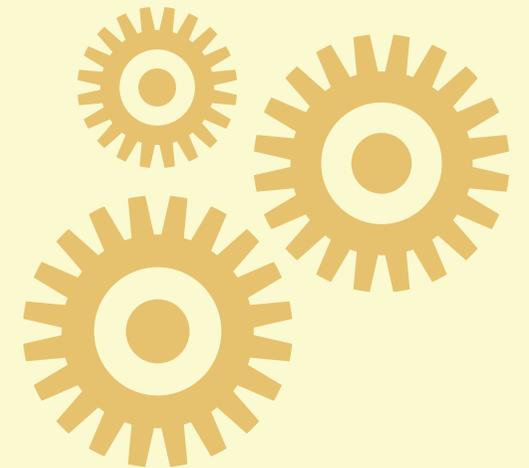
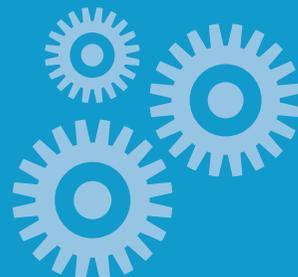


Top 26 Innovative Companies 2017



The Hi-Tech Robotic Systemz Ltd

The Hi-Tech Robotic Systemz Ltd. (THRSL) is an Indian tech company, with its deep roots in Artificial Intelligence, machine learning, computer vision, multi sensor fusion and autonomous navigation tech. The core to the company is its leadership team, who are alumni of Carnegie Mellon University, Harvard Business School and IITs along with strong technology advisory assistance from Carnegie Mellon University. The company designs and develops underlying technology for autonomous vehicles and driver assistive systems with its implementation in commercial vehicles (trucks, busses, cars, etc.) and industrial vehicles (forklifts, pallet trucks, etc.). They also cater to a diverse blue-chip list of clients, which includes companies like Volvo-Eicher, Ford, Tata Motors among others.



The Innovation

Innovation 1

24x7 manual indoor material handling in high throughput or high loads is a challenging problem. As humans are subject to fatigue, loss of concentration over an extended period, especially during odd hours, making it unsafe and some cases even lead to loss of life.

Their Natural Navigation KIT enables the existing fleet of electric forklifts, reach trucks and pallet jacks to be converted into driverless vehicle offering safe, synchronized 24x7 material handling operations.

Innovation 2

Their Mobile Robot model can carry max 1500kg and tug 3000kg loads from A-B at max 2 m/s using natural environment features for navigation, thus eliminating the task of manually pushing trolleys and optimizing indoor material movement traffic by central fleet manager.

Innovation 3

Driving for long hours at times could be quite tiring and due to the dynamic nature of road traffic, it may not be possible for the driver to be alert every moment resulting in accidents, loss of property and life.

THRSL has developed 'Advanced Driver Assistance' [ADAS] Systems with a camera installed facing the road. Its safety features are designed to avoid collisions and lane departure. Their 'Driver state Monitoring' [DSM] analyzes drivers state while he/she is driving. It measures fatigue with a camera facing the driver. Both these systems add to safe driving practices.

Benefits

Innovation 1: 'Natural Navigation KIT' has improved uptime and enables cloud connectivity of forklifts utilizing them up to 99.99% of the operating time over 24 hours.

Their Mobile robots (Innovation 2) are green as they are 100% electrically driven.

ADAS (Innovation 3) can work in ZERO light condition with 360 degree coverage including blind spots.

The Future

The company is focused towards global expansion and is in very strong position to deliver scalable, smart, autonomous and assistive systems to global customers through disruptive business models.

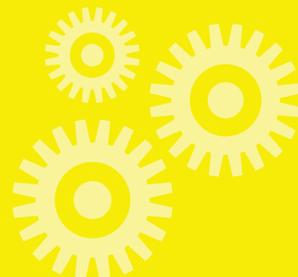


National Engineering Industries Limited

Manufacturing more than 150 million bearings annually in more than 1000 sizes, National Engineering Industries Limited (NEI) is the flagship company of CK Birla Group that has a turnover US\$ 1.6 Billion.

NEI was founded by the renowned industrialist, Shri B M Birla, in 1946 under the name of 'National Bearing Company Limited' and commenced manufacturing operations in 1950. In 1958, the name of the company was changed to National Engineering Industries Limited (NEI) owing to its rapid expansion in engineering expertise, but it chose to retain its original trademark NBC.

NEI has four state of the art manufacturing plants in Jaipur, Newai (Rajasthan), Manesar (Haryana) and Savli (Gujarat). The company manufactures a wide range of bearings for automotive, industrial and railways applications. NEI's product range includes ball bearing, taper roller bearing, double row angular contact (DRAC) bearing, cylindrical roller bearing, spherical roller bearings, special bearings for the railways, steel mills, heavy industries and power generation plants.



The Innovation

Innovation 1

There is problem of early pre-load loss in pinion support bearing in tractors. Due to early preload loss, rigidity of the system deteriorates and subsequently pinion or ring gear gets damaged during service.

The problem is addressed with an innovative 'Pinion Bearing Solution', where preload losses are controlled by replacing taper roller bearings by two angular contact ball bearings and one cylindrical roller bearing.

Innovation 2

Automotive OEM's are looking for compact, high load capable, lightweight and reliable solutions for its new models. Traditional wheel bearings used more parts, consumed more sub-assembly time and were difficult to mount.

NEI developed a 3rd Generation wheel bearing, which are highly integrated units with a brake disc mounting flange, bearing and wheel mount flange that guarantee highest running accuracy. The bearing clamping force (Preload) is applied and controlled via a specially formed shoulder, resulting in a maintenance free design.

Innovation 3

There is a problem of grease drip in idler pulley bearing of timing belt of an automobile engine. Due to grease drainage metal to metal contact leads to heat generation and subsequently premature failure of the bearing.

NEI developed a special bearing seal of four lip and unique stiffener design. The new design gives higher stiffness, which allows the light contact at sealing lip for the desired sealing at high rpm with less torque.

Benefits

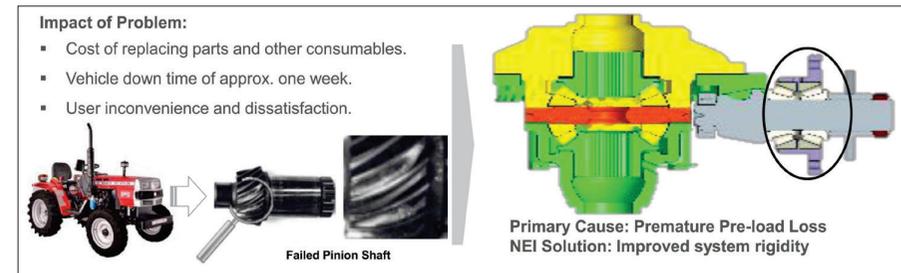
Pinion bearing solution (Innovation 1) does not require any maintenance during its service thereby eliminating/reducing maintenance cost. It has also improved the load carrying capacity and given NEI a first mover's advantage in the market

With its (Innovation 2) double flange design and integration, total cost and mounting time of the assembly in the vehicle have reduced.

Unique sealing lip profile (Innovation 3) prevents leakage of lubricant from the bearing and at the same time prevents infiltration of foreign particles inside the bearing thus enhancing bearing life in demanding operating conditions.

The Future

NEI aims to grow in the business of anti-friction bearings, other allied engineering products and services by delivering superior value to their customers, suppliers, shareholders, employees and society at large. They also look forward to attaining a gross turnover of INR 50 billion by 2020.

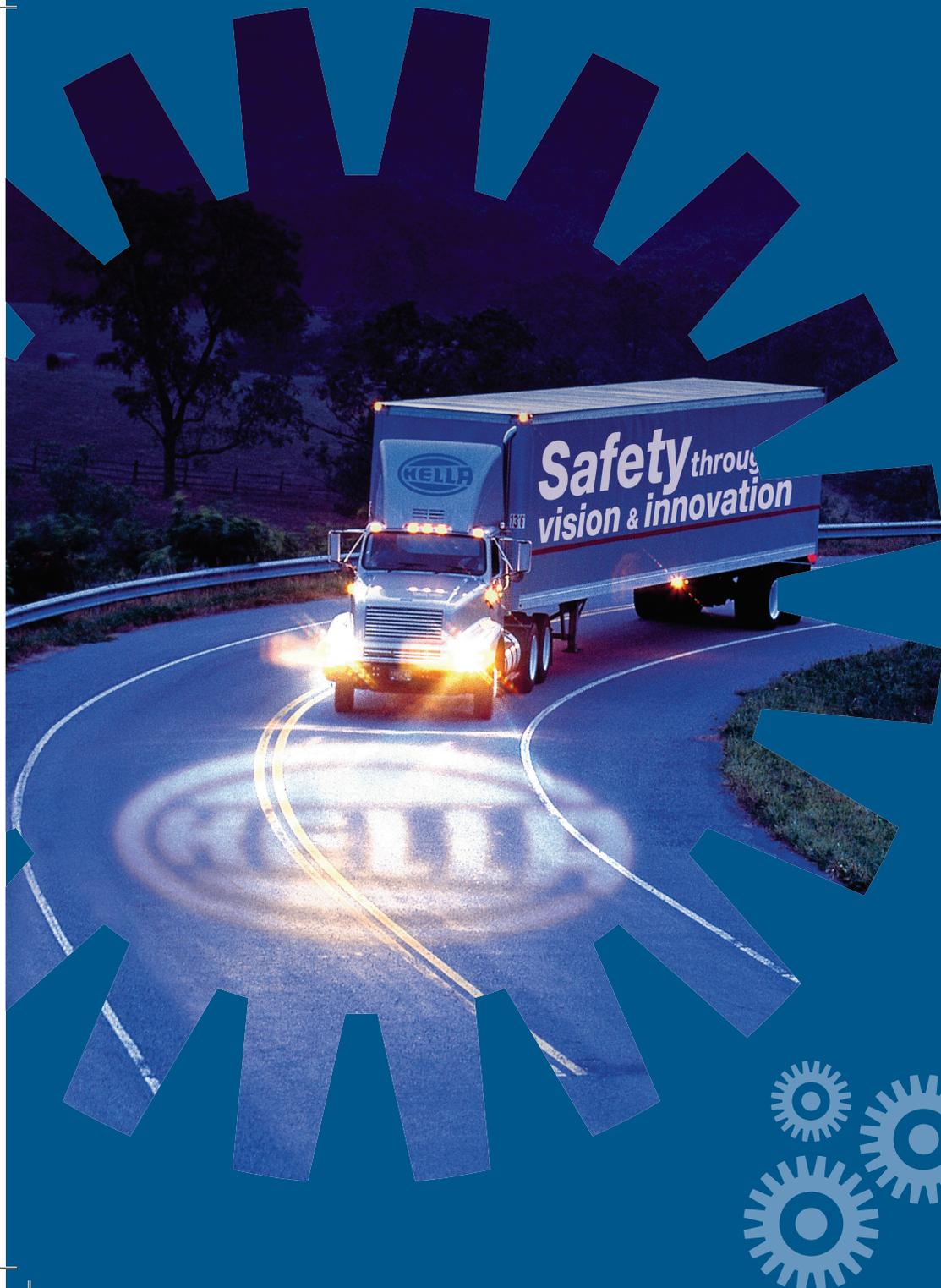




Hella India lighting Ltd

HELLA is a global, family-owned company with a rich history spanning over 100 years. It is one among the 100 largest German industrial companies. Known for its automotive lighting & electronics product portfolio, HELLA is a highly innovation driven firm. It employs 40,000 members of staff at over 125 locations in 35 Countries.

Hella India Lighting Ltd. is developing and producing innovative visibility and signalling solutions to arrest alarming road deaths in the country. Company is one of the leading automotive lighting suppliers to OEMs for commercial vehicle, bus & coach and serves to all special OE segment including tractors, 2 wheelers & off-highway equipment in the country. The company also distributes and markets its safety products to fleet owners and technicians through its countrywide retail network.



The Innovation

Innovation 1

It is very important “to see” and “to be seen” to avoid road fatality, while driving on Indian roads.

