and investors world-wide.

GCIP India was launched in May 2013 as a partnership between the Ministry of Micro, Small & Medium Enterprises (MSME), GEF and UNIDO. The United Nations Industrial Development Organization (UNIDO) with support provided by the Global Environment Facility (GEF) is currently implementing the GCIP in eight countries namely Armenia, India, Malaysia, Pakistan, South Africa, Thailand, Morocco and Turkey. As GCIP is about to complete its India journey, we are proud to launch this e-book to commemorate and spread the outreach of our innovators and their innovations.

This e-book aims to leave a mark on the clean technology future of tomorrow by showcasing some of the India's leading innovations in the space of clean technology by our top nineteen semi-finalist teams. The e-book covers the innovators and their mentors, who symbolize two key cornerstones of our programme. It marks the celebration of cleantech innovation, which helps extract the rewards of entrepreneurship for the greater good of society.

Dr. Pradeep Monga

PREFACE

Micro, Small and Medium Enterprises (MSMEs), being a major contributor to manufacturing output in the country, have a significant impact on Indian Environment, Economy, Energy Consumption and Society. The energy-climate nexus is often viewed as a deterrent to India's economic growth objectives. Further, the fast-paced globalization and urbanization in the country leaves a large footprint on the nation's natural resources and there are increasingly fewer means to replenish them. These demands on the natural ecosystem are further exacerbated by the climate change and thus straining the country's economy.

The Cleantech space in India is a highly energized space with the advent of new entrepreneurs and newer business models. Extending beyond the immediate linkages of CO₂ emissions to Climate change, there is an imperative need in adopting a holistic approach to Cleantech innovation with broader emphasis on clean energy, water, waste and transport and their overlapping linkages. Breaking the traditional moulds of entrepreneurship, many of these innovators are first generation entrepreneurs, backed with a passion for the cause and a keen sense of technology and often equipped with advanced technical training. Thus, overcoming India's climate challenges will critically involve fostering the much-needed ecosystem for these Cleantech entrepreneurs. Agencies, governments, investors and business need to proactively collaborate as forces facilitating this transition towards a sustainable future on a global level.

Technology start-ups provide one of the most important vehicles for developing and commercializing innovation to meet these challenges, while generating value for investors. From research to commercialization, the life cycle of high-impact technologies includes many players, from governments and universities to investors and multi-national corporations. At the center of this matrix is the entrepreneurial start-up, the vehicle for taking an idea from the lab to the market. Most innovation companies bring incremental innovations; those transferring technological applications from one industry or geography to another; and those presenting business model innovations.

India is working towards an entrepreneurship ecosystem where there is minimal red tape, strong rule of law and a vibrant support network for entrepreneurs where venture capital is ready to access resulting into ease of doing business. Office of Development Commissioner (MSME), Ministry of MSME is implementing "GEF UNIDO Cleantech Programme for SMEs in India" in



partnership with UNIDO, part funded by the Global Environment Facility (GEF) and co-financed by the Ministry. The programme leverages the power of entrepreneurship to address most challenging energy, environmental and economic problems. Selected SMEs from India participate in a rigorous, competitive national acceleration programme that trains, mentors, promotes and connects them to potential investors, customers and partners.

This e-book showcases the winners of the GCIP India 2016 and is the second volume of the “Cleanovators” series. We came out with the first volume last year which showcased the teams of 2014 and 2015 programme and was a great success in terms of spreading information about the innovations in the ecosystem in an easy ready to use format. The book is a handy resource for those looking for a bird’s eye view of the breadth and range of clean technology innovations currently being fostered under the programme in four crucial areas: energy efficiency, waste-to-energy, renewable energy and water efficiency. The information is structured in a way to showcase the winning pitch of these innovators – the viability of their technologies and the desirability of their target market. This e-book is one more step towards the much warranted Cleantech market transformation in the country. I congratulate the entire team of the Office of Development Commissioner (MSME) and UNIDO who have worked on this programme and contributed to the cause of Cleantech and motivate these promising SME innovators.



SURENDRA NATH TRIPATHI
(Additional Secretary & Development Commissioner, MSME)
Government of India

New Delhi



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“ We are creating an innovative, global programme supporting small- and medium-sized enterprises by leveraging the Cleantech Open’s global platform with UNIDO’s international network and resources. ”

Dr. Naoko Ishii
CEO and Chairperson
Global Environment Facility (GEF)



Introduction

The UNIDO Global Cleantech Innovation Programme, started in 2011, is focused on enhancing emerging cleantech startups and developing a local entrepreneurial ecosystem and policy framework in six countries: South Africa, Malaysia, India, Armenia, Turkey and Pakistan. A competition-based approach is used to identify the most promising entrepreneurs across a country, whilst a local acceleration program supports, promotes and “de-risks” the participating companies and connects them to potential investors, customers and partners. As the best cleantech startups progress through the Cleantech Platform, they are continuously trained, mentored and assessed. The very best startups from each country are brought together for the finals of the Global Competition in Silicon Valley, California, where they can both compete for the Global Prize and connect with potential partners, customers and investors from around the world.

Global Cleantech Innovation Program India (GCIP India)

In May 2013, the GEF UNIDO Cleantech Program for SMEs, also called GCIP India, was launched in New Delhi led by the Ministry of Micro, Small and Medium Enterprises (MSME) and the national executing agency, the Federation of Indian Chambers of Commerce and Industry (FICCI). GCIP India has been focused on promoting clean energy technology innovation and entrepreneurship in selected SME clusters across India through a cleantech innovation platform and competition. In the three years that the Program has been running, there have been 534 applications, 69 semi-finalists and 93 mentors.

GCIP 2016: At a Glance	
No. of Applications	191
No. of Innovators shortlisted as Semi-finalists	19
Area of Innovation	
Energy Efficiency	10
Renewable Energy	2
Water Efficiency	6
Waste to Energy	1

The MSME sector in India plays a vital role in the Indian economy, contributing 45% of manufacturing output, 40% of exports and employing more than 69 million people. Tackling climate change and seizing the economic opportunity for green industry requires increased design, deployment and scaling of innovative clean technologies by SMEs across India.

Through new collaborations across disciplines and sectors, the GCIP India programme aims to build the national capacity for clean technologies and develop a supportive local entrepreneurial ecosystem for SMEs developing clean and resource efficient innovations. An important aspect of this Cleantech Innovations platform is the ability to connect with other synergistic initiatives and entrepreneurs in countries around the world. Through the growing community of national partners in the GEF UNIDO Global Cleantech Program, selected Indian Cleantech entrepreneurs will be connected to potential partners around the world.

Innovator Profiles



Innovation Name:

Nano Metals

Company:

Aarshadhaatu Green
Nanotechnologies India Pvt. Ltd.

Product applied to:

Nano particles production

Industry, Innovation Area:

Metallurgy Sector, Energy Efficiency

Short Description:

Replace conventional process of producing nano particles with an Economical, Energy Efficient and Eco-friendly process

Contact Person:

Mr. Karthik R.B. Aamanchi

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edirector@aarshadhaatu.com

Website:

www.aarshadhaatu.com

Telephone:

+91 70326 56514

Technology/Science: The technology reduces time to produce Nano-Copper in a more economical and environment friendly manner.

Market Status: Commercially available.

Technology Validation: IITM - Chennai, IITB- Mumbai, NCL – Pune, NMRL – Thane, IICT – Hyderabad, BHEL R&D.

Patents/Intellectual Property Right: Patent filed in India.

Problem: Presently the conventional process of extracting metals from their respective ore is energy intensive and leads to high degree of large amount of greenhouse gas emissions. Besides being harmful for the environment, this process is complex, time consuming and also highly expensive.

Solution: The Company synthesizes nano materials through bio-route using “Economical, Efficient and Eco-friendly (E-3) Technology” where the synthesis is carried out at room temperatures and no toxic chemicals are used. The nano powders produced have higher oxidation stability and low toxicity with enhanced mechanical and conductivity properties when compared with the conventional processes. These nano particles are coated with an organic layer formed during synthesis. The team has developed a process of producing nano materials in a single step using herbal extracts. This process reduces wastage in extraction of metals from their respective ores, thus decreasing the enormous amounts of energy spent and reducing air and water pollution.

Market Opportunity: Nano Copper will result in reduced usage of copper metal by at least 70% due to its high ‘surface area to volume’ ratio.

Target Customers: Conductive Inks and coating, Lubricants and Additives, Powder Metallurgy and Anti-bacterial Fabrics.

Competitive Advantage: Reduced time, more economical and eco-friendly way of producing Nano copper.

Strategic Partnership: Investors and Joint Ventures.

Company: Aarshadhaatu Green Nano-technologies is an Indian owned company incorporated with an interest in manufacturing wide range of nano materials. Aarshadhaatu has a patented “E3 production (Economical, Efficient and Eco-friendly) that are environmentally benign. The technology has an advantage of natural organic coating leading to better shelf-life and reduced risk of oxidation and toxicity.

Achievements/Awards/Recognition: (i) India Innovation Initiative Award, Department of Science and Technology & CII in 2012 (ii) Finalist, Young Innovation Award, MIT (Massachusetts Institute of Technology).

