

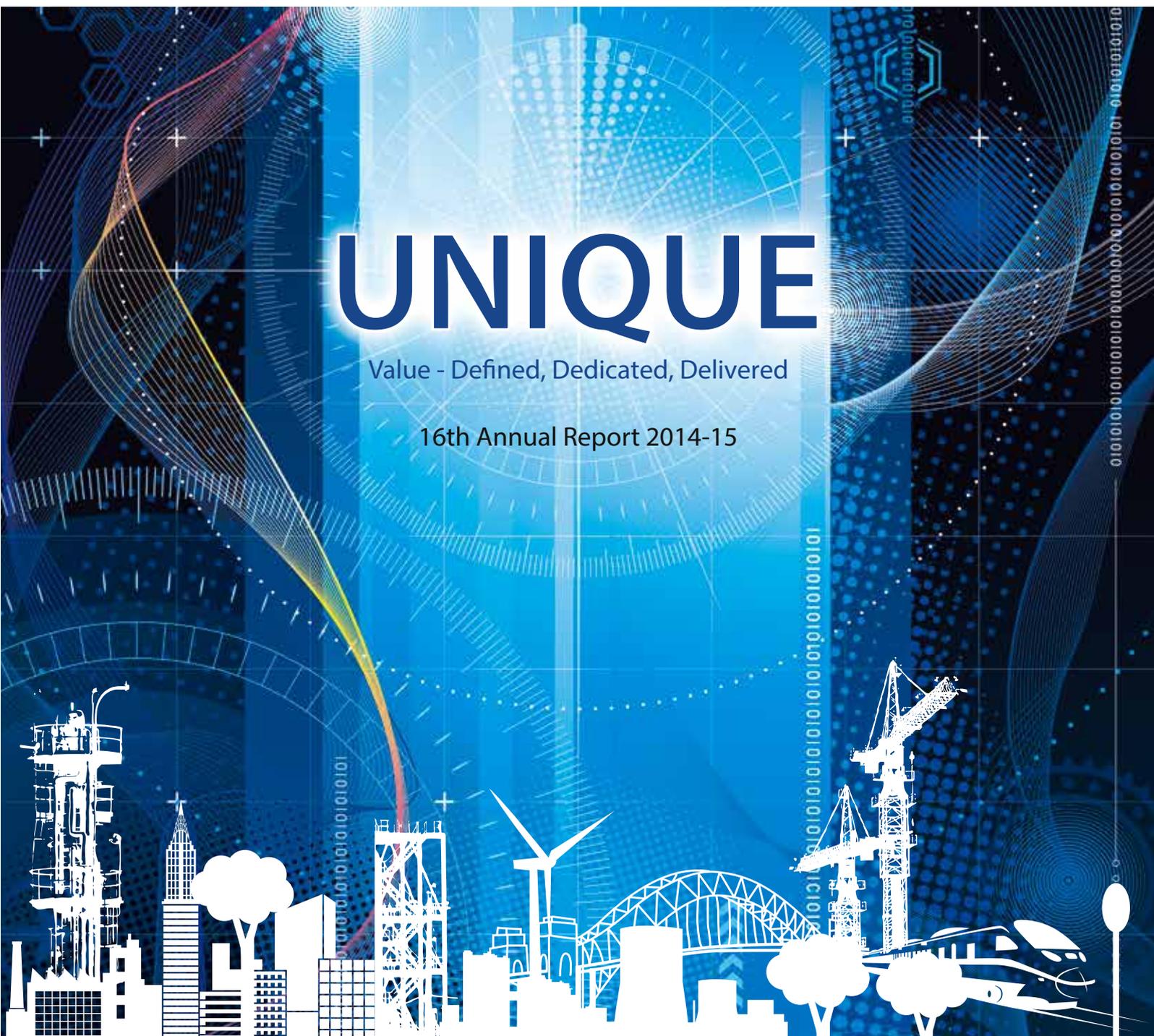


TATA CONSULTING ENGINEERS LIMITED

UNIQUE

Value - Defined, Dedicated, Delivered

16th Annual Report 2014-15



Forward-looking statement

This annual report and other statements – written and oral – that we periodically make, contain forward-looking statements that set out anticipated results based on the management’s plans and assumptions. We have tried wherever possible to identify such statements by using suitable words in connection with any discussion on future performance.

We cannot guarantee that these forward looking statements will be realised, although we believe we have been prudent in our assumptions.

The achievement of results is subject to risks, uncertainties and even inaccurate assumptions. Should known or unknown risks or uncertainties materialise, or should underlying assumptions prove inaccurate, actual results could vary materially from those anticipated, estimated or projected.

We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise.