Hella India Lighting innovated an affordable localised signalling solution for trucks. A ‘Fit & Forget’, ‘Always On’, affordable full LED truck stop-tail lamps which gives 4 metres extra braking distance to safeguard from accidents on highways, saves 80% of energy and results in lower total cost of operation for truck owner. The system is water and dust proof, has high impact resistant lens, a bolt retention system for Indian conditions, a distinctive night signature and has a 5-year warranty against any manufacturing defect.

Innovation 2

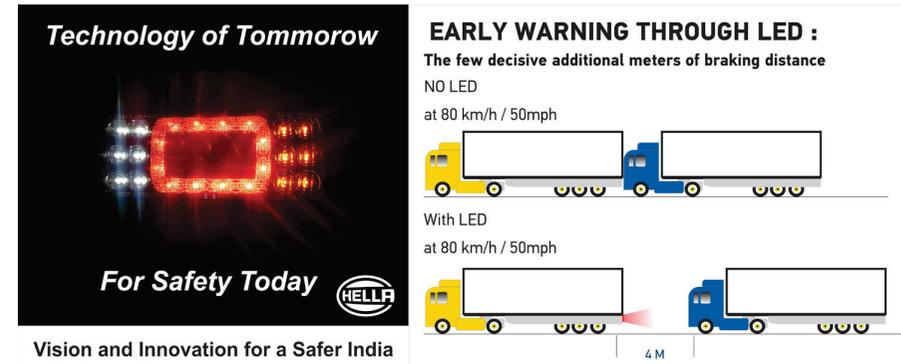
This Signalling device was then followed up with another visibility solution, an ultra-durable, precision light pattern projector with light modules for longer front visibility, enhancing the braking distance without causing dangerous glare on road. These modular projector lamps allow the light to be focused more on the road with less scatter or glare; this prevents blinding other drivers while adding more light on the road. These are produced in state of the art metalizing machine with top coat protection for longer life to reduce total cost of operation over life time. Due to modularisation, it offers variety of styling for different models of vehicles with least possible time and minimum investments per model/per OEM customers. Hella came up with these projector modules for front lighting, which involves diffusion and scattering of light by the reflector directly. This results in the higher output of useful light (45% as compared to conventional paraboloid systems with 27% of useful light).

Benefits

For Innovation 1: For their Innovative LED stop-tail lamps, biggest benefit is improved visibility and signalling on Indian highways. This is a fully sealed unit with high ingress protection rating. It uses superior materials for true fit and forget durability. The system consumes ~ 80 % lower power costs cheaper over its lifetime as compared to bulb based rear lamps.

For Innovation 2: Despite 60mm light aperture, it produces excellent light output with homogeneous illumination. It can be quickly developed at lesser tooling investment. Development time majorly involves customization as basic projector

modules remain the same. It has more styling options and meets Economic Commission for Europe (ECE) and Indian Homologation. 90-mm Module, has an enhanced light output (~60% more light than conventional systems). The advanced reflector geometry and use of the sturdy H1 bulb (H7 in 90 mm Fog) correspond to the technical standards of lighting in the current headlights for the automotive industry. The system brings optimized illumination like increased beam width, longer range, better homogeneity and intensity.

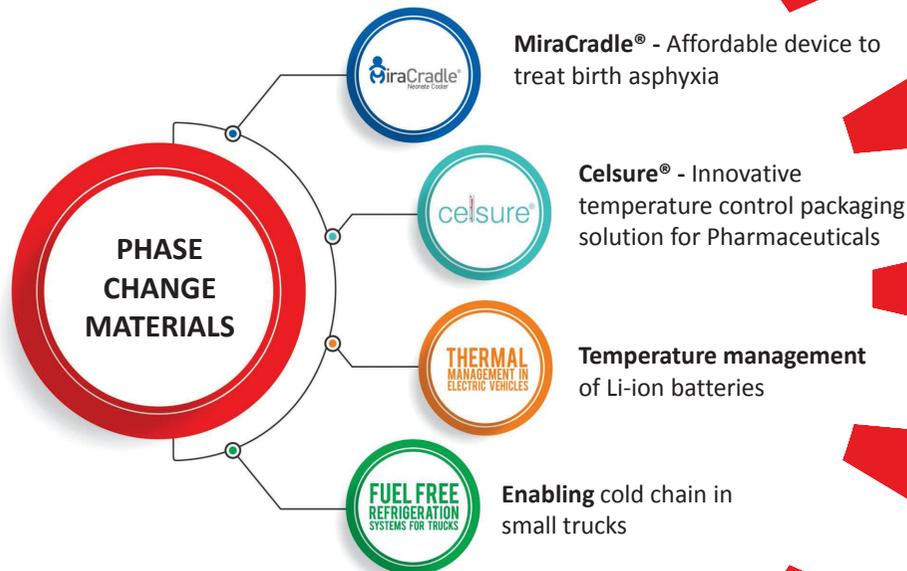


The Future

There is an urgent need to protect the 2-wheeler riders who are involved in most of the accidents due to reasons of not being noticed and not having required visibility. HELLA engineers are presently working on ideas in this domain and are poised to come up with another novel solution to prevent accident for these riders.



Pluss Advanced Technologies Pvt. Ltd.



Pluss Advanced Technologies Pvt Ltd. (PLUSS®) is a materials research and manufacturing company involved in the field of specialty polymeric additives for enhancing polymer properties and phase change materials (PCMs) for thermal energy storage.

Founded in 1994, the company has seen tremendous growth in the recent past. Research and innovation have been the cornerstone of the company since its inception and are at the very core of their DNA. The organization welcomes and motivates young minds and helps them successfully implement their ideas. The company believes in developing products, which are meaningful and relevant to the country and the world at large. They feel pride in developing technologies in-house with indigenous processes; this has enabled them to put PLUSS® on the world's innovation map.

The equity infusion in PLUSS® from Tata Capital Innovations Fund in 2012, has enabled them to expand their team and further augment their pursuit of consistent innovation.

In line with the brand purpose, they contribute significantly towards innovative solutions that create a definitive change in the polymers and thermal energy storage industry, and developing breakthrough products to meet the current and future needs of the society.

The Innovation

More than 25% of the vaccines go waste globally primarily because of a broken cold chain. The product Celsure addresses the following problems of the current cold chain packaging solutions:

temperature excursions in extreme ambient of 40°C, complex conditioning of the coolants and temperatures observed below 2°C with current coolants.

Celsure uses the save phase change material technology to ensure precise temperature control for more than 120 hours irrespective of the ambient conditions (40°C or -5°C). Celsure has simplified the conditioning and packaging reducing the assembly time from 30 minutes to only 5 minutes. Celsure has been tested as per the Indian ambient conditions of 40°C and higher. It gives a backup of more than 70 hours' event when ambient temperatures are 43°C.

Benefits

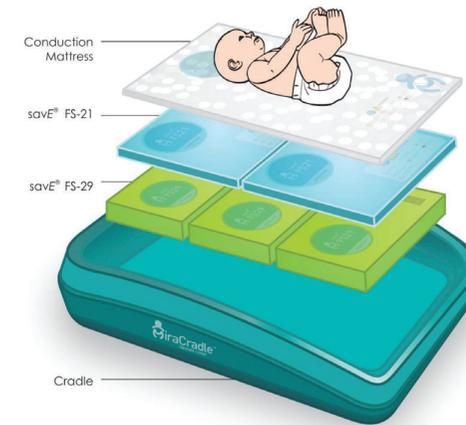
Celsure has the potential to reduce the vaccine wastages significantly. This could have far reaching impact especially for the child vaccination and immunization programs. The product has already been adopted by certain pharmaceutical and logistics companies.

In Celsure no thawing of coolants (PCMs) is required before packing the box. The PCMs can be placed directly from the freezer, thereby reducing any chances of human error. It has reduced the assembly time to 5 minutes from 30 minutes.



The Future

The vision of the company is to develop innovative products for a better world. The idea behind every product they develop is to improve the society at large. The mission of the company is to develop innovative temperature control solutions across sectors including healthcare, logistics, refrigeration, HVAC, building/construction and retail.

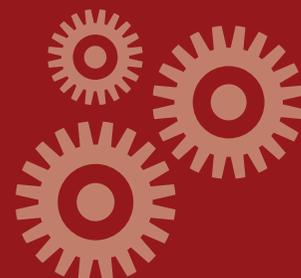




KFC, YUM! Restaurants India Pvt. Ltd.

Yum! Restaurants (India) Private Limited operates as a subsidiary of Yum! Brands Inc., which is an American fast food company. A Fortune 500 corporation, Yum! Offers a bouquet of brands Taco Bell, KFC, Pizza Hut, and WingStreet worldwide.

Yum! India believes strongly in giving back to local communities, where its business operates, making a positive difference in the lives of all its customers, associates, franchisees and their families which is evident from their initiatives like 'World Hunger Relief', Specially-Abled Restaurants, Green Restaurants etc. Their India business has been making incredible progress, laying the foundation for similar emerging markets, where the consumers are likely to increase manifold in coming years.



The Innovation

Yum! has witnessed successes due to innovation through various initiatives across food, activations, processes, and internal practices such as:

- Chizza- a breakthrough twist for pizza, Smoky Grilled Chicken – an innovation, which leveraged on the familiarity of grilled, as well as the novelty of smoky, yet spicy flavours
- Watt-a-box, Gamer's Box – both innovations involving packaging ultimately engaging the fast, young audience.
- More recently they became the pioneers of 'one-click ordering' in the quick service restaurants (QSR) space.

The Approach

In many of their consumer interactions, they encourage their R&D to facilitate on the spot customization of the products. This allows their consumers to get a first-hand feel of how the product would come across if it were re-designed based on their inputs – many a times consumers come back realizing the original build was better or there can be further tweaks. This dynamic method is typically used for easier to assemble and modify items such as Krushers, which require a modification of only the flavour syrup.



Gamer's Box
9.4 bn
Impressions



Watt-a-box
87 bn
Impressions



Envision Scientific Pvt. Ltd.

Envision Scientific (ES) is a company involved in research, development and manufacturing of innovative products and methods for treatment of cardiovascular disease. ES has been pioneering in the development of nanotechnology based applications. They have developed a novel polymer free nanocarrier based drug delivery system.

Their novel technology works in the best interests of their patients, the treating physicians, and the investors who are attracted by the promise of further innovation. The essence lies in their working hard to stimulate a continual stream of innovation in the medical device industry. The intangible value of their innovation lies in the improved health of their patients.



**ENVISION
A *HAPPY* FUTURE
TOGETHER.**



The Innovation

Innovation 1

Due to poor diffusion of drug in drug eluting stents, drug is not properly transferred in tiny pores of artery. This may be due to the size of drug particle and its lipophilic properties.

To address this, ES created a drug in nanocrystal and encapsulated with a unique polymer-free nano-carrier delivering the drug in short time to prevent restenosis.

Innovation 2

Current biodegradable stents are made of polymers and degrades with unpredicted time. Stents made with other non-polymeric biocompatible materials also degrades very fast and fails to provide radial strength to artery. ES have developed a unique coating material which can protect both polymeric or non-polymeric stent while maintaining its radial strength.

Note: All the aforesaid innovations have been patented by the company.



Benefits

No stents are available in market which can treat diabetic patients, who are at high risk after angioplasty. Due to novel coating pattern the product has ultra-high potential to treat diabetic patients with acute myocardial infraction.

The Future

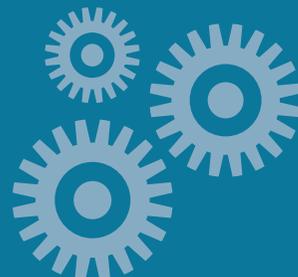
ES is committed to study, research, innovate and develop novel products in life-saving devices towards enhancing quality of life for the patients. With their mission of 'Advancing Innovation' ES leads with best innovation practices with protection of IPR, advancement and improvement of technologies.



Apollo Tele Health Services Pvt. Ltd.