Media Traction:

Twitter: https://twitter.com/Theme_Fusion



**Innovation Name:**

Gorilla Fan

Company:

Atomberg Technologies, Mumbai

Product applied to:

Ceiling Fans

Industry, Innovation Area:

Power Sector, Energy Efficiency

Short Description:

Superior motor design and driving algorithm for tuning Brushless Direct Current (BLDC) motors to achieve lowest power consumption and high performance in ceiling fans

Contact Person:

Mr. Arindam Paul

Email:

arindam@atomberg.com

Website:

www.atomberg.com

Telephone:

+91 90515 03838

Technology/Science: The Atomberg team has designed and manufactured India's most energy efficient ceiling fan – Gorilla, which uses Brushless Direct Current (BLDC) motors and a unique driving algorithm and blade design to reduce power losses. The team has achieved the lowest power consumption of 28W with superior air delivery.

Market Status: Commercially available.

Technology Validation: 10,000 units sold and operating.

Patents/Intellectual Property Right: Not available.

Problem: Except for cosmetic changes the ordinary ceiling fans have undergone very little improvements with regard to energy consumption pattern and do not give desired performance with low input voltage and voltage fluctuations.

Solution: Gorilla is a remote controlled ceiling fan consuming just 28W at full speed compared to 70W in a conventional fan, which is achieved by using a superior brushless DC motor design and a driving algorithm called "atomsense", which precisely senses various motor parameters in real time and controls the motor in a closed loop, avoiding all possible power losses.

Market Opportunity: Need for energy efficient ceiling fans to reduce energy costs. The ceiling fan market in India is estimated at INR 7,000 crore (70 billion) of which institutional sales comprise of 20%. The total addressable market is estimated to be INR 1,400 crore (14 billion).

Target Customers: Any institution or industry which has more than 50 fans running around 8-9 hours a day for most part of the year. Examples: Schools, Colleges Hospitals, Ceramic Industry (which are located in remote areas prone to voltage fluctuations and use fans for around 20 hours a day for drying purposes), the textile industry and other industries using ceiling fans.

Competitive Advantage: Gorilla is a remote controlled ceiling fan consuming just 28W at full speed, which is 65% less compared to existing fans, thus resulting in a saving of INR 1000-Rs 1500/fan/year.

Strategic Partnership: Companies who are selling premium LEDs and other home automation solutions, Energy Consultants, Solar Integrators, ESCO Companies - through both B2B and B2C models.

Company: Atomberg Technology is a modern hardware company founded by IIT Bombay graduates in 2012. They aspire to combine the attributes of energy efficiency and emerging trends like Internet of Things (IoT) to come up with smart, intelligent and connected electrical appliances that will bring hitherto unheard levels of comfort to the consumers.

Achievements/Awards/Recognition: Raised USD 1 million from an Indian VC firm, Parampara Capital.

Media Traction:

Your Story: <https://yourstory.com/2015/11/atomberg-technology>

Facebook: <https://www.facebook.com/gorillafans>

**Innovation Name:**

Green Manufacturing Process

Company:

Cellzyme Biotech
Coimbatore, Tamil Nadu

Product applied to:

Pharmaceuticals

Industry, Innovation Area:

Biotechnology

Short Description:

Using immobilized enzyme manufacturing of antibiotics can be carried out at 26°C without using toxic chemicals and organic solvents and achieve 8% higher productivity

Contact Person:

Dr. Rajkumar Rajagopal

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rajkumar77@gmail.com

Website:

www.cellzyme.com

Telephone:

+91 96299 79980

Technology/Science: Cellzyme has applied immobilized enzyme method to manufacture antibiotics at 26°C without applying any toxic chemicals and organic solvents. This helps in achieving an 8% increase in productivity.

Market Status: Proof-of-concept stage.

Technology Validation: Proof of concept is realized and validation carried out in lab scale batches.

Patents/Intellectual Property Right: Provisional Intellectual Property filed.

Problem: Antibiotics are manufactured using energy intensive chemical process at -50°C with large volumes of organic solvents and toxic chemicals. This process has significant negative impact on energy, environment and cost.

Solution: The team has conceived and developed a green manufacturing process using an engineered enzyme. The product (enzyme) and the process can be used for large-scale commercial manufacturing of cephalosporin antibiotics.

The proposed enzymatic process is executed at 26°C instead of existing energy intensive process at -50°C. This process eliminates need for organic solvents (8,000 litres of organic solvents per batch) and toxic chemicals. The green technology has lower environmental footprint with improved productivity.

Market Opportunity: Antibiotics market is an estimated USD 50 million industry.

Target Customers: Pharmaceutical Industries, Oral Health Care, Textiles and Chemical Industry.

Competitive Advantage: Energy efficient, cleaner processes and minimal waste streams.

Strategic Partnership: Carrier bead manufacturers (Mitsubishi, Purolite).

Company: CELLZYME BIOTECH is a vibrant biotech start-up focusing on the bioprocess development of recombinant enzymes. The company caters to the global pharmaceutical, food and chemical industries through cleaner manufacturing processes that yield high quality products.

Achievements/Awards/Recognition:

- (i) Massachusetts Institute of Technology - Global Start-up Workshop MIT GSW Elevator Pitch 2016 Award.
- (ii) Bio-Excellence Award: Emerging Company of the Year (Bio Industrial), Bangalore INDIA BIO 2016
- (iii) FICCI R&D Catapult Award 2015 in Start-up category
- (iv) BIRAC-Ignite Fellow 2015, Judge Business School, University of Cambridge, UK
- (v) Gold Award, India Innovation growth Programme IIGP 2015, DST-Lockheed Martin - FICCI - IUSSTF - Stanford - IC2 Institute - TIE Silicon Valley



**Innovation Name:**

UNIMAG system

Company:

Team DNV, Kolkata, West Bengal, India

Product applied to:

Energy Efficiency

Industry, Innovation Area:

Combustion Efficiency

Short Description:

UNIMAG system saves fuel consumption by maximizing the combustion efficiency of a liquid fuel combustion system

Contact Person:

Mr. Amit Mitra

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industries.dnv@gmail.com

Telephone:

+91 98310 09977

Technology/Science: UNIMAG system enhances/maximizes the combustion efficiency of a liquid fuel combustion system, through improved application of magnetic induction, thereby conditioning the di-pole characteristics of hydrocarbon in the fuel and oxygen in the air, imparting Quantizing Magnetic effect on the combustion input fluid dynamics.

Market Status: Commercially launched.

Technology Validation: Validated.

Patents/Intellectual Property Right: Applied.

Problem: (i) Ever increasing liquid fossil fuel price and consumption that leads to increased fuel bill and operating expense; (ii) Continuously increasing pollution load due to emissions and (iii) Gradual reduction of energy returned on energy investment ratio.

Solution: A non-chemical fluid conditioner for maximization of combustion efficiency of liquid fuel combustion systems for automotive and industrial segments, thereby conservation of fuel consumption and reduction of pollution load.

Market Opportunity: Automotive and Industrial Sectors, Agricultural Appliances and Railways

Target Customers: (i) Construction Equipment Business (Diesel fuelled); (ii) Liquid Fossil Fuel Energy Intensive companies with high potential value of greener profiles; (iii) Diesel Generators; (iv) Railways Diesel Locomotives; (v) Commercial Automotive Segments; (vi) Passenger Cars; (vii) Two wheeler segment; (viii) Agricultural Appliances; and (ix) OEMs of Automotive sectors.

Competitive Advantage: (i) Reduction in fuel consumption by up to 5-7%; (ii) Reduction in OPEX by 25%; (iii) Reduction in exhaust emission by up to 35%; (iv) Increases combustion system life (burner/engines) by up to 25%; (v) Achieved through external fitment of UNIMAG-Magnetic Fluid Conditioner in the combustion inputs without disturbing the original aerodynamics of the combustion system, unlike fuel additives or other fuel gadgets which have neither a proof of concept nor validated the techno-commerciality by end users.

Strategic Partnership: (i) Industry-Institute Partnership for R&D; (ii) Energy Efficiency Rating Agencies and Energy Auditors; (iii) Industry Associates/Energy Consultants; (iv) Automobiles Associations, OEM liaisoning agencies, NGOs working on energy economy.

Company: DNV Industries Private Limited, formerly known as A.M. Pollution (Engg.) Research Pvt. Ltd., was established in 1997 and started working in the field of energy conservation and environmental pollution in automotive as well as industrial segments. The company developed UNIMAG-Magnetic Fluid Conditioner - a non-chemical, permanent fluid conditioner which saves fuel energy and reduces exhaust emission. The product was validated by PCRA, under the Ministry of Petroleum and Natural Gas, Government of India, and approved for field trials. At present the company is working with reputed private and public sectors in India and is aspiring to go globally with its unique energy efficiency technology.

**Innovation Name:**

GIBSS

Company:

GIBSS, Mumbai

Product applied to:

Air Conditioners

Industry, Innovation Area:

Power Sector, Energy Efficiency

Short Description:

Geothermal Heat Sink, System for Air Conditioners

Contact Person:

Mr. Arun Thomas

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+91 99301 01745

Technology/Science: GIBSS Geothermal heat sink system uses the earth as heat sink instead of outside atmosphere temperatures. With the lower temperatures the efficiencies of the air-conditioning are significantly higher.

Market Status: Commercially available.