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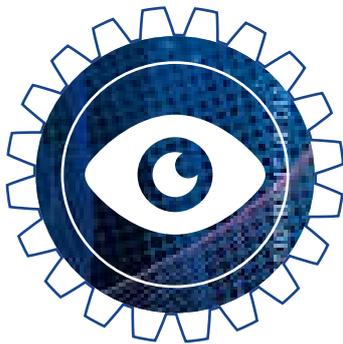
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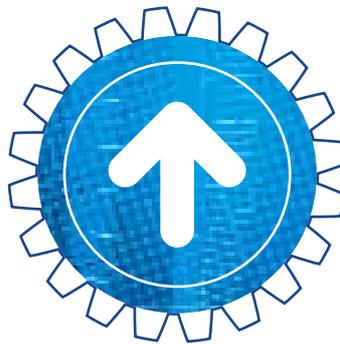
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VISION



To be an internationally respected engineering consultant offering comprehensive solutions

MISSION

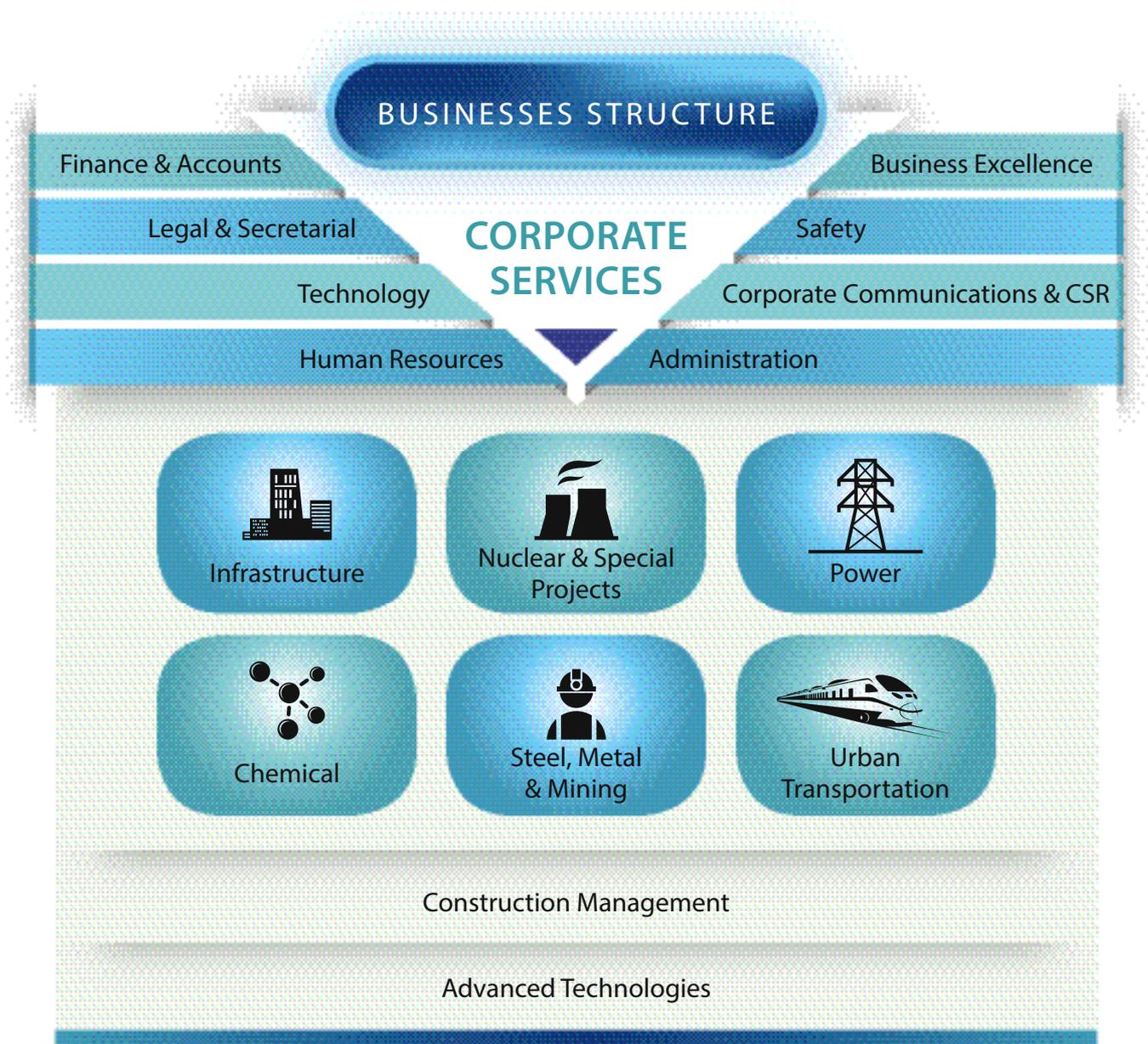


Provide technically excellent and innovative solutions, for adding value for all stakeholders, and operate globally as professional consulting engineers