Apollo Hospitals with close to 17 years of experience in the field of telemedicine has created the largest and oldest multi-specialty telemedicine network in South Asia. As one of the pioneers of telemedicine across the world, Apollo has always striven to enhance the access to quality healthcare for communities both in urban and rural geographies

With the vision of bringing healthcare of international standards within the reach of every individual, Dr Prathap C Reddy in 1999 established Apollo Telemedicine Networking Foundation (ATNF) and Apollo Telehealth Services (ATHS). On March 24, 2000, Bill Clinton, the then US president, commissioned the world's first VSAT enabled village hospital at Aragonda in Chittoor District of Andhra Pradesh. This marked the formal introduction of telehealth services in India. Indian Medical Association (IMA) has declared March 24 as IMA's National Telemedicine Day to acknowledge telehealth as the most promising solution to bridge the urban-rural health divide.



The Innovation

Innovation 1

Apollo's new telemedicine programme aims to cater to the healthcare need of population residing in Kaza and Keylong situated at 14000 feet above sea level in the Himalayan mountain range.

The objective of their new telemedicine program was to create a conducive health care environment and stabilize patients requiring emergency services before moving them to secondary or tertiary health care services. With this project Apollo Remote Healthcare has completed a total of 4801 OP consultations in Kaza and 4071 in Keylong till date and 534 emergency cases were stabilized through tele-emergency services. 51 patients were screened under tele-cervical cancer screening, and above 9000 lab tests were provided through tele-laboratory services.

Innovation 2

Common Service Centres (CSC): CSC scheme has been one of the key pillars of the ambitious National e-Governance Plan (NeGP) of Government of India. A CSC is essentially a kiosk with a personal computer, a wireless connection and other equipment.

Apollo Remote Healthcare signed a partnership agreement with the CSCs to enable 'Primary, Preventive and Promotive health care services through teleconsultations and telemedicine platform'. The primary objective of this collaborative partnership is to provide grass root level access points for health literacy among the communities, develop health seeking behavior and to promote preventive healthcare services among the rural population.

Innovation 3

e-UPHC – Electronic Urban Primary Healthcare Centre: With this project Apollo Remote Healthcare, have empowered 164 Urban Primary health centres with on-site Medical Officer along with Paramedical and IT staff; there is also a provision for Specialist tele-consultations & laboratory services.

e-UPHC MAK Project is one of its kind formed by the alliance of best resources from the Government's end with Apollo Hospitals.

Benefits

For Innovation 1: This programme has reduced, difficult travel for patients to distant locations seeking health care, saving effort, time and money.

For Innovation 2: Apollo has been able to quickly connect to 60,000 rural endpoints through the Digital India programme and help them become Rural TeleClinics, thereby delivering quality healthcare to the population seamlessly from their neighborhoods. By enabling remote doctor access through telemedicine at CSCs, Apollo Hospitals has been able to penetrate geographies, which remained disconnected over a long time.

For Innovation 3: They have touched lives of close to a million people with more than 2 million footfalls so far. More than 1 lakh people have utilized their speciality tele-consultations in General medicine, Orthopaedics, Cardiology and Endocrinology. 2 lakh people have utilized their lab services that offer more than 30 different investigations. 2 lakh Children have been registered for immunization and 40 thousand pregnant women have registered for ante-natal services.

The Future

They aim at increasing not only the general consultation but also the specialist's consultations by four folds soon. With CSC they aspire to reach every nook and corner of India providing primary healthcare for rural population.



Agappe Diagnostics Ltd

Agappe Diagnostics Ltd is one of the rapidly growing company in IVD (in vitro diagnostic) industry in India with a turnover of over INR 125 Cr.

In India, they have the know-how of making immunoturbidimetry and nephelometry reagents and their reagent range includes Biochemistry kits, Serology kits, Immuno-turbidometry kits, Specialized kits, Coagulation reagents, Haematology reagents and System Reagents for Closed and Open Systems. They have about 250 different reagent kits in their product portfolio.

They are being counted as one of the fastest growing and reliable equipment manufacturer from India for Semi Automated Clinical Chemistry Analyzer and nephelometry analyser which are exported globally. These systems are designed, developed and manufactured in India. Mispai-3 is the new entrant to their product portfolio.

They are currently exporting to over 55 countries including Africa, Asia, Middle East, Far East as well as regions in Europe.

They are an ISO 9001- 2008 and ISO 13485:2003 certified Company under UL. They conform to GMP standards and have an FDA approved most modern manufacturing facility spread over 120,000 sq. ft. of built up area, which has become the biggest set-up in IVD manufacturing in India.



The Innovation

MISPA i3: Specific protein testing is one of the fastest growing segment in the IVD industry; because of the specificity, diagnosis is easy and accurate. Conventionally the testing is performed mainly by photometry analysers or turbidometry analysers where the sensitivity is one of the major issues. The gold standard for specific protein estimation is nephelometry. Automated Nephelometry platforms are huge systems marketed by the multinational Companies with huge investment and recurring cost. In Indian scenario, the highest number of testing is performed in the Class B, C laboratories, which number more than 15,000, one third of the total laboratories in India. Due to high investment cost, most laboratories in India cannot afford an automated nephelometry platform. The test packs are also large eluding the common laboratories for an automation.

To address the Indian IVD demand, Agappe designed Mispa -i3, a cartridge based specific protein analyser using the nephelometry. Mispa i3 uses specially designed cartridge for performing tests and thus reduces sampling error. Because of the cartridge based testing, customer has the flexibility for a single test. Sampling, mixing, incubation and reading are automated. Mispa -i3 is having smart card calibration to eliminate calibration error and this reduces the recurring cost for calibration. The size of Mispa -i3 is very small that can well fit in all laboratory segments in India. Mispa -i3 is also having battery backup to take care of the power issues in the rural areas and can be taken to field for tests.

Benefits

- Accurate results.
- Possibility to perform rare parameters.
- Very low recurring and maintenance cost.
- Affordable system for B, C Class laboratories, where highest number of testing performed.
- Requires less space and suitable even for small laboratories in rural area and metro cities.
- Simple to use software.
- Export possibilities because of price advantage.

The Future

Cartridge based testing is the new trend, which is revolutionising the IVD industry. Because of the simplicity in operation, flexibility in testing and high accuracy, these kinds of systems are getting wider acceptance in the industry. At present, cartridge-based systems are mainly present in the specific protein testing and soon, it is expected to expand to other common testing segments also.

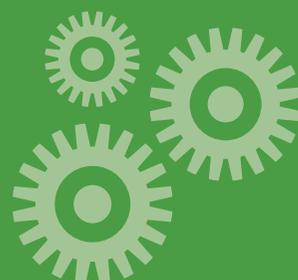




Ankur Scientific Energy Technologies Pvt. Ltd.

Ankur Scientific has been a global leader in the field of Biomass to Energy solutions since the last 31 years. Ankur Gasifier Systems use the biomass and agri-waste to produce combustible gas for thermal applications and power generation. Its equipments are marketed in more than 40 Countries. In the developing countries, they help provide energy that is cheap and on-demand, while in the developed countries, they help make the energy mix greener.

After creating a niche in this segment, Ankur is moving forward as an innovative leader in the 'Waste to Energy Solutions'. Ankur has developed systems for converting various wastes like empty fruit bunch, palm waste, poultry, tyres, waste currencies, etc. to energy. It has now launched a unique technology for converting Municipal Solid Waste (MSW) to energy with minimum separation. The technology is ideal for distributed approach, small cities & towns, where no comprehensive solutions are available today. Ankur is also working with the Bill and Melinda Gates Foundation for converting faecal sludge to energy and setting up the first pilot project shortly.



The Innovation

Municipal Solid waste (MSW) poses the major challenge in our urban and partially, even rural landscapes. MSW collection and management are the most difficult and expensive tasks for Municipal Corporations across the world and in India. MSW disposal involves centralized landfills calling for huge transport of waste from various parts of the city. This leads to increased environmental and social degradation. There are hazardous gas emissions resulting in explosions in landfills thus adversely affecting the ozone layer.

To address this, Ankur has introduced a promising gasification technology, which uses all fractions of MSW without extensive segregation. The process coupled with composting (biogas plants), ensures that very little goes to landfills. The systems are designed to meet all emissions norms and made in India.

The Approach

Their innovation converts MSW to energy almost online, with minimum segregation. Ideally the bigger inerts like stones, glass metals, that can be seen by the naked eye are removed and the small pieces that cannot be seen goes along with the waste into the gasifier after a trommeling process to remove fines / soil. The waste then gets converted to a gas, which is cooled, cleaned and fed to a gas engine to generate electricity or can also be used for various thermal / process heat applications.

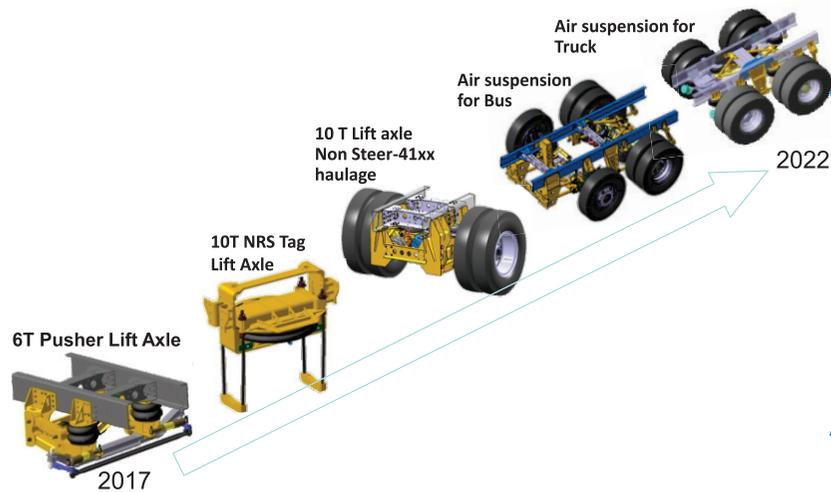
The Technology would bring multiple benefits like eliminating landfilling, revenue generation through power, reduced transportation costs for collection and transfer of MSW to the landfill etc.

Benefits

- Substantially reduces the waste volume – system ideally results in almost all waste being processed.
- The process generates fertilizer, gas, power etc.
- The solution would be usable in small towns as well as large cities.
- Even for large cities, the solution would allow decentralised waste processing to minimise transportation and related costs.
- It is a very financially viable solution.



Ashok Leyland Ltd.



Ashok Leyland is the 2nd largest manufacturer of commercial vehicles in India, the 4th largest manufacturer of buses, and the 12th largest manufacturers of trucks in the world. Headquartered in Chennai, its 9 manufacturing plants give them an international footprint - 7 in India, a bus manufacturing facility in Ras Al Khaimah (UAE), one at Leeds (UK) and a joint venture with the Alteams Group for manufacture of high-pressure die-casting and extruded aluminium components for automotive and telecommunications sectors. With a well-diversified portfolio across the automobile industry, Ashok Leyland has recently been ranked as 38th best brand in India.

While millions of passengers use Ashok Leyland buses to get to their destinations every day, 7,00,000 trucks from their stable keep the wheels of the economy moving. With the largest fleet of logistics vehicles deployed in the Indian Army and significant partnerships with armed forces across the globe, Ashok Leyland helps keep the borders secure.

The Innovation

Innovation 1

Their first innovation is indigenous axle mechanisms for lifting auxiliary axles (i.e. CLASSIK-6T pusher) for a multi-axle truck having leaf-spring suspension, to increase the load carrying capacity of the commercial vehicle, improve its fuel efficiency and enhance the tire life for reducing carbon foot print.

Innovation 2

They have developed an axle mechanism (CLASSIK -NRS) for lifting tag axle of a multi-axle truck having leaf-spring suspensions. This innovation has resulted in increased fuel efficiency and enhanced tire life for reducing carbon foot print.

Note: All the aforesaid innovations have been patented by the company.



Cholamandalam Investment and Finance Company Ltd.



Cholamandalam Investment and Finance Company Limited (Chola) was incorporated in 1978 as the financial services arm of the Murugappa Group. Chola commenced business as an equipment financing company and has today emerged as the provider of a bouquet of comprehensive financial services offering vehicle finance, home loans, home equity loans, SME loans, investment advisory services, stock broking etc.

Chola operates from 873 branches across India with assets under management above INR 42,900 Crores. The subsidiaries of Chola are Cholamandalam Securities Limited (CSEC), Cholamandalam Home Finance Limited (CHFL) and White Data Systems India Private Limited (WDSI).