Technology Validation: Pilot installation in different regions of India.

Patents/Intellectual Property Right: In the process of filing 4 patents.

Problem: Traditional air-conditioning systems, using chillers consume high amount of energy and uses millions of litres of clean water to cool the buildings in India's hot and tropical climatic conditions. The efficiency of traditional air conditioning systems is dependent on the atmospheric temperature. If the atmospheric temperature is high, the efficiency of these systems is low.

Solution: GIBSS provides an energy efficient, water saving air-conditioning system with a very low carbon foot-print called geothermal air-conditioning system, which uses the ground as a heat sink as the earth's temperature at certain depth is lower than that of the atmosphere temperatures. With lower ground temperature available to the air conditioning systems, their efficiency increases significantly.

Market Opportunity: Huge growth in demand for air conditioning foreseen in India, both due to urbanization, rise in incomes and global temperature changes. A potential market of INR 100,000 crore including commercial, industrial and infrastructure buildings - new construction building and retro-fitment market.

Target Customers: Customers who have a mandate to build sustainable buildings, such as campuses of large MNC, IT Parks, Special Economic Zones, Airports, super-specialty hospitals, and educational institutions. Specialized buildings such as Data Centers.

Competition: Traditional chiller manufacturers.

Competitive Advantage: Geothermal air conditioning system brings up to 60% energy savings, 100% water savings and reduces the carbon footprint for air conditioning of commercial and industrial buildings.

Strategic Partnership: EPC Players executing Smart City projects, and Building Solutions providers.

Company: Green India Building Systems and Services (GIBSS) is an India-based clean technology company specializing in geothermal air-conditioning technologies for cooling focused on tropical regions such as India. Headquartered in Mumbai, the company has offices in Delhi, Bangalore, Hyderabad and Singapore. GIBSS was founded by Arun Shenoy and Mandar Kaprekar in 2009.

Achievements/Awards/Recognition: (i) GIBSS was one of the 30 emerging innovative companies showcased during Hon'ble Prime Minister Narendra Modi's visit to the Silicon Valley in 2015. (ii) Won the Innovation for India Awards 2016, held by the Marico Innovation Foundation. (iii) The Climate solver award by the World Wide Fund (WWF), India; (iv) Innovator Award by the Ministry of Science and Technology, Government of India (v) India-Africa Award supported by the Ministry of External Affairs, Government of India.

Media Traction:

- Media Traction: http://www.gibss.in/media_desk.html
- Your Story: <https://yourstory.com/2016/04/green-india-building-systems-and-services-gibbs>
- Facebook: <https://www.facebook.com/pages/GIBSS/151155971605446>
- Twitter: https://twitter.com/Gibss_NZEB



**Innovation Name:**

Cold Vault – An efficient thermal storage technology for your refrigeration needs

Company:

Inficold India Pvt. Ltd., Ghaziabad, Uttar Pradesh

Product applied to:

Refrigeration and Air conditioning

Industry, Innovation Area:

Energy Efficiency

Short Description:

Plug N Play Thermal Storage for Refrigeration & AC to mitigate power outages & integrate solar

Contact Person:

Dr. Nitin Goel

Email:

ng@inficold.com

Telephone:

+91 9873518652

Technology/Science: Inficold system innovatively combines thermal storage with vapor compression refrigeration systems. Electrical energy is stored in the form of ice. Inficold's patented technology seamlessly integrates thermal storage with any existing refrigeration/AC system. All three operating modes – cooling by grid electricity, charging the thermal storage and cooling by thermal storage during outages – are accomplished by the existing compressor, evaporator and condenser of the system, thus minimizing the capital cost of the system.

Market Status: Pilot plants have been installed and operating in select locations.

Technology Validation: Pilots operational.

Patents/Intellectual Property Right: 2 patents applied.

Problem: Currently the gap in electricity demand and supply is met by battery backup or diesel generators. For air conditioning and refrigeration systems a significantly cheaper and cleaner option is needed to store energy and eliminate the need for diesel generators and battery power backup.

Solution: Thermal storage system, similar in concept to a chargeable battery, which stores "cooling" when charged while the power is available. The system provides the required cooling during power outages.

Market Opportunity: Higher average ambient temperatures, leads to high perishability of dairy products, fruits and vegetable; transportation and storage of perishable food product; growing demand for space cooling and air conditioning in urban areas, and steadily rising demand in rural areas.

Target Customers: Milk Cooling, Dairies, Milk Processors, Cold Storages, Residential and Commercial Air Conditioners.

Competition: Diesel generators and electrical batteries which are 3-4 times more expensive.

Competitive Advantage: Indigenous technology can be retrofitted and adopted seamlessly with existing HVAC systems and thermal storage technologies.

Strategic Partnership: Manufacturers of bulk milk coolers.

Company: INFICOLD INDIA PRIVATE LIMITED is an unlisted Private company incorporated on 28 August, 2015. Its registered office is at R-9/279, Raj Nagar, Ghaziabad, Uttar Pradesh with a paid-up capital of INR 1.0 lacs.

Achievements/Awards/Recognition: R&D award from Global Innovation and Technology Alliance.

Media Traction:

- Your Story: www.inficold.com
- Facebook: <https://www.facebook.com/inficold/>
- Twitter: <https://twitter.com/InficoldNg>

**Innovation Name:**

Multiflex

Company:

Rhino Machines, Anand, Gujarat

Product applied to:

High pressure moulding machines

Industry, Innovation Area:

Energy Efficiency

Short Description:

Use of hydraulics instead of compressed air in high pressure moulding machines

Contact Person:

Mr. Gajendra Prasad

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rhino.gpbvb@gmail.com

Website:

www.rhinomachines.net

Telephone:

+91 92279 70118

Technology/Science: Use of hydraulics system in high pressure moulding machines to save energy and increase production efficiency.

Market Status: Commercially available.

Technology Validation: Self-validation with actual energy consumption monitored.

Patents/Intellectual Property Right: Not applied.

Problem: The conventional process that uses compressed air as a source requires enormous amount of energy. Critical to reduction in energy consumption as well as energy costs.

Solution: The product, Multiflex, is a stand-alone high pressure moulding machine which reduces energy consumption by 30 to 50%, with reduction in noise pollution, improves the process quality, thus saving energy by lower the high rejections rate. Compared to the conventional jolt squeeze machines, this process uses hydraulics instead of compressed air, and with 4 to 5 times higher force, resulting in stronger mould. This further helps in better compliance with safety and noise regulations.

Market Opportunity: Foundries with output of 100 tons or more per month, including Cast Iron and Spheroidal Graphite casting.

Target Customers: Foundries in segments of 100 to 1000 MT/month productions, as well as Foundries which service OEMs, where high quality standards and maintained and strict regulatory compliances.

Competitive Advantage: Reduce the energy consumed, saves energy and resources by minimizing variations in casting weight.

Strategic Partnership: Manufacturing partner, bought out supplier, strong internal team help to manufacture product.

Company: Established in 1983 as a project consultancy firm, in 1991 Rhino Machines evolved into a full-fledged manufacturing firm that produces conventional Green Sand, Pouring and Centrifugal Casting Products. In 1995, Rhino machines collaborated with a French company 'Fondarc' to further strengthen their capabilities while bringing latest technologies to local markets. The company has taken ISO 9001:2008.

Achievements/Awards/Recognition: Leading member of Institution of Indian Foundry men. S2 rating by CRISIL Performance Rating for High Performance Capability and Moderate Financial Strength. Awarded as Centre of Excellence in Smart Manufacturing in April 2016.

Media Traction:

Facebook : <https://www.facebook.com/RhinoMachines/>

Website : www.rhinomachines.net

Youtube : <http://www.youtube.com/c/rmplvvn>



**Innovation Name:**

Radiant Cooling

Company:

Oorja Energy Engineering

Product applied to:

Air Conditioners

Industry, Innovation Area:

Power Sector

Short Description:

Energy Efficient Radiant Cooling panels and pipes system for Air Conditioners

Contact Person:

Mr. Madhusudhan Rapole,
Managing Director

Email:

madhu@oorja.in

Telephone:

+91 90003 32828

Technology/Science: Oorja manufactures Radiant cooling panels and pipes for energy efficient air conditioning with an innovative gypsum board based panel that uses conventional gypsum board, widely used as false ceiling material, and converts it into a cooling panel by embedding a network of pipes in the board and connecting it to chilled water source. Oorja's radiant panels and pipes provide 30-50% reduction in electricity consumption by the chiller units, thus eliminating the need for fan motors in air handling units (AHUs).

Market Status: Commercially available.

Technology Validation: 15 customer installations in India.

Patents/Intellectual Property Right: 4 patents filed in radiant cooling technologies.

Problem: Space cooling in commercial buildings accounts for 60-70% of the total electricity consumed. Efforts to bring in efficiency have focused on efficient 'generation' of cooling while cooling 'distribution' technology of using air ducts has remained unchanged.

Solution: Changes the cooling distribution by using pipes embedded in floor or panels in the ceiling instead of air ducts. This removes inefficiency in cooling distribution and consequently cooling generation too.

Market Opportunity: Need for energy efficient central air conditioning to reduce energy costs in organizational and institutional buildings, especially in India where year-round air conditioning is essential in many parts of the country. Rs. 20,000 crore /year opportunity available.