CORE VALUES



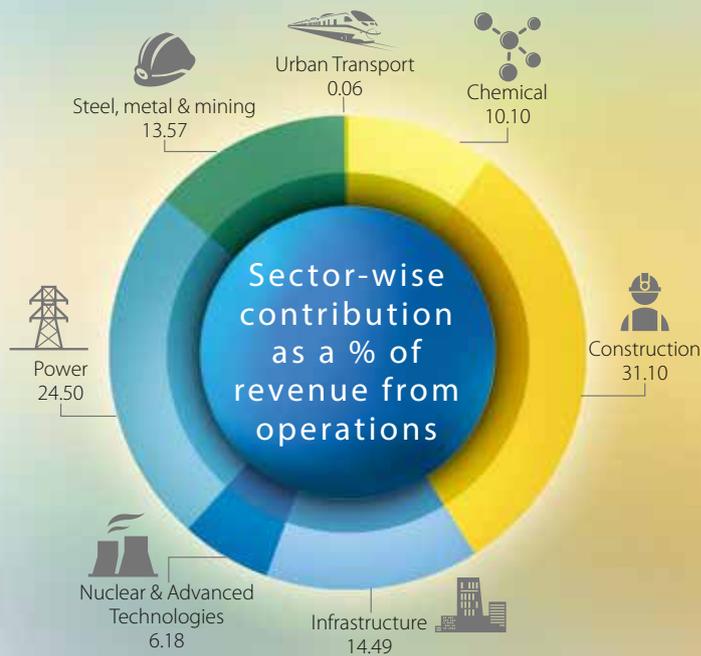
- Customer satisfaction and loyalty
- Responsibility to society
- Organisational and individual growth
- Technical excellence with professional ethics
- Employee dignity and self respect



BUSINESSES STRUCTURE		SERVICES		
Power	Generation (Fossil -coal, gas & oil), Hydro, Renewable, Transmission and Distribution	Design engineering	<ul style="list-style-type: none"> ● Feasibility studies, Pre-project reports and technical studies ● Architecture & Master Planning ● Layout & Transportation Planning ● Electrical, MEP and Instrumentation ● Environment and Air Quality Control Services ● Design & Detailed engineering ● Utilities & Shared Services ● Environment impact assessment ● Sustainability and green technology solutions 	
Nuclear & Special Projects	Nuclear energy, Fuel fabrication, Spent fuel processing, Waste management. Design for Special purpose equipment, industrial Automation and unique Projects.		Project management	<ul style="list-style-type: none"> ● EPCM services, Procurement management, Quality inspection ● Engineering Program Management and Planning ● Project management services ● Quality, Inspection & Equipment management Commissioning support
Chemical	Oil and gas, Petrochemicals, Pharmaceuticals and other organic and inorganic Chemicals , Cement, Paper and pulp, Glass, Paint	Procurement management services		<ul style="list-style-type: none"> ● Procurement Assistance ● Quality, Inspection & Equipment management ● Inquiry/Tender Preparation and Award ● Procurement Management Services
Steel Metal & Mining	<p>Ferrous & Non-Ferrous Metals, Process Metallurgy, Material Handling, Iron Making, Coke Making, Steel Making and Ferro Alloys, Rolling Mills</p> <p>Geology & Mining, Mineral Processing & Beneficiation, Material Handling</p>			Construction management
Infrastructure		Advanced technologies	<ul style="list-style-type: none"> ● 3PLM services - Project, Plant & Product Lifecycle Management ● Engineering Outsourcing - Product Engineering, Plant Engineering ● Manufacturing Engineering - Plant Automation & Manufacturing Process Design ● Digital 3D/4D/5D Design & engineering services ● BIM, Constructability Analysis and Site Optimisation ● Asset Lifecycle Management Solution ● Engineering Simulation and Validation Services 	
Smart cities	Master plan, Energy Management, ICT, Water & Waste solutions, etc			
Built environment	Urban development & Planning, Buildings , Manufacturing Facilities			
Transportation	Airports, Marine, Ports & Harbours			
Water & Environment	Water, Waste recycling & Sewerage systems, Environment & Ecology			
Urban Transportation	Metro, Rail			

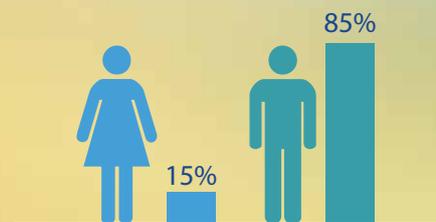
FINANCIAL SNAPSHOT

Total revenue (in ₹ crores)