The vision of Chola is to enable its customers lead a better life. Chola has a growing clientele of over 8 lakh happy customers across the nation. Ever since its inception and all through its growth, the company has kept a clear sight of its values. The basic tenet of these values is a strict adherence to ethics and a responsibility to all those, who come within its corporate ambit - customers, shareholders, employees and society.

The Innovation

Innovation 1

Trucks contribute to 57% of India's freight traffic. However, the trucking business is affected by unpredictable pricing model with multiple levels of middle-men aiming at consolidation, lack of working capital to start trips leading to delays in delivery, high rate of interest and under-utilization of vehicle capacity.

To address these issues, iLoads and Trip-credit as a service were introduced to the market. iLoads offer demand supply aggregation between the load providers and truckers in a fragmented and technologically under-penetrated road transport industry. Further, through trip-credit, it provides credit-limit based on freight distance rather than asset value.

Innovation 2

From data-entry at customer's place to instant credit decisions based on scoring model to disbursement of loan and collections using contact recording module, LEAP is their second innovation which is an end-to-end integrated platform empowering the feet-on-street workforce, enhancing their productivity, reducing their time and efforts, delighting the customers by reducing physical process.

Innovation 3

Technology gives even the quietest user a voice. Being perceived as bottom-of-pyramid, the trucking community has always had limited technological solutions to their needs. Meeting most of their requirements involve physical processes and efforts. The Customer-Facing-App (CFA) loaded with Gaadi Bazaar and Vishesh facilitates their customers and brokers to transact at the press of a button. PayNow button eases customers from walking to their branches, e-auction enables selling broker's stock at higher prices and Vishesh enables transfer of pre-approved funds.

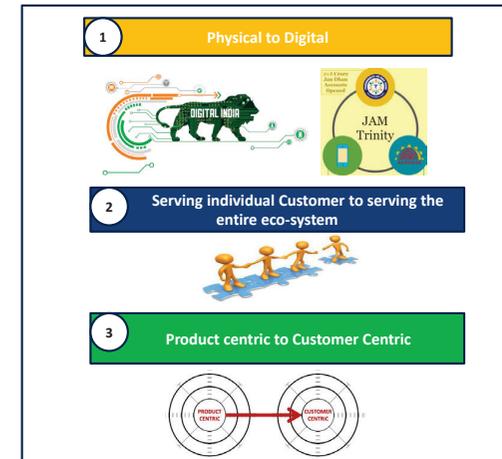
Benefits

With App based E-POD, and reducing the idle-time of the vehicles on the road, they have helped the truckers, who are typically from the bottom-of-the-pyramid enter a better life. The increase in their earnings will help them save and invest more, and more importantly improvise their standard of living.

Vishesh is a game changer in the market that operates out of top-up loans given to customers, who seek a loan.

Instant payment and receipting in CFA to any time instant pre-approved credit to one touch for participation in an auction conducted pan India, all these features significantly reduce the time taken by a customer.

They had an increase in the market share across products because of the improvement in the productivity and having a quicker turnaround time.



CYIENT

Cyient Ltd.

Founded in 1991, Cyient provides engineering, manufacturing, geospatial network and operations management services to global industry leaders. They deliver innovative solutions that add value to businesses through the deployment of robust processes and state-of-the-art technology. Their high-quality products and services help clients leverage market opportunities and gain the competitive advantage.

From quieter flights and safer train rides to more reliable energy supply, they strive to provide comprehensive solutions that help their clients achieve their operational and business goals. To them, problems are an opportunity to use their extensive global experience and industry knowledge creatively to help their clients do more.



The Innovation

Innovation 1

Unmanned aerial vehicle (UAV): With the changing city infrastructures, the existing applications used by the government departments are not enabled geospatially and are not automated for general city administrative operations like Property tax, building permissions, traffic, security, streetlights etc. This results in loss of revenue for the department and increasing unauthorized constructions. Unique feature of the UAV system is the 3D view of the entire area of interest with different level of details which gives integrated information for efficient decision support. The model provides details in thematic layers such as Buildings, Parks, Parking Lots, Poles and Roads and enables to build an efficient decision.

Innovation 2

Holo Eye: The 'Holo Eye Anatomy' is a mixed reality application made for Hololens device exclusively. It showcases the mixed reality environment which is a combination of both augmented reality and virtual reality. It clearly illustrates the Anatomy of the Human Eye and its inner details with added virtual reality supportability feature.

Innovation 3

One Stop Data Source: Aircraft engine is a complex system with large number of unique parts. Most of information related to specific part or a sub-assembly stays in multiple database servers and it takes lot of time to collect the required data. Cyient has developed a web based, cutting edge 3D visual framework for accessing and managing data from multiple data sources used in aircraft engine product life cycle, called Visual Engine – One stop data source. This is an active 3D visual tool.

The Approach

For Innovation 1: The innovation 1 talks about an Integrated 3D City GIS Solution, a web based decision support system that has the Geospatial, IoT and decision Support capabilities at one place. This solution will Integrate all the departments with one common platform for effective management of the information and resources.



For Innovation 2: Holo eye anatomy is a Universal Windows Platform application that uses the holographic rendering, gaze, gesture and Voice API's. Interacting with the holograms in mixed reality enables the user to visualize and work with the digital content as part of the real world.

Benefits

Their Unmanned Aerial Vehicles (UAV/drones) can be used to optimize consumption of fertilizers and pesticides in farming.

The integrated system has a framework to capture direct feeds from the traffic servers and cameras with live streaming. This helps officials managing the information in an infrastructure like Command & Control Centre based on the live data feeds and system intelligence

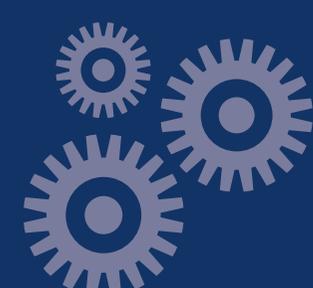
Visual engine is helping them in saving time for data search, data pulling as well as single source for training and knowledge management repository.



GMR Hyderabad International Airport Ltd

GMR Hyderabad International Airport Limited (GHIAL) is the first Greenfield Airport project in India under Public Private Partnership model of governance. As a JV company, GHIAL was entrusted to develop, finance, build, operate and maintain Rajiv Gandhi International Airport-(RGIA at Shamshabad. The airport was commissioned in a record time of 31 months and commenced commercial operations in March, 2008. The airport is currently one of the fastest growing major airports in the country, handling around 18 million passengers and over 1,35,000 MT of cargo every year. RGIA is strategically located 25 km from the twin cities of Hyderabad-Secunderabad on the Bangalore Highway.

The entire airport was constructed with a vision to be environment friendly. The airport was conceptualized as a world-class facility benchmarked against the best airports in the world, bringing in several industry firsts such as integrated airport operations control center (AOCC), inline baggage screening systems (ILBS), modern flight information display systems (FIDS), integrated cargo facilities and many others as first time in the country. Various industry-first innovations viz. introduction of end-to-end e-boarding, doing away with hand-baggage stamping, express security check and stamping free travel for domestic passengers, conversion of taxiway into runway, Airline Route Profitability Algorithms(ARPA) to increase cargo revenue etc. – these have become the benchmarks not only for the airports in India but also across the world.



The Innovation

Innovation 1

End to End E-Boarding solution: This automated process promises better environment by going paperless; better operational efficiency and convenient journey for passengers at RGIA – all these at no additional cost to the passengers. Passenger needs only a smart phone and an Aadhar number to avail this facility; there would be no need to carry any ID proof at the airport.

Innovation 2

Conversion of Taxiway into Secondary Runway: At Hyderabad Airport, Rwy 09R/27L is the primary runway. In case of the non-availability of the main runway, there is no alternative for the aircraft to land and they need to be diverted to the next airport either at Bengaluru or Nagpur. Hence, maintenance of the main runway leads to the revenue losses and discomfort to the passengers.

Taking these into the consideration Twy 09I/27R, primarily a taxiway has been converted in to the alternative runway in a phased manner with the innovative approach. Now the aircraft can operate on the secondary runway in the VFR conditions and recently Hyderabad airport got approvals for the installation of the Instrument Landing System (ILS) for the secondary runway. This enables Hyderabad airport as a nonstop runway operations with the optimal resource management.

Innovation 3

Airline Route Profitability Algorithm: Historically, freighter connectivity at RGIA has been low (nil till 2010). GHIAL took up the challenge to transform RGIA into logistics hub for India and South-Asia by improving freighter connectivity with the objective to Increase the international freighter frequency at RGIA by 60% over previous year. The following have been the innovation milestones:

- Proposals were sent to airlines based on scientific approach on potential routings with a unique airline route profitability algorithm (ARPA).
- Possibly world's 1st airport to prepare such an algorithm as part of airline proposal



Benefits

For Innovation 1: Automation has improved efficiency and led to more throughput and better utilization of airline & security manpower and infrastructure. This project has been developed with only internal technology/ resource utilization. Had it been outsourced (software), it would have cost around Rs.2.00 crores. The indirect cost saving benefit to airlines would be approx.. Rs.65.00 lakhs (staff reduction for airlines)

For Innovation 2:

- Reduction of Capex investment by approximately Rs.1500 crores.
- No diversion of flights for the airlines and passengers.
- Reduction of holding fuel for airline.

For Innovation 3:

- Moving heavy, oversized and special cargo made possible with the introduction of freighters.
- Cargo volumes at RGIA grew at 10.3% CAGR in the last 9 years, higher than country's CAGR in same period.
- International exports grew at 15% YoY in FY17 and currently growing at 21% YTD July 2017.





Godrej Consumer Products Ltd.

Godrej Consumer Products Ltd. (GPCL) is a leading emerging markets company. As part of the over 120-year young Godrej Group, they have a proud legacy built on the strong values of trust, integrity and respect for others. At the same time, they are growing fast and have exciting, ambitious aspirations.

Today, Godrej group enjoys the patronage of 1.15 billion consumers globally, across different businesses. In line with their 3 x 3 approach to international expansion at Godrej Consumer Products, they are building a presence in 3 emerging markets (Asia, Africa, Latin America) across 3 categories (home care, personal care, hair care). They rank among the largest household insecticide and hair care players in emerging markets. In household insecticides, they are the leader in India and Indonesia and are expanding their footprint in Africa. They are the leader in serving the hair care needs of women of African descent, the number one player in hair colour in India and Sub-Saharan Africa, and among the leading players in Latin America.

Approximately 23 per cent of the promoter's holding in the Godrej Group is held in trusts that invest in the environment, health and education. They are also bringing together their passion and purpose to make a difference through their 'Good & Green' approach to create a more inclusive and greener India.

At the heart of all of this, is their talented team. They take much pride in fostering an inspiring workplace, with an agile and high-performance culture. They are also deeply committed to recognizing and valuing diversity across their teams.

The Innovation

Innovation 1

In bathrooms, the whole category was operating in odour elimination space. There was a need for a differentiated format and improved fragrance solution that works towards experience enhancement in bathroom space. Aer pocket is a first-of-its-kind format in the category. It is a paper membrane-based perfume diffusion solution, with differentiated, improved, fragrance options and convenient usage.

The new innovative format utilizes a gel based technology that is far superior to the products currently available in the market. More than 85% of the people who tried the product, end up repeating their purchase, due to the efficacy of the fragrance release (internal third party research)

Innovation 2

According to an A.C. Nielsen study, 85% Indians are aware of dengue, 90% are unaware that dengue-causing mosquitos bite during the day. Only 8% use repellents during the day and only 1.1% use outdoor solutions. Existing products were perceived to be ineffective, had bad odor, and a tedious skin application process.

A 100% natural mosquito repellent applicable on fabrics that provides 8 hours of protection, pediatrician certified, and at a disruptive price of Rs75. It is quick and easy to use – only 4 dots on clothes, enabling habit creation for use of personal repellents, especially for children.

Innovation 3

India has 986 variants from over 500 deodorant brands. Penetration for the category, however, stayed stagnant despite substantial advertising spends. Research suggested that consumers felt the fragrance did not last long, was not gentle on skin, and costly. A long-lasting, cost-effective, and skin-friendly deo solution was required.