Target Customers: IT Services Firms, Hospitals, Educational Institutions, Shopfloors and Aircraft Hangars.

Competitive Advantage: Radiant cooling eliminates the need for fan motors by circulating the chilled water directly in the space to be cooled. In addition, air-based cooling requires chilled water supply temperature of 7°C, whereas radiant cooling requires 16-18°C. This leads to additional electricity and commercial savings as the compressor in the chillers consumes less electricity by operating at higher temperature.

Strategic Partnership: Grundfos. Grundfos Pumps has nation-wide dealer network and it benefits in sales of pumps with our solution.

Company: Oorja is a Cleantech Heating and Cooling company focused on providing sustainable solutions for industrial and commercial heating and cooling. It provides solutions based on Solar and Energy Efficiency that are economically and commercially viable.

Awards and Recognition: SKOCH Smart Technology Award 2015.

**Innovation Name:**

Airtron AC Energy Saver

Company:

Magnatron International, Kolkata

Product applied to:

Air Conditioners

Industry, Innovation Area:

Power Sector, Energy, Efficiency

Short Description:

Use sensors-driven microprocessor in air-conditioners to ensure the set temperature is maintained

Contact Person:

Mr. Kishore Mansata

Email:

indiaenergysaver@gmail.com

Website:

www.magnatron.in

Telephone:

+91 97487 27966

Technology/Science: Airtron AC Energy Saver uses sensors-driven microprocessor in air-conditioners to ensure the set temperature is maintained using this intelligent system and thereby save upto 35% electricity.

Market Status: Commercially available.

Technology Validation: Validated on Inverter ACs and 5-star ACs by OEMs, MNC's and PSU's over the past 4 years. Sold more 12,000 units.

Patents/Intellectual Property Right: Patent Published in 2013.

Problem: Today's air-conditioning system uses thermostat to detect and maintain the preferred temperature which is inefficient. It uses mechanical relay structures to control the AC. So there is a need to intelligently maintain the temperature with accuracy and efficiency.

Solution: THE AIRTRON AC energy saver retrofit cuts your bills by upto 35%, yet assuring Precision control of the room temperature by reducing the compressor run time. It does this by referencing the room, coil and ambient temperatures, using multiple algorithms in a closed loop circuit. It is a dual-sensor driven, programmable AC power saver as opposed to the "blind plug'n play" timers currently available.

Market Opportunity: The existing air-conditioner market which is steadily growing, provides an opportunity for energy saving benefit to the institutional as well as domestic customers.

Target Customers: Sectors where the population of ACs is large and they run 24x7, such as telecoms and mobile towers, banks and ATMs, healthcare, hospitality and industrial and commercial sector especially in hot countries, and companies where a major chunk of the energy bill is for ACs.

Competitive Advantage: Cuts electricity bills by upto 35%, priced for a pay back of less than 3-5 months operating only 9 hours daily.

Strategic Partnership: To have 80 distributors in India and 30 overseas in the next 18 months, and also strategic partners to increase the sales by 250%. Actively looking for overseas partners to create global presence and we would welcome this initiative.

Company: Magnatron International is focused on providing a Patent-published energy saver for all Air Conditioners up to 20.0 TR capacity. This technology ensures that the set temperature is maintained and enabling savings upto 35%.

Achievements/Awards/Recognition: None.

Media Traction:

- Facebook: <https://www.facebook.com/magnatronint/>
- Twitter: <https://twitter.com/MagnatronInt>



**Innovation Name:**

Nightomatic - Sensor less energy saving nightlight

Company:

Timersnsavers Kozhikode, Kerala

Product applied to:

Power Saving

Industry, Innovation Area:

Energy Efficiency

Short Description:

Sunrise and sunset timings are calculated for a given location and is pre-programmed to the device EPROM. The device uses this information to turn on and off the lights taking into account additional customized time changes from the mobile user interface.

Contact Person:

Mr. Sunish Issac

Email:

sunish@timersnsavers.com

Website:

www.timersnsavers.com

Telephone:

+91 94470 10553

Technology/Science: Sunrise and sunset timings are calculated for a given location and is pre-programmed to the device EPROM. The device uses this information to turn on and off the lights taking into account additional customized time changes from the mobile user interface. There is also provision for the user to do an emergency on and off. The technology takes care of frequent power failures and extremely low and high voltage situations and has temperature compensation for maintaining accurate time in all conditions for years to come.

Market Status: Commercially available

Technology Validation: Field tests carried out for over 2 years

Patents/Intellectual Property Right: Indian Patent Filed

Problem: Automatic night lights currently available use sensors or timers to turn on and off lights at sunset and sunrise. Sensors have reliability issues due to dust and dew and cannot be used indoors. Timers need to be reconfigured for seasonal and geographic variations. Both of the methods also are difficult to install and configure. Other problems are manpower requirement in case of manual switching, energy wastage and provide security for unmanned commercial, industrial and residential property.

Solution: The product is a timer with times pre-programmed for a geographic location. By design the product allows ease of installation by having it between the load (LED, CFL or other lighting) and the source of power (the holder). The key idea is that there is no permanent physical user interface on the device except for an LED to indicate it's working. The user interface required for one-time programming can be a mobile, tablet or computer.

Market Opportunity: 4 billion market for timers.

Target Customers: Publicity Signboards manufacturers, and Agricultural timers for watering, water level controllers without sensors other timer applications.

Competitive Advantage: Ease of installation, smartphone UI enabled.

Strategic Partnership: For street lighting applications, tie up with local governing bodies. EESL was suggested as good strategic partner by one of the UNIDO mentors.

Company: Timersnsavers develops user-friendly energy, water, time and manpower saving technologies for domestic and industrial sectors.

Achievements/Awards/Recognition: Millennium Alliance Award for Digital Portable Copra Moisture Meter.

Media Traction:

Facebook: <https://www.facebook.com/Timersnsavers>

**Innovation Name:**

Nishant Bioenergy

Company:

Nishant Bioenergy Pvt. Ltd., Zirakpur, Punjab

Product applied to:

Biomass Pellet Plants, Cooking Stoves

Industry, Innovation Area:

Renewable Energy, Sustainability

Short Description:

Innovative Pellet Cook Stoves & Burners for commercial kitchens and micro industries that saves more than 35% in fuel cost while replacing fossil fuels (LPG/Diesel) with carbon neutral biomass pellets. Low cost technology to make biomass fuel pellets (250 kgs/hr)

Contact Person:

Mr. Ramesh Kumar Nibhoria

Email:

nibhoria@gmail.com

Website:

www.nishantbioenergy.com

Telephone:

+91 98156 09301

Technology/Science: Innovative pellet-fuelled cook stoves which can be regulated like LPG/Diesel stoves. Heat can be controlled over a range of 1 kWh to 100 kWh with automated pellet feeding. Small pellet plant (250 kg/hour) can convert any biomass into solid fuel pellet. Manufacturing and selling these to small green enterprises.

Market Status: Commercially available

Technology Validation: Already in use since last 4 years

Patents/Intellectual Property Right: Applied for Stove and Burner

Problem: Community kitchens and small industries use LPG/Diesel and needs solutions which can use carbon neutral fuel pellets to save on fuel costs.

Solution: Innovative pellet-fuelled cook stoves that can be controlled like LPG stoves. It has heat controls from 1 kWh to 100 kWh and pellet feeding is automated. The advanced pellet burner has many user friendly features. Small pellet plant (250 kg/hour) can convert any biomass into fuel pellet. Plants manufacturing fuel pellets are sold to district level franchisees, who sell their pellets to the stove/burner clients in his/her exclusive franchisee area. Stoves and burner are given free of cost, pellets are sourced from franchisee producing pellets within that area.

Market Opportunity: Need for carbon-neutral stoves and burners in communities replacing diesel/LPG, giving 35% saving in fuel cost is huge and conservative estimate is 100000 in India.

Target Customers: : Small and micro industries using diesel burners; and a market created by the company's free installations of stoves and burners. The attractive 35% savings ensures 1.5 billion USD market for the sale of pellets.

Competitive Advantage: Setting up decentralized fuel pellet technology (250 Kg/h) through franchisee model. Installing stoves and burners FREE of cost under agreement of pellet sales. We will establish FACTORY TO CONSUMER supply chain to remain almost 25%-30% cheaper than centralized pellet production selling through distributors.

Strategic Partnership: Franchisee route

Company: Nishant Bioenergy (NB) was established in the year 2005 and is a pioneer in the field and conceive/design/manufacture Biomass Cook Stoves and pellet making equipments. The franchisee model also creates employment opportunities for local people. The company has more than 10 years experience in designing and manufacturing innovative solutions to use bioenergy for thermal applications.

Achievements/Awards/Recognition: Ashden Award-UK, PCRA Award-India, Santa Clara University-GSBI-USA-2007, GSBI Accelerator-USA-2013 among others.