DIVERSITY PROFILE

Gender



Age



TCE WORLD-WIDE



Domestic Offices

Mumbai-Corporate | Mumbai-SEZ | Bengaluru

Pune | Delhi(NCR) | Jamshedpur | Gandhinagar

Chennai | Kolkata



International Presence

Qatar | US-New Jersey | Abu Dhabi | Nepal | Kenya

Ethiopia | Zambia | Nigeria | South Africa | Indonesia

Switzerland | Dubai | Sharjah | South Korea

BOARD OF DIRECTORS



Prasad Menon
Chairman



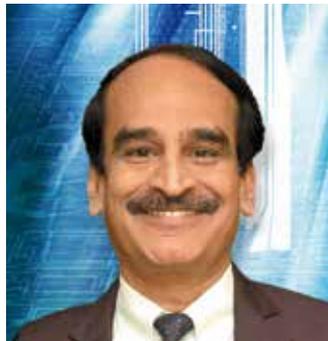
A K Vora
Director



S Padmanabhan
Director



Neera Saggi
Independent Director



J P Haran
Managing Director



Amit Sharma
Executive Director & COO

SUBSIDIARIES

Ecofirst Services Limited

Board of Directors

J P Haran, *Director*

Amit Sharma, *Director*

Risheshwar Prasad, *Additional Director*
(w.e.f. 1.07.2014)

TCE QSTP LLC*

Board of Directors

Prasad Menon, *Chairman*

J P Haran, *Director*

**(Under liquidation)*

Executive Management



Chitranjan Kaushik
Chief Operating Officer

CORPORATE MANAGEMENT COMMITTEE



J P Haran
Managing Director



Amit Sharma
Executive Director & COO



Risheshwar Prasad
Sr. VP & CFO



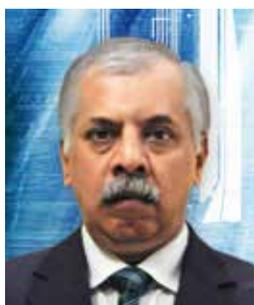
Sachin Mishra
*Head Legal
& Company Secretary*



Kalpana Jaishankar
Sr. VP, Corporate HR



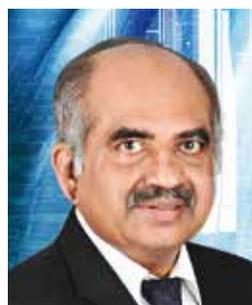
Mahesh Marve
*Sr. VP & Chief
Technology Officer*