DeoStick is an all-new cream-based deodorant to be applied directly on the body or clothes. It was 3x longer lasting fragrance, gentle on skin, which is quickly absorbed, and non-staining. It is priced at an extremely low-cost of Rs.60 compared to other leading brands.

Benefits

For Innovation 1: The launch of the format doubled the gross profit of the brand within a year and the company's gross contribution on the brand more than doubled in this financial year. Within 1 year, brand gained 13% market share in the home air care segment.

For Innovation 2: Children spend a lot of their time out of the home, while playing in the evening or at school in the morning, they are vulnerable to mosquito-borne diseases. The ease of use of mosquito repellants applicable on fabric protects children against the mosquitoes outdoor and the communication encourages children to play outside without their mothers worrying about deadly mosquito-borne diseases.

For Innovation 3: The company has gained 2.9 % of the market share after 9 months of its third innovation launch. This product has won the Best Deo award on Amazon Beauty Awards 2016.

The Future

In 2020, the company aims to reach 10 times the size they were in 2010. They are making steady progress towards this through international expansion, innovation, and growing market share. By the year 2020, they are committed to generate considerably higher size of the workforce, building a greener India and innovating 'good' and 'green' products that cater to the bottom-of-the-pyramid users.



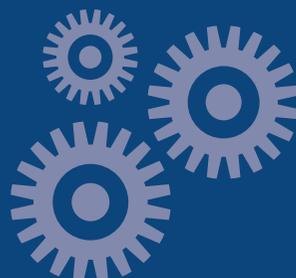


L&T Technology Services

L&T Technology Services Ltd.

L&T Technology Services Limited (LTTS) is a publicly listed subsidiary of Larsen & Toubro Limited focusing on Engineering and R&D Services (ER&D) and addressing global customers including 52 Fortune 500 companies and 48 of the world's top ER&D spenders.

LTTS offers consultancy, design, development and testing services for the industrial products, medical devices, transportation, telecom & hi-tech, and the process industries. Digital Engineering portfolio of LTTS helps build smart products & services and offers smart manufacturing services and solutions to customers. The company also offers services and solutions in software engineering, embedded systems, mechanical & manufacturing engineering, value engineering and plant & process engineering. Headquartered in India, LTTS has around 11,000 employees, 12 global delivery centres in India and overseas, 27 sales offices in India, North America, Europe, the Middle East and Asia and 34 labs in India as on March 31, 2017.



The Innovation

Innovation 1

Design of a motion activated, bi-directional and variable speed screwdriver. Unique aspects of the screwdriver include:

- Innovative adjustable spring clutch
- Unique spindle lock & latch mechanism

Innovation 2

Optical microscopes: For imaging of large 3-D specimens, capturing the entire object in focus is usually impossible. To solve the limitation of shallow depth of field of microscopy, LTTTS' novel technology with extended depth of field includes parallax & illumination corrections and a robust focus selection algorithm. The in-focus segmentation component ensures good quality images across a large variety of specimens.

Innovation 3

A complete end-to-end development of smart meters, gateway module, communication protocol and analytics engine for monitoring energy distribution performance at all levels.

Note: All the aforesaid innovations have been patented by the company.

Benefits

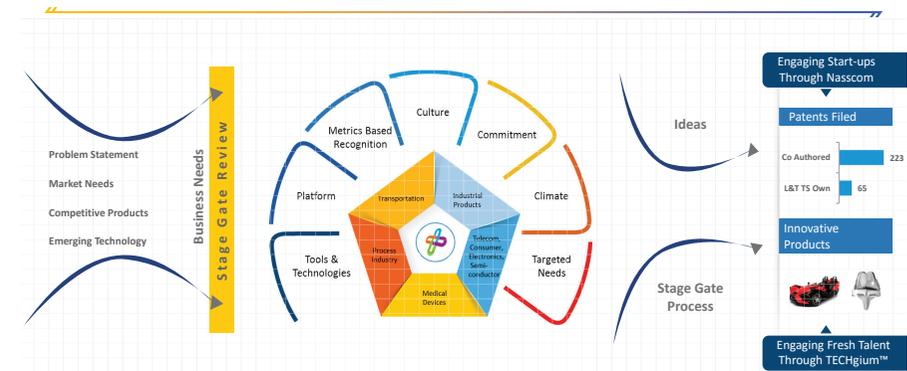
Innovation 1, LTTTS has enabled its customers save design and development time.

Innovation 2 has helped increase profit for the company.

Innovation 3 has given real-time insights into the operations, which enable reduced theft and downtime enabling significant improvement in revenue collection. The automatic data collection and reporting have reduced manhours and the company has also bagged tenders worth US\$ 2 -3 billion globally.

The Future

LTTTS aims to be among the top 10 global engineering services companies in the world. Their mission is to foster customer delight through a creative and innovative culture with technology leadership and delivery excellence, while enhancing value for all the stakeholders.





NBCC (India) Ltd.

NBCC (India) Limited, formerly known as National Buildings Construction Corporation Ltd., is a blue-chip Government of India Navratna enterprise under the Ministry of Housing and Urban Affairs.

The company's present areas of operations are categorized into three main segments, i.e. Project Management Consultancy (PMC), Real Estate Development and EPC Contracting. NBCC has been executing many landmark projects as a PMC which contributes to about 90% of its annual revenue. The segment being the company's core strength, the areas covered under its umbrella include re-development of government properties, roads, hospitals & medical colleges, institutions, offices, airports, bridges, industrial & environmental structures etc.

The real estate segment of the company which came into being in 1988, mainly executing commercial real estate projects, today has undergone a sea change operation wise. Keeping pace with the changing business scenario. The present Real Estate Business of the Company could be distinctively viewed falling in two categories based on origin of the projects i.e. one is internally originated & conceptualized projects wherein the company buys land from private and government agencies alike, develops the land and sells it off; while others are sourced from Government wherein, NBCC carries out re-development of Government properties on a model i.e. self-sustaining and does not call for any government funding. The New Motibagh complex, New Delhi under general pool residential accommodation (GPRA) scheme of the Govt. of India is one of the finest examples of such a re-development work in recent times. The project today is certified largest green home complex of its kind in the country.

The Innovation

Innovation 1

A huge quantity of construction and demolition waste (C&D) is generated in the demolition process. The usual practice is to dispose of such wastes to unauthorized sites. In order to prevent this unhealthy construction practice, C&D waste was required to be transformed into recycled products such as bricks, concrete blocks, pavement blocks etc.

For this C&D waste was crushed with jaw crusher and material was sieved to achieve fine sand of less than 4.75 micron. Post mixing this material with cement, water and enzymes it was sent to brick moulding machine. Moulded bricks were cured for 28 days to gain strength.

Innovation 2

This innovation was to reduce the fresh water consumption for construction process by utilizing treated domestic effluents from urban sewage treatment plant for concrete production. This also helped reducing CO2 emissions and contributed towards green environment.

The application of treated domestic effluent is an alternative to fresh water for curing of concrete mix production of high water-cement ratio. The improved process, attributed to the pore filling effect concomitant to the deposition of suspended and dissolved solids present in effluent water for evolution of enhanced construction practices.

Benefits

For Innovation 1: Zero requirement for the disposal of construction and demolition wastes without any initial financial investment by NBCC (India) Limited. This process ensures less wastes ending up in landfills, increased longevity and reduced costs. Hence, a saving of transportation and processing fees approximately amounting to Rs.7 Crore was achieved.

For Innovation 2: The use of treated effluent (TE) curing compound helped enhancing performance in terms of strength development and surface imperviousness.

The Future

Their mission is to be a leading company, with high brand equity in construction business, offering sustainable, innovative and cost effective construction products and services contributing to national wealth, upholding responsibility for the environment, and promoting well-being of all stakeholders including employees, customers, shareholders and society.





Ramani Precision Machines Pvt. Ltd.

Ramani Precision Machines (P) Ltd., a Punjab based business entity is the recipient of prestigious National Award from the Prime Minister of India, as an outstanding small scale industry, for the year 1998. The company is primarily engaged in the manufacturing, supplying and exporting of industrial machines like automatic fillet rolling machines, automatic caulking machines, automatic wire winding machines, spring coiling machines, gang drilling machines and many more. In addition to this, the company has set a strong foothold in the regions of India, Germany, United Kingdom, Dubai etc. Recently, they have become a channel partner of Yaskawa Robots, Japan.

The projects, undertaken by them, are implemented with efficiency, speed & economy adhering to the time schedule. Their products and services are widely supplied to automotive industry, air conditioning industry, lighting industry, mass production machining, materials testing, material handling and transfer systems engineering. They are working for the development of special purpose machines for American as well as Japanese organizations, who are setting up their new projects in India. They are constantly striving to establish and maintain long-term relationship with their esteemed clients.



The Innovation

They work towards developing machines for various manufacturing processes. Every machine they developed is packed with several new technologies, ensuring high output, fool proofing, consistency of quality and with economical costing.

The Approach

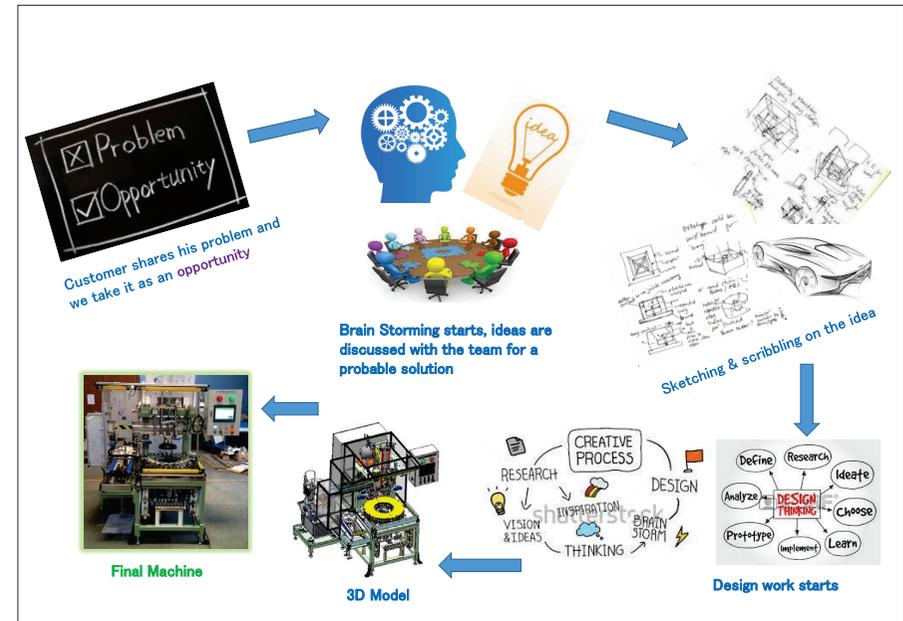
The company is providing customized solutions for their customers. They indulge in discussions with their customers and then design the solutions, and manufacture and supply to them.

With their own developed technologies, they are not required to pay any royalty / fees to any technology provider. This makes their profitability quite sound. Many multinational companies are purchasing special equipment's developed from them.

Benefits

Their special equipments are for fast production. They have developed certain machines, which have cycle time of 2.5 seconds only.

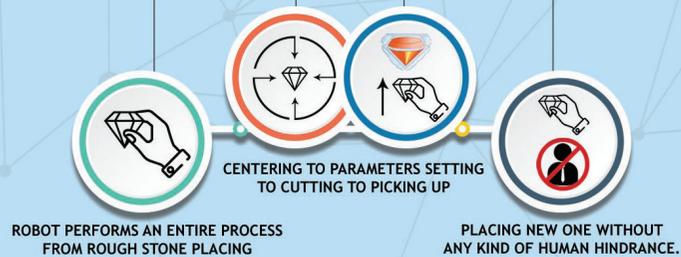
With their attributes of high quality designs & manufacturing, they have earned a good reputation in India & abroad. Their company has seen increase in their market share compared to others.



ROBOMATIC

**WORLD'S FIRST DIAMOND PROCESSING ROBOT
ONLY ONE OF ITS KIND.**

FULLY AUTOMATIC DIAMOND CUTTING OPERATION



Sahajanand Technologies Pvt. Ltd.