Media Traction:

Facebook: <https://www.facebook.com/pages/Nishant-Bioenergy-P-Ltd/284025204995771>

Twitter: <https://twitter.com/nibhoria>



**Innovation Name:**

SolStove

Company:

Sahastra Urja, Vadodara, Gujarat

Product applied to:

Cookstove

Industry, Innovation Area:

Solar Cookers

Short Description:

SolStove is a state-of-the-art complete modern cooking solution using solar energy

Contact Person:

Mr. Dhaval Thakkar

Email:

dhaval@sahastraurja.com

Telephone:

+91 97277 03664

Technology/Science: Solar energy is stored in portable thermal storage in high density, that becomes Hot-Plate for cooking three meals a day inside kitchen and would be charged in the noon with outdoor concentrator in sunny days and by other energy source at other time.

Market Status: Commercially available.

Technology Validation: Prototyped and Alpha Pilot tested.

Patents/Intellectual Property Right: 8 patents filed.

Problem: Despite solar energy being key renewable source, there is no affordable, accessible, appropriate, convenient modern cooking solution.

Solution: Solar based complete-cooking system to cook with a wide range and medium of heating much closer to the conventional method of cooking.

Market Opportunity: Providing accessible and affordable modern cooking solution to half of the world population who are still using biomass as cooking fuel; increasing their savings and income generation by more productive time. Also providing aspirational cooking solution to consumers that is economic, clean, safe and environmentally acceptable. SolStove can save 4.3 million lives by replacing traditional biomass cook stoves, and another half million lives from kitchen accidents around world. It can save billions of trees, that would help in carbon sequestration of a fifth of current GHG emissions.

Target Customers: Consumers who are currently using LPG but having accessibility, lifelong cost and price rise as concern. Consumers who want to control their cooking fuels costs with convenient and safe cooking fuel users.

Competitive Advantage: Fully 'end-to-end' packaged solution to make SolStove accessible worldwide; with 20% lifecycle cost to other commercial solutions (min \$0.08 per family per day), makes it most affordable solution in most regions and for most income groups.

Strategic Partnership: Regional Energy Departments (MNRE in India), Social, environment, climate, forest and other relevant government departments UN, WHO, SE4ALL, Climate change/RE funding agencies (WB, ADB).

Company: Sahastra Urja Pvt. Limited (SUPL) was founded in 2011. The founding team has over a decade of experience in research and experimental development of natural sciences and engineering products and solution. The company aims to provide disruptive affordable renewable energy solutions, including innovations in area of renewable and clean-tech energy solutions that can enrich the lives of the people.

**Innovation Name:**

Multi Fuel Biomass Gasifier

Company:

Urjas Energy Solutions Pvt. Ltd.,
Mumbai, Maharashtra

Product applied to:

Agro Waste

Industry, Innovation Area:

Clean and Green Fuel

Short Description:

Urjas Gasifiers can reliably convert farm waste to a clean and convenient gaseous fuel.

Contact Person:

Pradeep Podal

Email:

pradeep.podal@urjas.com

Website:

www.urjas.com

Telephone:

+91 98709 99679

Technology/Science: Urjas converts various types of agro-wastes to a clean and convenient gaseous fuel, and has been successfully used even with high-ash content feedstock exceeding 15% ash. The gasifiers are also equipped with Urjas proprietary Vortex burners for high flame efficiency and safety. The Gasifiers can be semi-automated to offer great ease of operation and removing necessity of highly trained manpower.

Technology Validation: Pilots on-going

Patents/Intellectual Property Right: Proprietary; No Patents

Problem: India burns over 1.4 billion liters of diesel per year for heating and has over 400 million people living without electricity. Also, 120 million tons of agro-waste is produced.

Solution: Converting agro-waste to a convenient gaseous fuel to replace diesel and other fossil fuels for heating and electricity generation. Typically, the payback is less than 7 months.

Target Customers: NGOs powering remote villages, industries using diesel for heating, Lead recycling industry and Battery industry

Competitive Advantage: Extremely low maintenance, capable of using diverse feedstock.

Strategic Partnership: India's biggest burner manufacturer, Grassroots Inc.

Company: Urjas started in the labs of IIT Mumbai by a team of young engineers passionate about renewable energy, as an attempt to bridge the energy gap between needs and availability in remote India. Since then it has been an endeavour to bring renewable energy technology to the masses and build a sustainable future. The team has acquired experience in system design and installation of renewable energy power plants and has build-up strategic relationship with their suppliers, which gives them the edge needed to achieve their target.

Achievements/Awards/Recognition: Raised 100,000 USD in angel funding.

Media Traction:

Your Story: <https://yourstory.com/2015/04/urjas-energy-funding/>

Facebook: <https://www.facebook.com/urjasenergy/>

Twitter: https://twitter.com/urjas_energy

<https://www.linkedin.com/company/urjas-energy-solutions>



**Innovation Name:**

Aquvio

Company:

Aquvio, Varanasi

Area of Innovation:

Water Efficiency

Product applied to:

RO water Purifier

Industry, Innovation Area:

Water Efficiency

Short Description:

To reduce wastage in RO based water purifiers

Contact Person:

Mr. Naveen Kumar

Email:

naveen@iMinBit.com

Website:

www.aquvio.com

Telephone:

+91 80902 39338

Technology/Science: The technology uses a semi-permeable membrane (Reverse osmosis) to make water potable. The pump-membrane system and surface area of membranes are the innovation.

Market Status: The product has been launched in market and 30 customers acquired.

Technology Validation: In process.

Patents/Intellectual Property Right: Provisional Patent received, national and international patents filed.

Problem: To reduce wastage in RO based water purifiers. The current water purifiers waste nearly 60-70% water during purification. This is an issue to be taken care of and not only provide potable water but also safeguard this precious resource.

Solution: The product reduces the wastage by 50% and generates product water with 70% recovery, per litre and energy consumption costs have been reduced to half.

Market Opportunity: The need for pure drinking water is an ever growing market with more domestic users across Indian and institutions opting for reverse osmosis-based water purifiers.

Target Customers: Any place with consumption of drinking water more than 600 liters per day. E.g. schools, colleges, universities, offices, hospitals, hotels and restaurants.

Competitive Advantage: With the boom water purification systems, and the need to conserve potable water, the higher efficiency of Aquvio is a significant advantage.

Strategic Partnership: MCIIE TBI, IIT (BHU), Varanasi

Company: Aquvio is an initiative to impart a cost efficient reverse osmosis-based water purification solution. India has a huge challenge of providing pure drinking water to the masses in our water stressed country. The purifier converts unsafe water to potable water with the highest efficiency. Aquvio has 100LPH capacity suitable for the consumption of 700 to 1000 litres, B2B segment product that provides a high recovery rate of more than 70%.

Media Traction:

- Your Story: <https://yourstory.com/2016/01/aquvio/>
- Facebook: <https://www.facebook.com/AquvioIN/>
- Twitter: <https://twitter.com/Aquvio>

**Innovation Name:**

EcoHealth

Company:

EcoHealth Products, Chennai

Product applied to:

Waste water recycling

Industry, Innovation Area:

Water Purification

Short Description:

Clean sewage and other forms of waste water into odor free water using reagents made from botanical derivatives.

Contact Person:

Mr. Suraj Sunil

Email:

surajsunil5@gmail.com

Website:

www.ecohealth.in

Telephone:

+91 98464 75555

Technology/Science: The company has developed organic reagents made from botanical derivatives, which can convert sewage and other forms of waste water into clear, odour free water with parameters specified for drinking water.

Market Status: Commercially available.

Patents/Intellectual Property Right: Not available.

Problem: Sewage and other forms of waste water are harmful and projects strong foul odour, therefore to eliminate that a need arises.

Solution: The technology flocculates the suspended and dissolved impurities in sewage and other forms of waste water using an herbal-based reagent. The water is then treated with a disinfectant of herbal origin which eliminates all harmful bacteria including faecal coli forms and E-coli. The water when filtered through sand and carbon filters is absolutely clear, colourless and free from any odour. Since all the harmful bacteria are also eliminated and since the water would have attained accepted parameters in terms of Total Dissolved Solids, Total Suspended Solids, Biological Oxygen Demand and Chemical Oxygen Demand, it is of drinking grade. The treated water is safe for use in other secondary purposes such as horticulture, thereby reducing the pressure on fresh water resources by as much as 80%.

Market Opportunity: Need for waste-water reutilization.

Target Customers: Urban and rural and remote users of water, especially where water is likely to be contaminated, Urban and Municipal water supply, industries where high water purity is required.

Competitive Advantage: Absolutely harmless with no negative side-effects and the process produces pure drinking grade water at a very low cost.

Company: Ecohealth is a company researching deep into time-honoured customs and practices, to develop wealth from waste by developing dynamic, eco-friendly, sustainable solutions for medical and environmental problems, integrating the richness of traditional knowledge with the practicality of modern science.

Facebook: ecohealthproducts



**Innovation Name:**

Smart water distribution technology

Company:

Efftronics Systems, Vijayawada,
Andhra Pradesh

Product applied to:

Water distribution

Industry, Innovation Area:

Water Supply

Short Description:

Smart water distribution using RTU technology, which ensures reliable water distribution

Contact Person:

Mr. Anvesh Dasari

Email:

anvesh@efftronics.com

Website:

www.efftronics.com

Technology/Science: Ensuring right quality, quantity and duration of time using RTU over PLC water management system.

Market Status: Commercially available

Technology Validation: Installed in Vijayawada City

Patents/Intellectual Property Right: Not available.