Shrikant Chandratreya
VP, Business Excellence



K Ramesh
VP, Construction Services



Vidyanand S
VP Power



M V Soman
*AVP, Nuclear, Special
Projects & Advanced
Technologies*



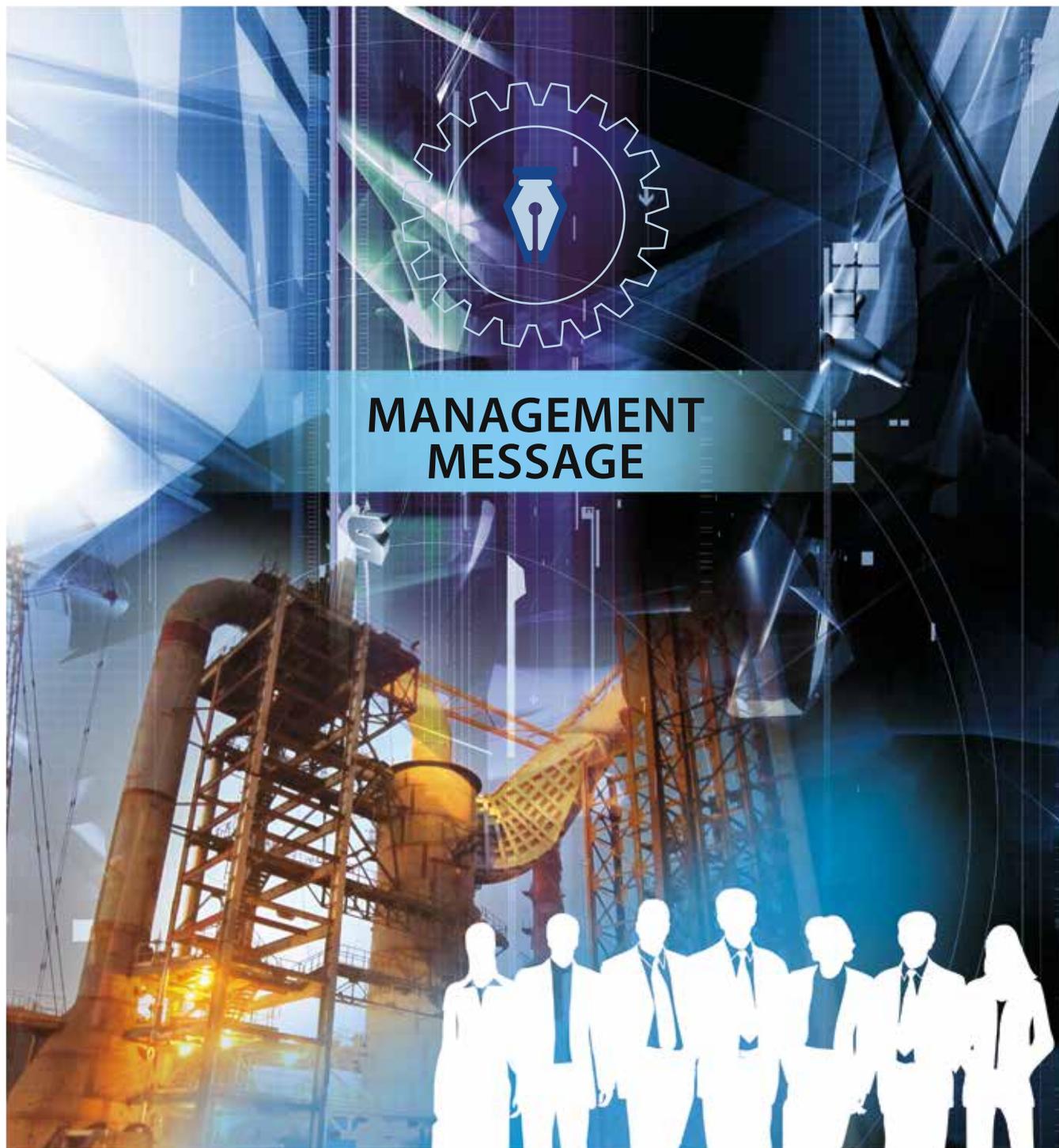
Dr Tapan Choudhury
VP, Steel Metals & Mining



Manoj Kumar
VP, Chemical



Vikram Bapat
AVP, Infrastructure





FROM THE CHAIRMAN'S DESK

TATA CONSULTING ENGINEERS HAS PROGRESSIVELY BUILT UPON ITS CORE ENGINEERING EXPERTISE TO BENEFIT CUSTOMERS IN UNIQUE WAYS. SERVICE TODAY IS INCREASINGLY BEING CALIBRATED TO UNIQUE PROJECT NEEDS. SUCH CALIBRATION CALLS FOR BALANCING OF ALL ASPECTS OF THE ENGINEERING CONSULTING BUSINESS IN ORDER TO DRIVE TOPLINE GROWTH AND STRENGTHEN THE BOTTOMLINE. TCE IS CONTINUING TO REALIGN ITSELF TO RISE UP TO CUSTOMER CHALLENGES OF COST, TECHNOLOGY, COMPLIANCE AND DELIVERY.

A customer-driven pathway

The year 2014-15 was characterised by falling prices in oil and commodities. TCE's regions of interest such as Middle East and Africa faced slow growth conditions owing to which large capex projects did not materialise or went on hold. West Africa saw setbacks due to the Ebola outbreak and TCE had to avoid involvement in some projects in the interest of safety. The momentum in the US markets proved to be a positive sign for firming up business initiatives relevant to these markets. The domestic economy, though poised for growth, awaits the momentum to pick up. Large projects pertaining to Infrastructure, Power, Steel & Mining are progressing, albeit at a very slow pace.

In this scenario, Tata Consulting Engineers focused on the international markets to drive growth. The breakthrough in the Korean EPC market in 2014 through synergies with large EPC players in South Korea helped increase the international footprint in the Power, Water & waste management and Mining sector. TCE's process expertise in these sectors fills the gap to serve as a dedicated technology partner for such EPC players in their delivery of services to clients across the globe. The year 2014-15 saw yet another milestone in such synergies and a partnership was inked with a leading player in Saudi Arabia to provide dedicated services pertaining to



“Responding to the exigencies of our times pertaining to sustainable development, Tata Consulting Engineers will help its customers meet their sustainability goals through technology solutions that help safeguard the environment.”

the Chemical sector. This is the doorway to more such unique service offerings.

TCE's involvement in large capex projects and their vulnerability to macro-economic and political factors, poses the risk of the peaks and troughs associated with such businesses. TCE's foray in the regions of US and Europe, cushions against such business cycles. TCE has entered into strategic agreements to provide IT-enabled engineering services to global customers in the US & Europe. The establishment of a dedicated delivery centre in a Special Economic Zone (SEZ) adds value to customers through cost-effective and high-end engineering services and plant engineering solutions. This strategy infuses greater predictability in earnings and positions TCE on a sustained growth trajectory.