Sahajanand Technologies Pvt. Ltd. (STPL) is engaged in developing cutting edge technological solutions for the diamond industry. STPL is one of the very few global companies that offer total technology solutions for diamond manufacturing, including diamond analysis and planning, laser processing, laser blocking and polishing and safe diamond trading.

As a trendsetter of the industry, STPL pioneered the laser diamond cutting technology in India. Today, the advanced technological solutions offered by STPL leverage the promising laser technology, vision technology and ensure higher productivity at lesser costs. The solutions focus on optimizing automation and eliminating the resource consuming & less reliable finishing operations. The company also offers wide range of variants of its product to suite diverse needs and budgets. Sound technological competence and value driven approach have put STPL on the global map of diamond processing industry. At STPL, engineering excellence is merged with core values of quality, safety, integrity and responsibility.

The Innovation

Innovation 1

Laser Blocking System -Rough gemstone are processed through various stages of operations for obtaining polished diamond. Previously, laser was used to cut the gemstone for obtaining round shape and facets were made on the gemstone by using polishing wheels. One polishing wheel was consumed for processing 100 diamonds, moreover it was less precise and suffered poor productivity.

STPL started using laser for both the processes. Hence, their production improved and process time was reduced. They automated their entire process by working on CAD-CAM, therefore increasing accuracy and yield.

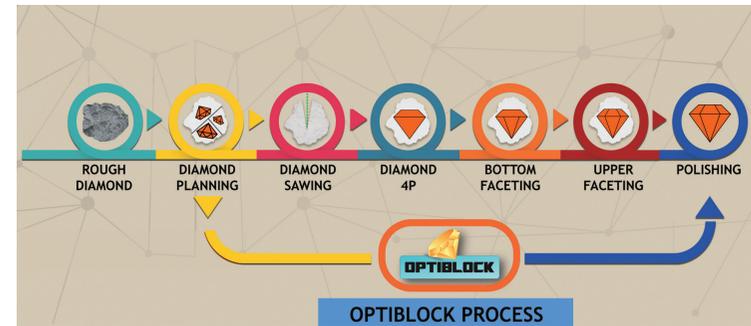
Innovation 2

OptiCent System- The gemstone is mounted manually on a holder by the operator by repetitive hammering at the required position. This reduced the value of polished diamond and had more process errors. Their innovation is the amalgamation of mechanical with image processing techniques as well as artificial intelligence, wherein the gemstone gets robotically positioned to its required place so that further processing on it can be started quicker. Also, the positional accuracy is much better than conventional techniques.

Innovation 3

Accurate parametric values are required to extract high-quality polished diamond from a rough gemstone. While setting these values into a laser cutting machine, human error significantly reduces the quality and size of the processed diamond. Also, the topographical data, which are not available to the operator, results into inaccurate guessing of process parameters in conventional techniques

Their third innovation addresses the process of measuring the actual topographical data of the rough diamond and the cutting process itself. This eliminates wastage of time and diamonds. The planer data i.e. the coordinates are automatically transferred from planer machine to laser machine without any human intervention.



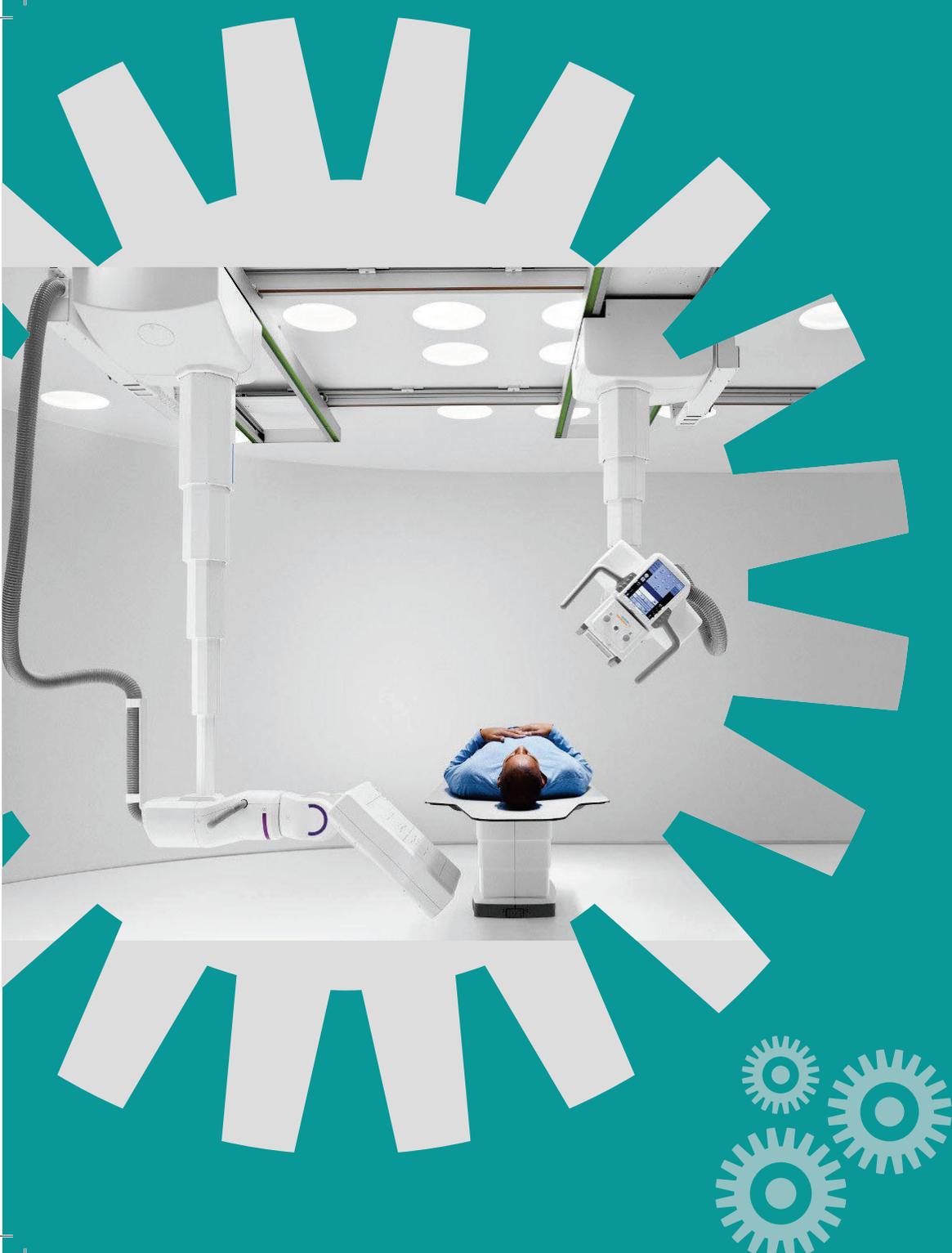
Benefits

- The error rate reduced to 5% (maximum) with the use of the new process. Hence, the accuracy improved.
- Due to process improvements at the initial stages, production throughput has increased by up to 40%.
- By their continuous efforts in innovation, they are able to reduce material loss by more than 4%. (i.e. several thousand carats of diamonds saving).

The Future

STPL continues its journey towards the vision set for itself by its founder. Soon, robotic automation is likely to move the Indian diamond industry swiftly setting new benchmark for methodologies, especially for cutting processes.





Siemens Healthcare Pvt. Ltd.

Siemens Healthcare's (SH) aims to increase value for the healthcare providers by developing precision medical devices, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

An estimated five million patients globally benefit every day from their innovative technologies and services in the areas of diagnostics and therapeutic imaging, laboratory diagnostics and molecular medicine, as well as digital health and enterprise services.

They are a leading medical technology company with over 170 years of experience and 18,000 patents globally. With more than 48,000 dedicated colleagues in over 70 countries, they are poised to innovate and shape the future of healthcare.

The Innovation

High-cost medical imaging systems break down if the environmental conditions (such as temperature, humidity, power supply) are not maintained within specified levels. Presently, customers of these systems find it difficult to ensure the environmental conditions at desired levels. This results in increased downtime of equipment and costs for spare parts.

SH's environment monitoring system uses IoT and cloud technologies to monitor different subsystems of medical equipment such as HVAC, helium compressor, chiller, power, humidity, battery back-up. Alerts are sent to their customers when environmental conditions go out of range. Advanced analytics help proactively identify effective steps to ensure minimal breakdowns.

Benefits

The environment monitoring system has resulted in reduction in onsite efforts of service engineers. The environmental data collected are used to help healthcare provider optimize air-conditioning within the hospital/clinic/diagnostic centre to reduce power consumption while improving conformance to recommended environmental conditions.

The reduction in downtime and associated requirement of spares grossly improve the customer satisfaction and patient throughput thus adding to the bottom line for the healthcare providers.





SKYi Composites Pvt. Ltd.



Man Hole cover

Established in 2015, SKYi is a polymeric raw material manufacturer founded by technocrats on two important pillars of innovation and sustainability. The vision of the company is to become a global technology leader and a solution provider for polymeric materials for a greener planet. They have over 10 patents specifically in the field of long fiber thermoplastics (LFT) manufacturing and products, die-manifold and preheating systems, which are covered under individual patents of Dr. Sachin Jain, MD. They also have flexi-line with patented die design to produce long carbon fiber composites. Globally, they have one of the largest fully functional and automatized LFT production line. SKYi has the capability to produce LFT with various sizes & continuous strands for different applications.

Average age of people at SKYi is 27 years thus resulting in young and energetic workforce. They have 25% women in R&D, HR and other departments with over 100 years of combined experience and 20% workforce in R&D with PhD and M.Tech/MS focusing on innovation. They also received 'Excellence Award' as 'Fastest growing company' by the International Achievers Conference and Gold Trophy by PLASTINDIA foundation for 'Innovative Polymer Materials'.

The Innovation

LFT composites are 5 times lighter than steel, 2.5 times lighter than aluminium and up to 30% lighter than conventional engineering plastics, while offering same or even better mechanical, thermal, dimensional stability and extremely high creep resistance. This makes it a unique class of material to be used in light-weight applications for automotive and other industries such as building & construction, white goods appliances etc. This innovative material is not only light-weight, but has high corrosion resistance along with extremely high chemical and environmental stress resistance. The material is easily recyclable, and more environmentally friendly than conventional materials such as metals or thermoset polymer based FRPs. Component manufacturing process is easy to scale and quick; hence, having high energy efficiency and low emission compared to FRP, BMC and metal off course. Due to EMI shielding ability and electrically insulating properties, thermoplastic composites are becoming popular in electric vehicles.

SKYi LFT is the 3rd generation of LFT's which overcomes the limitations of the previous generations by ensuring every single fibre is impregnated by polymer, providing uniform mechanical properties and dimensional stability viz. less warpage, better creep, uniform shrinkage etc. It also ensures that the screws and barrels are protected from direct contact with the abrasive glass fibre.

Their proprietary manufacturing process makes them the only company in India with the ability to produce LFT thermoplastic composites without any dependencies. Their patents on die design enable them produce consistent and superior quality products at high speeds. Their product patent portfolio also enables them to make customized products and provide specific need based solutions.

The Approach

SKYi's innovation aims at developing highly light weight and cost effective alternative material which would cater to the needs of latest vehicle manufacturing norms (e.g.: Euro 6 norms) as well as potential replacement for metals. It will help meet various regulations on emissions, safety and crash worthiness, NVH, fuel economy etc. in the design and development of new generation vehicles.

LFT, in the form of granules or tapes are becoming popular:

- to replace high performance and highly expensive polymers
- to replace metals or thermoset composites by improving thermal as well as mechanical performance
- in all crash relevant applications, where traditionally plastics were not considered

Their customer centric innovation strategy works on 3 fronts:

Customer requirements and applications based	Market trends and futuristic developments	Fundamental research
Joint development with >70% of our customers	Joint activity with 20+ global brands	Conductive hybrids, drug delivery

Benefits

- More than 50% weight reduction in metal to plastics and 20% further weight reduction potential by replacing conventional engineering plastics.
- 25% improvement in production efficiency and lower carbon footprint during production and use.
- Resistance to corrosion and chemicals, making it durable in applications such as consumer appliance, construction and plumbing specially in aggressive environment.
- Possibility of 3R's (recycle, reuse and reduce the waste) at the end of life cycle.
- Lower manufacturing cost of parts as it uses simple and fast injection moulding process, which is very efficient in terms of time, energy (electricity and heat), and low/no emission compared to thermoset curing.