Problem: The real time monitoring of water distribution is not present till date therefore a efficient monitoring system is needed so that the water distributed is monitored efficiently

Solution: Smart water distribution project aims to address Indian issues like truthful information flow from bottom to top and planning and monitoring activities in water distribution using RTU system. It ensures real time monitoring of turbidity, pH and chlorine levels at plants and reservoirs, timely trigger to plant personnel on how much local chlorine boosting to be done in case of chlorine decay during distribution, real time monitoring of inflow, outflow and water level at plants and reservoirs, real time monitoring of schedule adherence and duration adherence of water distribution, and managing demand variations with the help of historical filling and distribution patterns, etc.

Market Opportunity: Need for real time monitoring of water distribution system for more efficient quality and distribution monitoring.

Competitive Advantage: Use of real time monitoring system over PLC systems for real time and reliable distribution of water.

Company: Efftronics Systems Pvt. Ltd. is (an ISO 9001- 2008 certified IT company) a technology leader in Data Acquisition Systems, Data Dissemination Systems, Multilingual Graphics and Engineering solutions, providing software and hardware solutions that enable companies to develop better products faster and more cost-effectively. The company offers innovative products and solutions that help customers to overcome their challenges.

Achievements/Awards/Recognition: R&D recognised by DSIR Government of India, Certified ISO 9001: 2008 by Underwriters Laboratory.

Media Traction:

Facebook: <https://www.facebook.com/public/Anvesh-Dasari>

**Innovation Name:**

Smart Water Management System

Company:

Greenenvironment Innovation Chennai

Product applied to:

For water and wastewater treatment plants

Industry, Innovation Area:

Water Efficiency

Short Description:

Real-time Monitoring system for water, waste water and industrial effluent treatment plants has been developed to give local operators a guideline that would allow optimum operational and maintenance strategy.

Contact Person:

Ms. Latha Kannan

Email:

latha@greenenvironmentindia.com

Telephone:

+91 94444 67005

Technology/Science: Using Internet of Things (IoT) based technologies in remote monitoring instruments within a network it can collect data from a full array of smart sensors connected to the instruments transmitting water, waste water and industrial effluent quality, flow, temperature and other environmental indicators.

Market Status: Sewage Treatment Plants, Water Treatment Plants, Effluent Treatment Plants

Technology Validation: Trials completed on Prototype.

Problem: Water scarcity and the rising cost of supplying water, besides present issues of water stress and the likely emerging water-deficiency situation. Urban communities buy water in tankers at high price. Quality of potable, non-potable water and industrial effluents polluting aquifers, surface water bodies and farm lands. Water being a critical resource needs to be managed, monitored and re-used effectively.

Solution: Uses IoT technology and innovation to improve plant efficiency by monitoring water quality and quantity on a real time basis through the company's products and services: (1) The real time water quality and quantity monitoring system, (2) The customizable mobile app for field level data, (3) The User-specific Analytics dashboard at the customer-end receives immediate E-mail or SMS alerts indicating critical conditions and enables trouble-shooting and remedial action in water treatment plants.

Market Opportunity: Sewage Treatment Plants, Water Treatment Plants, Effluent Treatment Plants

Target Customers: Commercial buildings, Government - Rural development departments, Urban Local bodies, Schools & Educational Institutions and Mineral water companies. Residential buildings and Architects and Builders.

Competition: Electronics companies in IoT space, companies that offer Operation & Maintenance

Competitive Advantage: Real Time Data Communication, Troubleshooting and process support 24*7, Life cycle support for equipments

Strategic Partnership: Big water companies, Architects, Facilities management companies.

Company: Greenenvironment Innovation & Marketing India (P) Ltd., is an environmental engineering company incubated at IIT Madras, focused towards providing innovative and cost effective technologies for efficient water, waste water and internet of things (IoT) based technologies management solutions based on sustainability principles.

Media Traction:

- **Facebook:** <https://www.facebook.com/GreenenvironmentIndia>
- **Twitter:** <https://twitter.com/GreenenvironmentI>



**Innovation Name:**

Oás Media technology

Company:

OAS IIT Kharagpur, West Bengal

Product applied to:

Water Purification

Industry, Innovation Area:

Water Efficiency

Short Description:

Removal of arsenic from water through high adsorption system, while retaining the desirable mineral content of water.

Contact Person:

Mr. Saket Kumar

Email:

vasbros@gmail.com

Telephone:

+91 9308112345

Technology/Science: Oás Media technology is an Indigenous technology having 2 patents (by IIT Kharagpur) with the following distinctive features: Fulfils Toxic Characteristic Leaching Protocol; Has unprecedented high Adsorption capacity of Arsenic. (~32.5 mg/g); Lowest in cost per liter water filtration; and The filtration process has no requirement of electricity. Oás media technology removes the hazardous chemicals and contaminants, while keeping the minerals intact in the drinking water.

Market Status: Commercial scale production.

Technology Validation: Field trial has already been done in association with UNICEF and IIT.

Patents/Intellectual Property Right: 2 patents by IIT Kharagpur.

Problem: The increasing level of toxicity in drinking water is at alarming stage. The water purifiers available are not able to filter out the hazardous contaminations like arsenic and heavy metals. On the other side, Technologies like RO are removing the basic minerals in water required for the body. There is an urgent need for water filtration system, which is efficient and cost-effective.

Solution: Arsenic-free clean drinking water, at an affordable price, while keeping all the required minerals, and while removing all the hazardous elements is the need. A matter of grave concern is that 11% of Indian Population is forced to drink Arsenic and Heavy Metal Contaminated water. Since the economical water filters are not able to remove arsenic poisoning. Cases of contaminants are increasing with the decrease in ground water level.

Market Opportunity: USD500 million, annually.

Target Customers: : All the households (735 habitats, in 47 districts, in 13 states in India) living in regions affected with arsenic and heavy metal contaminated water. 11% habitats in India, growing at about 5% annually. Bangladesh, Malaysia, Pakistan, Morocco and other 50+ countries are also the perspective market.

Competitive Advantage: Removes ársenic, heavy metals and bacteria apart from other contaminants, at a price as low as 5 paisa per liters, with no electricity requirement.

Strategic Partnership: Local NGOs like Empower Jharkhand, Doctors For You, VARDAN etc.

Company: VAS BROS. ENTERPRISES PRIVATE LIMITED is a start-up company incubated at STEP IIT Kharagpur. The first media manufacturing unit (Reactor) is situated at Gopali, STEP IIT Kharagpur, whereas the filter assembly unit is at Bariatu, Ranchi. Led by IIT alumni, the management of the company consists of experience in the said technology and in social venture. The company has successfully scaled-up the production from Lab to Industry scale. Business and pilots with some very prominent organizations are already executed. Company is planning to roll out the retailing of filters in the habitats suffering with acute water problem.

Achievements/Awards/Recognition: Oás technology is a disruptive indigenous technology with 2 patents by IIT Kharagpur. The research was funded by Department of Science & Technology, Government of India. Chief inventor, Prof. Sirshendu De, has received 'Bhatnagar Award' for its invention. The said technology empowers us to design simple yet most effective water filter.

Media Traction:

Facebook: www.facebook.com/vasbros

Twitter: www.twitter.com/vasbrosplc

Your Story: The research & development of 'Organic ársenic Sorber' (Oás) technology is done at IIT Kharagpur, with the fund supported by Water Mission Project of Department of Science & Technology, Government of India. The technology was validated by UNICEF by the field trial in the arsenic affected habitats in West Bengal.





Innovation Name:

Watsan

Company:

Watsan Envirotech Pvt. Ltd., Chennai

Product applied to:

Water Purifiers

Industry, Innovation Area:

Water Efficiency

Short Description:

Electricity-free, maintenance-free water purifiers running on nano-clay micro filtration technology

Contact Person:

Mr. Chandrasekaran J.

Email:

chandra@watsan.in

Telephone:

+91 94444 41181

Technology/Science: Water purification through micro-filtration using nano-clay technology, an electricity-free, maintenance-free and affordable process.

Market Status: Commercially available, 1,00,000 households have used.

Technology Validation: DST, CSIR, CIPET, IIT Madras.

Patents/Intellectual Property Right: Patent available.

Problem: Today's water purifiers require lot of maintenance and electricity so the need arises for purifiers to be free from both.

Solution: Economical, without requiring electricity, low-maintenance water purifiers that run anywhere and transforms 100% water to potable water and addresses water contamination problems like arsenic, iron and fluoride removal.

Market Opportunity: Growing demand for potable water, leading to an increasing demand for water filters and purification systems, especially India's rural, slum and urban middle-classes. Meeting the water demand of 48 million rural households in India.

Target Customers: Direct sales to end-users, bulk sales to NGOs.

Competition: Conventions and modern high cost water filters, ROs and water purification systems.

Competitive Advantage: Not depended on electricity, low maintenance costs.

Strategic Partnership: DST, CSIT (IMMT), CIPET- for licensing, approval and accreditation, IIT Madras for arsenic removal technology

Company: The name WATSAN was coined by blending the words 'Water' and 'Sanitation', which are the two main aspects of the establishment. WATSAN's sole purpose is to provide water and sanitary solutions to the rural population by manufacturing and distributing low-cost, yet effective electricity-free water filters to urban slums and rural families who cannot afford other expensive options.