Seeking opportunities in the ambitious Indian Infrastructure upgrade program with several smart cities and rapid transit systems that are being planned, TCE set up a new Business unit – Urban Transportation. The existing Infrastructure business unit and the newly formed Urban Transportation unit will cater to opportunities in these sectors. TCE is already part of four smart cities in Gujarat and the Delhi-Mumbai Infrastructure Corridor.

TCE's strategic plans have taken the company a few notches higher on the growth path with the highest ever order bookings at ₹793 crores in 2014-15. Despite challenging macro economic conditions in India and the international

markets, Tata Consulting Engineers recorded the highest revenues of ₹555 crores in the year 2014-15. In a challenging and adverse economic situation, TCE sustained its profit margins, with a marginal increase over the previous year.

Innovation

TCE has strived to provide a strong incubation ground for research and technology experts. The company received right of patent for a unique process and a catalyst for the conversion of non-edible seed to bio-fuel. Several such technology breakthroughs are also in the process for award of patent rights. TCE is also working closely with customers such as Tata Steel to bring in better results in their R & D efforts.

Governance, Processes & Policies

The risk management framework introduced in 2012-13 was scaled up to include an Online Risk Management system which is integrated in the Proposal Management System. This system enables the Company to review the risk score for the business units and the overall organisation in real time.

The Diversity policy was introduced in alignment to the Group ethos and several measures were introduced to make TCE a women-friendly workplace.

Sustainability

Sustainability initiatives were launched with clearer focus to manage our operations as well as serve our customers. Responding to the exigencies of our times

pertaining to sustainable development, Tata Consulting Engineers will help its customers meet their sustainability goals through technology solutions that help safeguard the environment.

The CSR policy was formalized and the requisite two percent of average profits over three years was set aside for community initiatives. The company has firmed up its plans to drive the CSR programs.

Going forward, TCE will continue to balance its revenue streams from international and domestic markets and focus both on capex and opex projects for sustained topline and bottomline growth. The Company will focus on innovation and value engineering, driving sustainable engineering solutions. These plans are also in alignment with the Tata Group's 2025 vision.

Sincerely yours,



Prasad Menon
Chairman



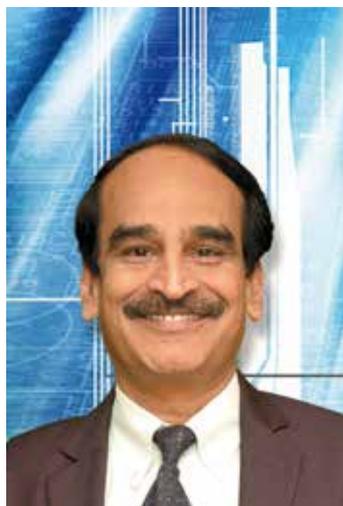
MESSAGE FROM THE MANAGING DIRECTOR

*Dear
Stakeholders,*

In today's business environment, sharper customer focus is the driving force for success. In line with this, Tata Consulting Engineers is consistently raising the bar and working to remain agile to mould itself to the requirements of customers. Across the prominent regions of our business engagement in India, MENA, SE Asia, Europe & the USA, TCE's pursuits in the year 2014-15 were multi-pronged –

- a) Direct delivery of large and complex engineering projects encompassing services from concept to commissioning across a wide array of sectors
- b) Collaborative delivery of projects across the globe as technology partners with EPC players in Power, Infrastructure & Water and Waste Management, Mining and more
- c) Dedicated engineering service providers for large multinationals for their projects across the globe through exclusive delivery centres
- d) Ongoing solutions for modernisation, refurbishments and equipment upgrades for large facilities
- e) Core engineering combined with complex IT-enabled design solutions delivered from special economic zones.

In the competitive engineering consultancy



The capability of solving customers' unique problems has positioned TCE as a reliable partner to large global organisations. TCE will continue to maintain this trust and goodwill through best in class service and innovative solutions that are totally relevant to customers' needs.

landscape, where margins are under constant pressure, this multi-pronged approach addressed opportunities from all ends. Our strategic efforts fructified by recording the highest levels of new businesses during the year 2014-15. Needless to say, the year was a mixed bag of challenges and success.