The Future

There is an urgent need to reduce weight in transportation mode (electric vehicles, fossil fuel based) to improve fuel efficiency, reduce emission and lower the carbon footprint. Safety in every aspect requires materials, which are human friendly and can be embedded with digital mediums. Metal being thermally and electrically conductive cannot be used. LFT composites offers freedom of design and flexibility to product designers to come up with affordable solutions to counter the challenges.

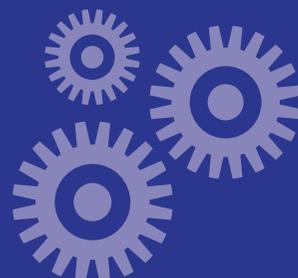




Sohan Lal Commodity Management Pvt Ltd.
An ISO 9001:2008 Certified Company & An ISO 22000:2005 Certified Company

Sohan Lal Commodity Management Pvt. Ltd.

Sohan Lal Commodity Management Pvt Ltd (SLCM) is a global post harvest Agri-Logistics Group. It is an ISO 9001: 2015, ISO 22000: 2005, ISO 33000, ISO 14001:2015 & OHSAS 18001:2007 certified company. The Group provides one-stop solution to the end user with diversified portfolio of services ranging from Warehouse Management, Agriculture Financing, and Collateral Management to Procurement. SLCM warehouse management is equipped with technology to offer storage and protection services for the entire range of agri-commodities. SLCM has been handling more than 873 agri commodities including Cotton, Barley, Bajra, Castor Seeds, Wheat, Pulses, Maize, Spices, Aloe Vera, etc. across India. As on 30th June 2018, SLCM manages a technology enabled network of more than 2850 warehouses and 19 cold storages pan India with a total capacity of over 9.33 million MT spread over 48.86 million sq. ft. and throughput of more than 675.41 million MT.



The Innovation

Innovation 1

AGRI REACH (patent pending) is as an algorithm which combines series of processes, audits and Real-Time tracking of facilities to give error free results with reduced risks of crop damage. It results in saving losses by 9.5 percent of INR 1,00,000 crore as per industry standards.

Innovation 2

KISSANDHAN: Post the slowdown of 2008, there has been a significant decline in agriculture sector. The government has laid down plans and taken initiatives to sustain development wherein ensuring institutional credit to farmers is of utmost importance. This is the problem, which Kissandhan, (SLCM)'S Non-Banking Financial Company wants to address through collateral financing. SLCM has developed methods that help farmers avail a loan against their crop through their wholly owned subsidiary Kissandhan. This not only ensures improved incomes to the farmers, but also provides them the facilities of crop storage till they are ready to sell off their products.

Innovation 3

SLCM LTD. Myanmar: Company changed the paradigm of Warehousing & Financing in Myanmar, where collateral based lending was limited to mostly land holdings. Myanmar Banks have now included key agricultural goods as collaterals; this has been a landmark achievement for a foreign company entering an international domain. In comparison to India, Myanmar experiences a post-harvest loss of 30-35% of its total agri-produce annually. SLCM Ltd. aims to provide innovative and affordable range of services to agri & warehousing sector in Myanmar while substantially reducing the food wastage.

The Approach

SLCM manages all their warehouses without investing in infrastructure. They have developed processes that enable farmers reduce agri-wastage by 9.5 per cent of during the post-harvest period and tied up with farmers, intermediaries, joint liability groups, SMEs, processors, traders, commodity exchanges to government.

Benefits

SLCM has devised a SOP, which amalgamates technology with agri domain expertise and allows SLCM to operate any warehouse agnostic to infrastructure, location, weather pattern across any kind of agriculture crop. It has also applied for patenting this scientific technology of storage under the name of "AGRI REACH".

The Group also has a wholly owned NBFC in India christened as "Kissandhan" which has changed the paradigm of collateral financing by financing across diversified agri products whilst being agnostic to balance sheet or net worth of the borrower yet complying with the prudential norms of RBI.



The Future

SLCM envisions being the preferred agro service provider across all agriculture value chains with a presence in every geo-climatic region of the world. SLCM Group has strong plans to foray into ASEAN countries like Cambodia, Vietnam and Laos. Also, the company is rigorously looking at the African commodity market. The post harvest losses in all these countries are more than 25%. Moreover, these countries face the same systematic agriculture problems as India does.



TATA HITACHI

Reliable solutions

Tata Hitachi Construction Machinery Company Pvt. Ltd.

Tata Hitachi Construction Machinery Company Private Limited, the leader in construction equipment in India, aims to enhance the operational performance of its customers, leading to improved profitability and competitiveness by offering constructive solutions.

Tata Hitachi is a subsidiary company of Hitachi Construction Machinery Co. Ltd., which holds 60% share and Tata Motors Ltd. holding 40%.

Tata Hitachi is focused on capitalizing the opportunity in the domestic arena for which the key market segments are excavators, wheeled products, cranes and others. Tata Hitachi's consistent growth and success have been built on the foundation of the company's ability to understand customers' needs and provide equipment alongside support solutions that increase profitability and competitiveness.



The Innovation

Innovation 1

The gear manufacturing shop of their company had difficulty meeting the production demand. The bottleneck was the gear grinding capacity, augmenting, which meant additional investments of approximately Rs.10.5 crore. A solution needed to be worked out to increase the production volumes with maximum additional investments of approximately Rs.4.00 crore.

A new process, “Fast Finish Hobbing” for gear manufacture was innovated through major modifications of the existing processes. The new process yielded better quality gears with shorter manufacturing lead time. With an additional investment of about Rs.4.00 crore in the gear shop, the higher production target could be met. In the new process, cutting speed up to 500 m/minute could be attained. This reduced the hobbing time by 60% while still maintaining the required gear accuracy and surface finish. This also eliminated the gear grinding process, which has reduced the man-hours requirement in the gear manufacturing shop by 25%.

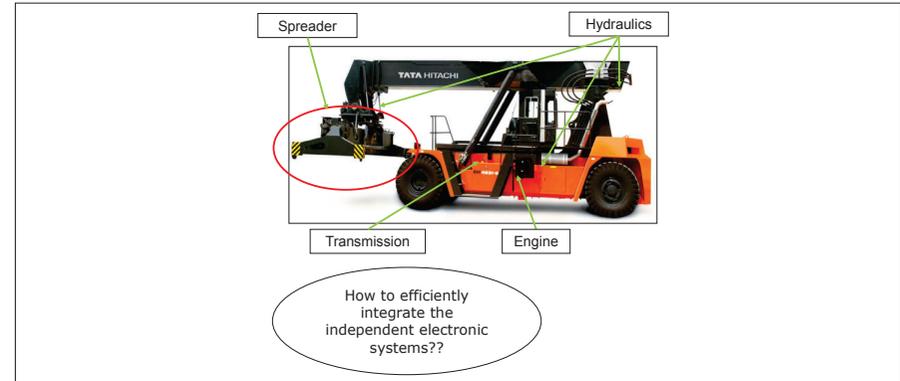
Innovation 2

In Reach Stacker machine (container handler), fault diagnostics is a challenging activity since functioning of many critical aggregates are interlinked electronically. In case of machine breakdown, pinpointing the error and reducing downtime is the main objective of service staff. A user-friendly electronic system was required for easy diagnosis. A diagnostic system has been designed by the company with a master controller communicating with all major aggregates through CAN bus system. It includes load measurement, load sensing and data logging and it is displayed on a single touch-screen monitor; no other reach stacker manufacturer in India offers such systems controlled from a single monitor.

Innovation 3

Their market share in 37-ton class excavators fell mainly for poorer durability of undercarriage parts (mainly track chain) in hard applications like granite quarries. Design modifications and quality improvements in the undercarriage parts helped to a limited extent. A major idea was needed to improve undercarriage life.

Rather than improving the individual components of the undercarriage, the company innovated a different solution by creating a “hybrid” machine. A new excavator was designed by combining the upper structure and attachments



of a 37-ton class excavator and the undercarriage of a 47-ton class excavator. The new model is named “Zaxis400MTH”.

Benefits

For Innovation 1: Due to enhanced productivity achieved with the new process, there has been a saving in production cost of gears to the tune of Rs.3.7 million per year, which has increased the profit margin of the company. Operators find it more convenient and comfortable to operate a machine without coolant than a machine with coolant since the liquid coolant sometimes spills and splashes, causing inconvenience.

For Innovation 2: Load sensing technology and CAN bus technology ensure that each aggregate of the machine functions optimally with respect to the load, resulting in optimum fuel consumption. While fuel consumption of their machine is 16 to 17 LPH, for competitors’ machines it is 19 to 20 LPH.

For Innovation 3: Sale of Zaxis400MTH is likely to push their market share up by about 3% in the 30 to 40-ton class excavators. The increase in profit is expected to be up to 20%.



Tata Power Delhi Distribution Ltd.

Tata Power Delhi Distribution Limited (Tata Power-DDL) is a joint venture between Tata Power and the Government of NCT of Delhi with the majority stake being held by Tata Power Company (51%). Tata Power-DDL distributes electricity in North & North West parts of Delhi and serves a populace of 7 million. The company started operations on July 1, 2002 post the unbundling of the erstwhile Delhi Electricity Supply Undertaking (DESU). With a registered consumer base of 1.6 million and a peak load of around 1852 MW (June 2017), the company's operations span across an area of 510 sq kms.

Tata Power-DDL has been the frontrunner in implementing power distribution reforms in the capital city and is acknowledged for its consumer-friendly practices. Since privatization, the Aggregate Technical & Commercial (AT&C) losses in Tata Power-DDL areas show an impressive reduction of around 84% from an opening loss level of 53% in July 2002.



The Innovation

In an environment where power distribution utilities across the country are reeling under heavy losses and experiencing acute power shortages, Tata Power-DDL has consistently over achieved its targets and scripted an unprecedented turnaround story.

Innovation 1

In this digital world, power thefts are carried out using advanced instruments, which either disturb accurate energy measurement or damage meters permanently without leaving any physical evidence of tampering resulting revenue losses. Faced with such a scenario, Tata Power-DDL in collaboration with Omron Corp., Japan has developed multifunctional sensor, which is capable of capturing events for all tampering with energy meters.

Innovation 2

Lack of dedicated corridor for utility network resulted in external damages and untimely failure in Tata Power-DDL cable network. These damages led to moisture ingress and further failure reducing cable life by 8-10 years. Tata Power-DDL has developed product and process based on extensive research and experimentation for life enhancement of installed cable at highly economical cost. They utilized in-house domain knowledge and developed chemical solution for cable treatment by silicone resulting in cable life enhancement.

Innovation 3

Reducing Aggregate Technical and Commercial (AT&C) losses in slums was extremely difficult with challenges like theft, non-co-operative attitude, political intervention etc. Hence, it was considered essential to maintain close connect with entire consumer base (1.7 million) of slum clusters in Tata Power-DDL licensed area. Tata Power-DDL designed a unique program where 741 women (Abha) from slums were identified, groomed and made their brand ambassadors. These Abhas were then engaged as intermediaries, who work to curb electricity theft, help the residents file complaints, and resolve other electricity connection related issues. This social and financial empowerment has helped them gain huge respect from family and society.



Benefits

For Innovation 1: Multifunctional sensor developed for energy meters has helped in curbing the menace of electricity theft and led to generation of additional revenues of INR 7.00 Crores per annum. It has also resulted in savings of man-hours lost on account of identifying and booking theft cases including collection of evidence tenable in legal forums.

For Innovation 2: Cable life enhancement by silicone has helped the organization in recurring capital saving of INR 9.00 Crores per annum. The operational efficiency has increased improving the reliability indices.

For Innovation 3: Abha has been a social innovation model, which not only resulted in financial savings (reduction of AT&C loss, enhanced billing & collection efficiency, and creating safe environment for the public) to the organization but also impacted the lives of women from the slum clusters.

The Future

The cable life enhancement technique has the potential of replication across power distribution utilities in the country resulting in national savings of INR 500 Crores per annum.