Since the inception of the water purifier unit, WATSAN gained a prominent place in the rural market. It is first company to provide electricity free arsenic and iron removal purifiers. Within 3 years of inception, we have impacted more than 1,00,000 households in rural India.

Achievements/Awards/Recognition: National Awards from Ministry of Petrochemicals in 2012 and 2015, FORCE-PARK shared value award for Innovation in BoP, 2014, Business World India's Hottest Young Entrepreneur Award

Media Traction:

- **Twitter:** <https://twitter.com/naturalfilter>
- **Website:** www.watsan.in
- **YouTube:** <https://www.youtube.com/channel/UCBSOIEpEm6TvAn2EPtARh9g>



Mentor Profiles



Mentor Chair:

Dr. Nand Pal Singh

Dr. Nand Pal Singh is currently a Senior Technical Adviser at the UNIDO Regional Office for South Asia, New Delhi. He brings 33 years of experience in policy making with the Department of Non-Conventional Energy Sources, now Ministry of New and Renewable Energy. He was the Group Head of Small Hydro Power, Biomass Power Cogeneration, Waste-to-Energy Group, Information and Public Awareness Group and Energy Parks. He was also the Director General of National Institute of Solar Energy and Director of National Institute of Bio Energy. He has contributed to over 50 research papers on Solar Energy and Bio-energy in leading National and International Journals and conferences. He has written three books on Solar Energy and Biomass Energy. Dr. Singh was awarded an honour of Senior Adviser by UNIDO International Centre for Solar Technologies, Hangzhou, China. He has widely travelled to several countries in Americas, Asia and Pacific, Europe and Oceania continents for participating in the meetings/conferences and study tours as representative of Government of India. Dr. Singh did his post graduate degree in Physics and Ph.D. in Bio Energy. **Email:** n.singh@unido.org



Mentors Name:

Dr. Subbarao Aynampudi

Dr. Subbarao Aynampudi is the President of Indian Innovators Association. A former Adviser to Department of Scientific and Industrial Research, Government of India, he has decade long experience in Policy formulation and programme implementation and has developed a unique approach for implementing solutions for Bottom of the Pyramid market. During his long career, he has mentored hundreds of innovators and evaluated over thousand ideas, from concept to commercialisation. He is the Director, Center for Projects Mobilization and Globalization, Vignana Jyothi Institute, Hyderabad and an Adviser and Mentor to - IIT-Hyderabad, Foundation for MSME Clusters, Startup Village, among others. He is a member of Executive Committee of International Federation of Inventor's Associations (IFIA) and serves on the AP State Committee on Innovation Society. **Email:** indiainvent@gmail.com



Mentors Name:

Mr. Mahesh Kanumury

Mr. Mahesh Kanumury has over 25 years of venture capital, management consulting and operating experience. He is the Managing Director & Founder of Arivali Partners where he provides advisory and investment services to for-profit social enterprises (companies with potential to become \$1B+ organizations and impact 1M+ lives). Mahesh was a General Partner at a \$260M early stage venture capital fund based out of the Silicon Valley where he invested and successfully nurtured the growth and successful exit of several companies. Prior to this, he worked at McKinsey, USA where he led several high-impact initiatives at the CXO level. He also led large scale, cutting edge software development projects at Schlumberger Technologies. He has an MBA from Harvard Business School, an MS in Engineering from Purdue University and BS in Engineering from IIT, Chennai. **Email:** mahesh@arivali.com



Mentors Name:

Mr. Chandan Gadgil

Mr. Chandan Gadgil has been an entrepreneur throughout his career and is the founder and erstwhile owner of Innovative Environmental Technologies, a company involved in large-scale biogas based renewable energy projects. He has more than 25 years of experience especially in Biogas generation and its utilisation. He has also been involved in setting up the first large scale Biogas to BioCNG project in India producing 8,000 Kg/day of BioCNG per day which is equivalent to 500 lpg cylinders/day. He has also been a member of the National Panel on Environment of Confederation of Indian Industry (CII). He is a founder president of Sankalp Trust, which is involved in promoting new and innovative ideas especially in social enterprise in environmental and renewable energy technology. Mr. Gadgil is a graduate in Electrical Engineering from University of Bombay, India. **Email:** chandangadgil@gmail.com



Mentors Name:

Mr. Ashok Toshniwal

Mr. Ashok Toshniwal is the CEO of Universal Instruments Manufacturing Pvt. Ltd. that manufactures battery chargers for power plants and substation (micro industry registered with MSME with customers in 21 countries in Asia and Africa. The company has developed high power solar controllers for NiCd battery (specific design) for installation on a gas pipeline. Mr. Toshniwal has an electrical engineering degree from JNU University, Jodhpur and has 29 years of working experience in the power sector, including renewable energy. Over the course, he has developed various types of charge controllers for various applications, including street lighting, telecom, railways signalling etc. **Email:** ashoktoshniwal@yahoo.com



Mentors Name:

Mr. Atul Bhatia



Mentors Name:

Mr. Karthik Chandrasekar



Mentors Name:

Dr. Nitant Mate

Mr. Atul Bhatia is passionate about building and supporting an ecosystem for Small and Medium companies that focuses on B2B markets for Technology driven products. Mr. Bhatia is currently mentoring about a dozen companies from TLab, TIE-Delhi and from his own network. He has set for himself a target of helping 100 start-ups cross a million dollar in revenue. Prior to becoming a Mentor and Angel Investor, Mr. Bhatia founded nSys Design Systems, a software product company that he bootstrapped from start to exit. nSys became a world leader in Verification IPs and was acquired by Synopsys, the leader in Electronic Design Automation. He has strong Engineering experience having worked as VP Engineering at DCM Data Systems and IBM, Austin. Mr. Bhatia holds a BE from the Indian Institute of Science, Bangalore and an MBA from FMS Delhi. **Email:** atul.nsys@yahoo.com

Mr. Karthik Chandrasekar is the founder and CEO of Sangam Ventures, a venture capital fund backed by the Shell Foundation and USAID. Sangam invests in early stage enterprises that improve access to sustainable energy and increase resource productivity leading to inclusive development and creation of communities that are resilient to climate change. Karthik is also co-founder of LexStart, a legal advisory services startup that helps startups in India start right and stay investment-ready always. Prior to Sangam, he led clean-tech investments in India for Acumen Fund and has worked with TVS Capital Funds where he focused on developing investment thesis for providing basic services in water, energy and agriculture for inclusive growth. At TVS, he also assisted CII and Prof. C.K. Prahalad in developing vision for India@75. Karthik holds an MBA from Chicago Booth, MS in Public Policy from Carnegie Mellon and a B. Tech from IIT Bombay. **Email:** karthik@sangam.vc

Dr. Nitant Mate is a Partner at See Green Solutions LLP, focused on development, demonstration and dissemination of sustainable technologies, processes and business models. He is also a Director in See Green Products Private Limited. His focus is on decentralized sustainable energy solutions that are economically viable, and socially acceptable; it includes biogas, biomass gasification, vegetable oil, bio diesel, solar, wind among others. He has contributed in developing applications of solar energy and other renewable technologies in health sector. WHO, UNICEF, The World Bank, and European Commission are among a few of the clients for whom he has undertaken assignments. He has served on committees for the Government of India, Government of Maharashtra, Confederation of Indian Industries, University of Pune and has been guiding research projects of several students; an Accredited Mentor for the entrepreneurship programmes of the Bharatiya Yuva Shakti Trust, and has also held Honorary Professorship at the Institute of Chemical Technology, Mumbai. He has several research papers, books and number of patents to his credit. He holds an M.S. and Ph.D. in Mechanical Engineering from Colorado State University, USA. **Email:** nitant@seegreensolutions.in



Mentors Name:

Mr. Niranjan Khatri



Mentors Name:

Dr. Vibha Tripathi



Mentors Name:

Mr. Ashis Sahu

Mr. Niranjan Khatri is the Founder, iSambhav and Principal Consultant. He is the former General Manager (GM) for Environment Initiatives at ITC hotels, India. He has a background in hotel management with extensive experience in various ITC hotels, in which he pioneered the concept of eco-designing. Mr. Khatri has submitted papers to International Labour Organisation (ILO) and Cornell University on eco-designing in 1994. He headed the Confederation of Indian Industries' (CII) renewable energy cell over 1996-97. Mr. Khatri played a key role in developing eco-rating for the Delhi Government, which has been distributed to 1200 schools and translated into Marathi for further distribution to 6000 schools. He was on the faculty of the Railway Staff College, Baroda on eco-designing for senior management of the Indian Railways and others including BHEL, CEL, TATA, BP SOLAR, WIPRO and the Karnataka Pollution Control Board, Power Finance Corporation, Management Development Institute, and the IITs besides various chambers of commerce. **Email:** niranjankhatri54@gmail.com

Dr. Vibha Tripathi founded Swajal Waters Private Ltd, the specialized community water solutions provider. She is also the managing Director of Swajal. The concept of smart water purification systems was visualized and refined by her over more than six years. Her work has been recognized and awarded globally by organizations such as REEEP, Goldman Sachs, ISB, Lockheed Martin, UNDP, MNRE etc. Prior to her work with Swajal, she was working at the Electrical Engineering department at IIT, Kanpur with specialization on the research and development of thin film solar cells and has held several workshops and seminars in the field of renewable energy. Dr. Tripathi received her PhD from IIT Kanpur. **Email:** vibha@swajal.in