Performance Overview

The year 2014-15 posed quite a few challenges with the domestic market still struggling to get into the growth trajectory and the overseas markets slowing due to falling oil and commodity prices. With renewed thrust on order books, Tata Consulting Engineers closed the year with the highest ever turnover of ₹555 crores. The profit before tax at ₹76 crores, is a marginal increase over the previous year. The margins were impacted due to slow pace in the progress of projects in the domestic markets in key sectors such as Power, Mining & Infrastructure. The pressure on cash flows due to the slow pace of growth was managed by prudent spending and strong earnings from high-value international projects. The domestic economy is expected to pick up with reforms and policy decisions which will boost the infrastructure and mining sectors. These two sectors are critical to fuel India's economic growth. Inorganic growth as an avenue to fast-track the growth agenda is being explored. Tata Consulting Engineers will continue to seek opportunities for acquisitions that will enhance TCE's sector and service offerings.

Our Successes

- Engineering design and urban infrastructure planning for India's four smart cities was completed and progressed to the execution phase.
- The launch of India's first experimental flight of the Geosynchronous Satellite Launch Vehicle (GSLV) Mark III of which TCE's Special Projects vertical, Chemical and Construction business units were part of.
- The award of patent rights for core process and unique catalyst for conversion of non-edible seeds into bio fuel.
- Dedicated international offices in USA, UAE, Nepal & Kenya
- The Special Economic Zone delivery centre providing IT-enabled engineering solutions commenced operations to serve customers in Finland, Switzerland, Canada and Kingdom of Saudi Arabia
- Building a younger organization, TCE ramped up its campus recruits to about 300 engineers
- Gearing for greater branding through digital channels, TCE built its social media presence
- Ramping up plans to serve as a responsible corporate, TCE plans to use technology to provide sustainability solutions to customers. This will include improvements in internal processes and systems within TCE, ensuring sustainability as we pursue our growth agenda.
- Corporate social responsibility initiatives continued with key focus aligned to four areas – Infrastructure, Education,

Health & Sustainable Livelihood. Several programs that are currently in operation continued while new programs have been chalked out to be launched in the next quarter of year 2015-16. The company has plans to drive CSR spends using its core expertise to benefit the community.

Our focus in the year ahead

Tata Consulting Engineers will continue to focus on company-wide and site specific safety management with the objective to maintain best in class safety standards. With a view to drive a culture of safety across the value chain, TCE put in place people, processes and systems.

Leveraging technology group, larger focus will be given to innovation-led value offering to customers.

We have streamlined several enterprise systems and tools to optimize customer experience and delivery standards. The customer feedback system was monitored and feedback analysed in systematic manner. This will gain a new thrust, going forward.

The year ahead will see increased customer touch points and relationship management, initiatives to engage with customers. The focus on relationship management coupled with value engineering services, is expected to sustain relationships and bring in repeat business.

Compliance and regulatory obligations will be stringently met in all our services. We extend this to benefit our customers by providing technology solutions that will positively impact their sustainability needs and environmental concerns in a cost effective manner. This is the value we

create for our customers and TCE will drive this with greater rigour.

Human resource plans for employee engagement to build a positive work environment and talent management will be rolled out progressively.

Branding and marketing using digital media channels will be driven to increase the visibility of the Company at a global platform

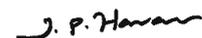
TCE will increase its international presence through overseas offices and dedicated delivery centres.

The approach for solving customers' unique problems is targeted to position TCE as a reliable partner to large global organisations. TCE will continue to maintain this trust and goodwill through best in class service and innovative solutions that are totally relevant to customers' needs.

The year 2014-15 saw the highest recruitment from the campus - an increase of 200% over the previous year. This infuses young talent in the organization and significantly reduces the average age of the Company.

With the highly skilled talent that TCE is proud to have, we are hopeful of taking long strides that will bring us closer to our vision of being among the top internationally respected engineering consultants.

Sincerely yours,



J P Haran

Managing Director



OPERATIONS PERSPECTIVE



TCE has streamlined its operations by integrating and consolidating people, processes and systems to compete aggressively on a global platform. The agility and quality that the company is driving will help tip the scales to position TCE at the next frontier of growth.

Operations focus

Tata Consulting Engineers continued on the path of a two-pronged approach of increasing the international footprint and progress with the business transformation process initiated earlier, to ensure that we lead in the Indian market while expanding overseas. This approach yielded positive results with about 37 % of overall revenues arising from the international markets. Tata Consulting Engineers closed the year with the highest ever turnover of ₹555 crores. The domestic markets moved at a slow pace even as Tata Consulting Engineers acquired some large capex projects in the water, mining, steel and smart-cities sectors.

In the year 2014-15, TCE firmed up the company's operations' focus to respond to unique customer requirements according to the changing dynamics, both in the international and the domestic markets. A planned shift towards tapping into opportunities arising from the OPEX spends of our clients, was aimed to provide solutions across the asset lifecycle.