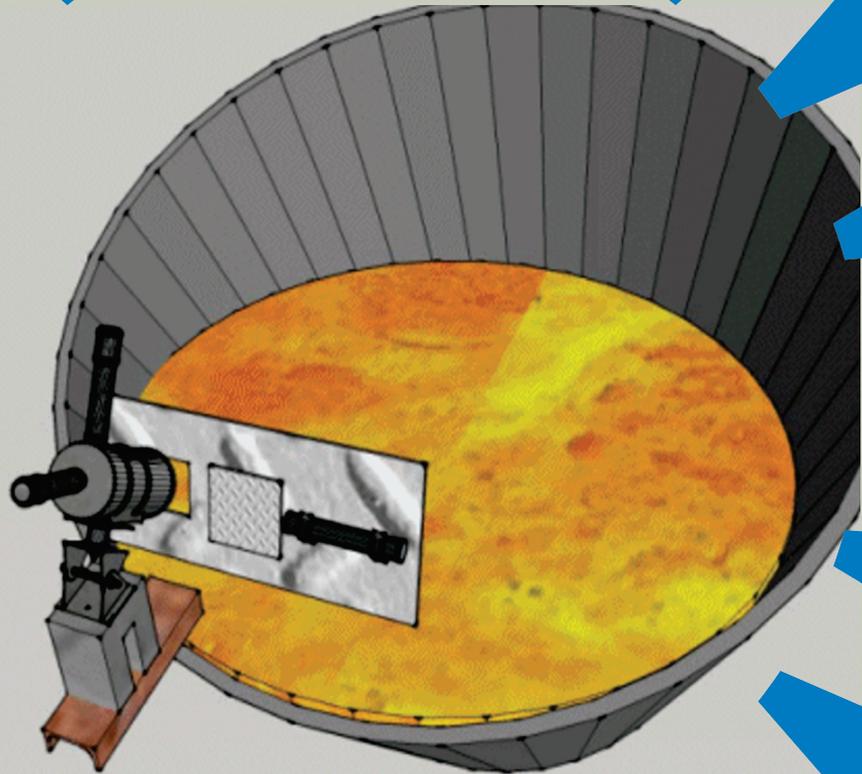
A team from World Bank visited Tata Power-DDL to study the social innovation model with a view to implement the same in a few countries facing similar problems.



Tata Steel Ltd.

Tata Steel Group is among the top global steel companies with an annual crude steel capacity of 27 million tonnes per annum (MTPA) as on March 31, 2018. It is the world's second-most geographically-diversified steel producer, with operations in 26 countries and a commercial presence in over 50 countries. The Group recorded a consolidated turnover of US \$20.41 billion (INR 133,016 crore) in FY18. Tata Steel Group is spread across five continents with an employee base of nearly 74,000.

Tata Steel was felicitated with several awards including the Prime Minister's Trophy for the best performing integrated steel plant for 2014-15 and 2015-16, Best Risk Management by CNBC TV18 (2018) and 'Corporate Strategy Award' by Mint (2018). The Company also received the 'Most Ethical Company' award from Ethisphere Institute for the sixth time (2018), Steel Sustainability Champions (2017) by the World Steel Association, Dun & Bradstreet Corporate Awards (2017 & 2018), Golden Peacock HR Excellence Award by Institute of Directors (2017) as well as 'Asia's Best Integrated Report' award by the Asia Sustainability Reporting Awards (2017), among several others.



The Innovation

The innovation is centred on the design, development, installation and commissioning of an intelligent “Smart Raking System”. The system uses Infrared camera with image processing capability that could cut down the losses and optimized amount of slag that could be skimmed away. This has been implemented in the Steel Making Shop of Tata Steel and is the “first of its kind” in India.

During steel making, a thick layer of floating slag is formed on the surface of the steel meniscus. This layer, if left alone, would adversely affect properties of the final product. The conventional practice involved a manual process to rake (skim) the slag. While the manual practice led to losses, the innovative raking system has overcome this limitation.

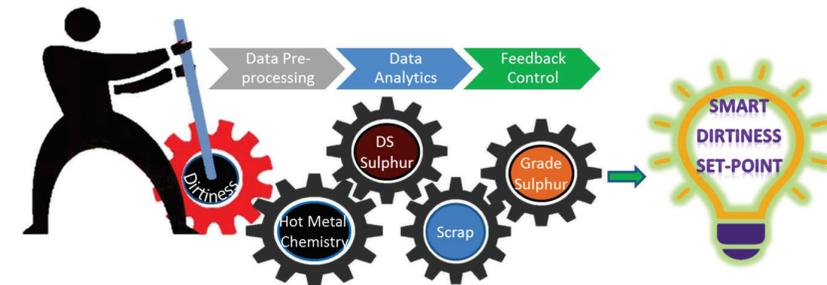
The Approach

Various challenges and the approach to overcome them are enumerated below:

- Environment Heat: It was resolved by utilizing direct and indirect cooling. This has been tried for the first time.
- Dust: A pneumatic shutter installed in in-front of the camera, preventing the dust to settle on the win-dow. A pressurized horn is installed in front of the enclosure window to prevent dust emanating due to the raking process.
- Unhindered view: During skimming, undesirably, boom came within view of the camera, giving wrong result. This was overcome by installing an encoder to track movement of the boom, and to know when the boom was out of the view of the camera.

Benefits

After implementation, this system has been able to generate savings through reduction in iron yield loss. This has enabled improve productivity and raking time, and reduced heat loss to the environment. One of the major benefits has been the improvement in quality of the high strength steel grades for the automotive sector. The number of complaints that were attributed to the slag entrapment in steel has reduced drastically. For the first time in India, a smart raking system has been designed, developed and implemented. The novelty lies in the use of Artificial Intelligence and Image Processing techniques to separate the slag and steel. The yield went up by 21%.



The Future

The system can be deployed in other steel making shops existing in India and abroad. The concept can also be used in industries beyond Steel making e.g. Aluminium, Copper and Zinc. In the long term, the raking system could be upgraded to an automated raking installation.



Windcare India Pvt. Ltd.

Windcare India Private Ltd is a pioneer in delivering innovative service solutions to the wind power industry. Started in the year 2001, Windcare has been a one-stop solution for any intriguing technical challenge faced by the wind power industry in India and abroad.

Mr. S. Anthonyraj Prem Kumar, its founder and Managing Director has been instrumental in the design, development and hands-on execution of an exclusive technology for de-erection and re-erection of wind turbine components without the use of heavy-duty cranes. Before Windcare's Innovation, the conventional method for de-erection and re-erection of wind turbines components involved use of expensive heavy-duty cranes.

Their extensive research brought a revolution in the industry by pushing down the maintenance cost of turbines by about 50%, a boon for wind farm owners. They are well positioned to handle complete operation and maintenance services for wind parks.

The Innovation

Their innovation arose from the pressing need to greatly reduce the cost of the conventional method involved in the operation & maintenance cost of wind turbine generators (WTG)s such as mobilization, transportation of counterweights, overhead power lines, huge fuel consumption due to the large numbers of trucks involved, time for execution, hill station pathway, road traffic etc.

Their innovative technology includes the method of removing and lifting a single blade from a rotor hub of the wind turbine. This technology lessens the problems associated with the conventional method of using large cranes.

The Approach

Windcare has indigenously designed and manufactured lifting tools and its respective processes for replacement of WTG accessories without the use of heavy duty cranes. This is done based on calculated and proven technical reviews, design guidelines pertaining to international engineering standards and specific customer requirements and is validated by competent academic institutes/engineers.

Quality assurance, environmental protection and safety control measures are the parameters, which have made their ideas a great success. Regular experience sharing as well as basic and on-going training promotes the awareness of their employees at all levels allowing them to act competently and responsibly.



Benefits

- More than 85% savings in the project cost.
- 80% reduction in process execution time.
- Carbon emission reduced by 97% in terms of transportation fuel consumption and pollution.
- Deterioration of the cultivated area near wind turbine reduced.
- Reduced the customer's compliance formalities for pathway and transportation.
- Suitable for any terrain and any capacity of wind turbines.

The Future

They are working to enhance their standards and improve their technology consistently to suit the requirements of various countries to capture the overseas markets, where they have not yet penetrated with their technology.

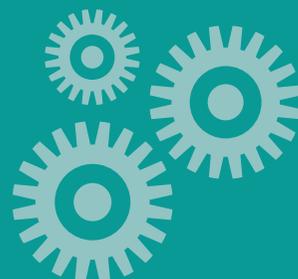




Wipro Ltd.

Wipro Limited has been a leading global information technology, consulting and business process services company. They have been working in the areas of cognitive computing, hyper-automation, robotics, cloud, analytics and emerging technologies to help their clients adapt to the digital world. As a company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, they have over 1,60,000 dedicated employees serving clients across six continents.

Wipro's Smart i-Connect Platform



The Innovation

Innovation 1

Data Discovery Platform: A full-stack analytics platform, which consumes analytics in service model and supports data-driven culture in organizations.

- Comprises 20+ pre-built Data Models, 100+ re-usable KPIs, 45+ clients globally.

Innovation 2

Smart i-Connect Platform: An IoT data aggregation and integration platform, which manages/monitors OT/IT devices, networks & applications end-to-end for smart cities, mining, seaports, airports, agriculture, logistics and more.

- Comprises over 87 built-in industrial protocols, 3000+ customer devices monitored in real-time and 100% customizable modules.

Innovation 3

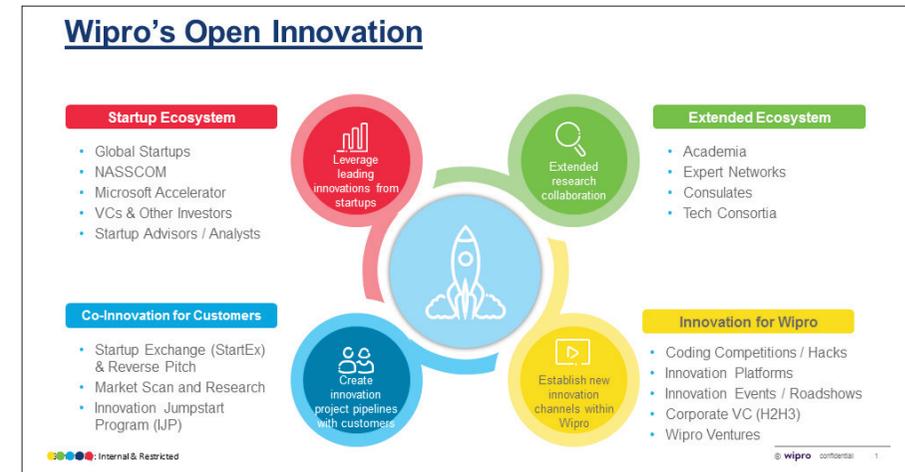
Open Innovation Process: This involves working with stakeholders [startups, academia, Wipro Ventures, Horizon Program, Crowdsourcing Models (Topcoder), Expert Networks and M&A].

The Approach

For Innovation 1: Wipro's approach to innovation is across business units and is broad-based and decentralized. The Data Discovery Platform is developed as an end-to-end analytics platform which enables reusability, flexibility and modularity across industries.

For Innovation 2: The operations of the cities and campuses are fragmented with various independent functions. This calls for a platform to collect seamless data timely decision making. The Smart i-Connect platform integrates various independent systems through a data aggregation layer on a scalable and modular basis.

For Innovation 3: The approach harnesses innovation within the ecosystem and the organization and delivers impactful solutions to customers. The processes have been evolved through various engagements and experience gained over time.



Benefits

Innovation 1 (Data Discovery Platform) has supported company's clients with reduced total cost of ownership (TCO) and development efforts. It also supports citizen services for customers in healthcare, transportation and utilities.

Innovation 2 (Smart i-Connect Platform) has resulted in increased profitability for the company and increased service satisfaction level of the company's clients and helped them reduce cost of operations. Operation & maintenance cost reduction to the tune of 30% could be achieved for smart cities/campuses. The system would cost 20-30% lower as it is based on Open Source & Open Architecture compared to the prevalent systems based on proprietary technology.

Innovation 3 (Open Innovation Process) has empowered company's clients with improved time to production, access to emerging tech, de-risked adaption. It has also increased company's customer & ecosystem engagements.