Mr. Ashis Sahu has over two decades of strategic and grassroots experience in sustainable energy, microfinance, and livelihoods. He has led multiple social enterprises balancing social mission with financial viability and continues to work with young entrepreneurs as mentor, advisor, or board member. Ashis has been the Founder CEO of Clean energy Access Network (CLEAN), Selco Incubation Centre and COO of SELCO Solar Light Pvt. Ltd. and as worked previously in organisations like BASIX, Sa-Dhan and Urmul Trust. Ashis is a Chevening Gurukul Scholar from LSE and an alumnus of IRMA. He has co-authored a book titled 'Development, Divinity, and Dharma' published by Practical Action, UK. **Email:** ashisks@rediffmail.com





Mentors Name:

Mr. Monish Ahuja



Mentors Name:

Mr. Milind Chittawar

Mr. Monish Ahuja is an ex-defence professional with a management profile with 20 years comprehensive experience in developing, and implementing strategic projects, marketing and business development plans, new business development, operations and maintenance for leading companies. He is the head of business for the Bermaco Group companies in the energy sector responsible to direct, drive and manage the networking, marketing and sales effort besides project development in the RE sector. He started the company PRESPL from the scratch, leading it to a \$10 Million valuation in 2 years with a strong 50-member team. He has been awarded Bio-Energy Man of the Year-2013 Award, by Renewable Energy Experts Committee of Fortune Media Group, and Udyog Rattan Award for Excellence by Institute of Economic Studies 2014. Mr. Ahuja hold Masters in Nuclear Technology and Bachelors in Mechanical Engineering. **Email:** ahujamonish@gmail.com

Mr. Milind Chittawar is the CEO of SEE-Tech Solutions Private Ltd. started in 1993 to deliver sustainable energy and environment solutions to its customer. He has mentored several graduate (B.E.) and Post graduate students (MBA, M. Tech) on various projects. He is a Charter Member of TIE (The Indus Entrepreneurs) where he has been mentoring many start-ups on several aspects like technical, financial, overall feasibility of business model, etc. He is an Executive Council Member of Alliance for an Energy Efficient Economy (AEEE), President of Association of Energy Engineers (AEE), India Chapter and member of ISHRAE, NSC, VIA, VMA, IAPPP among others. He is an Accredited and Certified Energy Auditor by Bureau of Energy Efficiency. He is also Certified Measurement and Verification Professional by EVO-AEE, USA. For his contribution to Energy Efficiency he has received "Energy Professional Development Award 2013" in South Asia Region by AEE, USA. **Email:** milind.chittawar@seetechsolutions.in



Mentors Name:

Mr. Deepak Gadhia

Mr. Deepak Gadhia is the founder of Gadhia Solar Energy Systems Pvt. Ltd. in Gujarat, which offers services in the Energy sector. His pioneering work includes bringing to India the Seifert Parabolic Solar Concentrator technology in co-operation with the developers and successfully commercialising it. The company has undertaken prestigious projects like the World's largest Solar Steam Cooking System at Shirdi Temple which cooks 50,000 meals per day with steam generated from Solar Concentrators. Gadhia Solar has received the Blue-sky Award in Shenzhen, China as one of the Top Ten Solar Technologies in the World. Solar Energy Society of India (SESI) has awarded him with the "Solar Entrepreneur Award" in Solar Thermal Field. He is a Board member of Solar Cooker International (SCI), in USA. Mr. Gadhia has done his Process and Environmental Engineering in Berlin, Germany and has done Master Courses in Technical University Berlin and MIT of USA. **Email:** deepak_gadhia@yahoo.com



Mentors Name:

Mr. Aryaman Saxena

Mr. Aryaman Saxena is an In-House professional and a Legal counsel to Powergrid Corporation of India Limited. He has worked extensively on the Regulatory and Policy aspects governing the Generation and Transmission of Power. He worked for Central Transmission Utility and has handled issues of recovery of tariff, regulation of power supply, trends of generation and tariff analysis, apart from streamlining the litigation and tariff petitions for transmission assets built by POWERGRID on Cost-Plus Basis. He further drafted the open-access and connectivity agreements, structuring and formalizing terms of cross-border energy trade. He has also worked on formation of Joint Ventures of Powergrid (both domestic and bi-laterals). He is also a pro-bono researcher at the Centre for Information Commission, and helping in establishing a Centre for Research & Studies on Public Accountability and Transparency Laws, apart from mentoring the GCIP semi-finalists on issues of contracts, non-competes and non-disclosure agreements and IP Laws. He obtained a Bachelor's Degree in Law from NALSAR University of Law, Hyderabad in 2013. **Email:** imaryaman@gmail.com

Project Management Unit - MSME



Surendranath Tripathi

Additional Secretary &
Development
Commissioner GCIP team,
Ministry of MSME, GOI

In his role as the Additional Secretary to the Government of India and Development Commissioner for the Ministry of MSMEs Mr. Surendra Nath Tripathi works on comprehensive policy making for the SME sector in India. He has over 30 years of experience as an Indian Administrative Service officer in Land Revenue & Management, Industries, Finance, Communication & Information Technology, Information & Broadcasting, Administration, Textiles & Handicrafts, Urban and Rural Development and Panchayati Raj departments etc. He has a Master in Business Administration (MBA) in Public Policy Management from the University Of Ljubljana, Slovenia.



Piyush Srivastava

Additional Development
Commissioner
Office of the DC (MSME),
Ministry of MSME, GOI

Mr. Piyush Srivastava is from the Indian Economic Services (batch 1993), and as the Additional Development Commissioner, in the Office of the DC(MSME) he looks after the implementation of National Manufacturing Competitiveness Programme (NMCP), ZED, GIZ and ISO Schemes. He has over 23 years of experience in General Management, Policy Formulation, Scheme Formulation, Strategy, Evaluation, Economic Analysis, Monitoring and Training



Mohd. Ali Rahman

Deputy Director,
Office of the DC(MSME),
Ministry of MSME, GOI

Mr. Mohd. Ali Rahman is as a Deputy Director at the Office of the DC(MSME) and has been attached with the GCIP project since its inception. He has 16 years of experience across diverse areas like Quality, Lean Technology, Energy Efficiency, formulation of new schemes, implementation, monitoring & coordination of various schemes being implemented by the Ministry.



Ms. Sanyogita Karana,

Assistant Director
Office of the DC (MSME),
Ministry of MSME, GOI

Ms. Sanyogita Karana, has been working as an Assistant Director with the Office of the DC(MSME). With over 11 years of experience, her role in MSME involves assisting in formulating, co-ordinating, implementing and monitoring policies like Information and Communication Technology (ICT) scheme, Technology and Quality Up gradation (TEQUP) and initiatives like National Innovation Fund for the promotion and development of MSMEs. She holds a MBA in Technology Management from IIT Delhi.

Project Management Unit - UNIDO



Left to Right: Mr. Manoj Kumar; Ms. Reshmi Vasudevan; Mr. Rishabh Goel; Ms. Amrit Raj; Ms. Ananya Pandey; Mr. Sandeep Tondon

<p>Amrit Raj National Project Coordinator</p>	<p>Amrit Raj is a Civil Servant with over twenty years of experience in Public Administration and Governance presently on deputation to UNIDO working on developing the right ecosystem to support innovative cleantech startups in India since April 2015. Prior to this, she has served as a Director in Department of Posts and Commerce, GOI, working on policy formulation and execution. She is a lawyer by education.</p>
<p>Sandeep Tandon Technical Advisor</p>	<p>Sandeep Tandon has more than 25 years' professional experience, he has been working in the area of energy efficiency and climate change for two decades in leadership role with private firms and Development Agencies including UNIDO, UNDP, and USAID.</p>
<p>Reshmi Vasudevan Programme Expert</p>	<p>Reshmi Vasudevan brings experiences working on energy efficiency policies and low carbon market transformation. Prior to UNIDO she worked on USAID's South Asia regional Initiative for Energy Integration. Her academic trainings are in multi-disciplinary aspects of sustainable development and in software engineering.</p>
<p>Rishabh Goel Project Associate</p>	<p>Rishabh Goel is associated with UNIDO for over three years and has been working on the GCIP Programme for identification and promotion of clean technology startups. His role in GCIP involves understanding the nuances of commercialization and technology component of cleantech innovations, project management, SAP, management, and IT coordination. He holds a Bachelor's degree in Electronics and Communication Engineering.</p>
<p>Ananya Pandey Project Associate</p>	<p>Ananya Pandey holds a Master's degree in International Relations from London School of Economics and Political Science (LSE). Having interned with the UNIDO Headquarters in Vienna for a period of 6 months, she is now working with UNIDO in India. Her role in the GCIP India revolves around communication, advocacy and project management.</p>
<p>Manoj Kumar Admin Support</p>	<p>Manoj Kumar works as an office support staff for the GCIP Project. His work relates to data entry and compilation by engaging with the vendors and the semi-finalist teams with regards to programme execution. He holds a Diploma in Computer Application & Programming and a Diploma in Hardware & Networking Professional.</p>





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