Tata Consulting Engineers' greatest strength is the skilled talent pool of diverse capabilities. Leveraging this talent to serve unique customer needs arising from various geographies, TCE remodelled delivery and service systems to benefit customers.

Key highlights

- Dedicated engineering centres were established to serve the exclusive needs of large MNCs within their operational periphery. These centres serve as an extended and dedicated engineering, design and operations arm catering to capex and opex needs of these firms globally.
- In order to effectively leverage the available skilled talent across the customers' asset life cycle, TCE groomed, trained and certified professionals in project management of large integrated multidisciplinary projects. Internally, investments in engineering IT tools were made to offer 3D, 4D & 5D simulation tools for executing projects in sectors such as Steel, Metal, Mining, Power, Infrastructure, Buildings, Water, Nuclear & Chemical. This also included services for special projects in defence and space research. Majority of the business units adopted the digital platform to ensure predictable, proven and safety-driven engineering solutions across the various sectors.
- Responding to rising opportunities in infrastructure development, TCE recruited talent, partnered with leading firms and introduced offerings to enter the urban transportation and smart cities sector.

- Safety was driven with greater thrust through safety training, mock drills, and awareness programs both within TCE and across the service lifecycle. The progressive adoption of digital engineering platforms across the sectors was aimed at embedding safety from concept to commissioning.
- Targeting growth markets and addressing customer proximity, TCE's expanded its international presence with sales offices in UAE, USA, Kenya and Nepal.
- Professionalising TCE's Project management consulting and construction supervision workforce with added thrust on safety, cost management, and project planning. In order to enhance safety at work, uniforms were introduced across all sites.

Business transformation

Tata Consulting Engineers bootstrapped organisational systems and processes to meet the challenges of operating on a global platform. Internal systems and logistics were integrated and aligned to provide cross-sector services to clients. Several process automation systems were launched and several systems were upgraded in the year 2014-15. These included ERP systems, knowledge management systems, workflow driven document management system, migration to an integrated enterprise landscape and others to increase operational efficiency, service excellence and quality, technology management and business predictability and planning. Corporate governance measures were strengthened to build transparency. Additionally, SLA driven internal review & approval systems, efficient decision & control structures

Internal systems and logistics were integrated and aligned to provide cross-sector services to clients. Several process automation systems were launched and several systems were upgraded in the year 2014-15.

 Information Security		
Enterprise Portal–Internet / Website		Customer connect
Collaboration Tools	Knowledge & Document Management (Stage Gate Process)	
Engineering Analysis Tools–CAE	3D-4D Design Platform - CAD	
Engineering Process and Project Management–Projects Portal		
SAP - Enterprise Resource Planning (Finance, Controls, Analytics)	Payrolls & Time-sheet	CRM & Bid Management
Mobility–Travel, Visa, Expense	Helpdesk	Legal & Contract Management
Risk Management System	Quality & Business excellence	HR Tools
Communications–VC, Outlook & LYNC		
Databases, IT Infrastructure, Communication Network		

were introduced. Systems to enhance risk management and compliance across the organization were implemented. These checks and balances are aimed to ensure robustness in information security and safeguarding of intellectual property.

TCE ramped up the quantum of talent pool certified in internationally recognised project management programs. The year 2014-15 saw the highest number of graduate trainees appointed and trained as industry-ready professionals. TCE's Young Engineers' Development Program (YEDP) is increasingly seen to be an industry benchmark enticing young engineering talent into the organisation. Chalking a career map for engineers, inter-disciplinary mobility and opportunities to provide 360 degree exposure to engineering, technology, project management and sales were provided. This helped develop a pool of holistic professionals who could serve clients optimally. In order to positively impact gender diversity and retain women professionals, several women-friendly measures were introduced. Under the Rewards & Recognition program, "TCE Value Awards" was introduced to recognise and reinforce commitment to TCE's five core values.

Business Review

The year 2014-15 saw the highest ever order booking of close to 800 crores for Tata Consulting Engineers. However, due to prevailing macro-economic conditions, projects moved at a slow pace. The Construction Management Services BU contributed over 31 % of overall sales revenues. This BU offers services across sectors. The Power BU seized opportunities through partnerships in the Korean markets. Despite a slow moving domestic market, the international opportunities helped the BU post over 24% of sales revenues. The Infrastructure BU clinched some large value accounts in the Water and Smart Cities verticals to post sales revenues of about 15% of total revenues. The Steel & Metals BU awaits some critical projects to take-off. With about 14% share in overall sales revenues, the BU hopes to see greater momentum in the year 2015-16. Nuclear & Special Projects, Chemical BUs are optimistic about moving ahead with the new projects on hand and continue to drive the strategy of balancing domestic and international markets through aggressive business development efforts. Advanced Technologies that offers specialised, engineering related

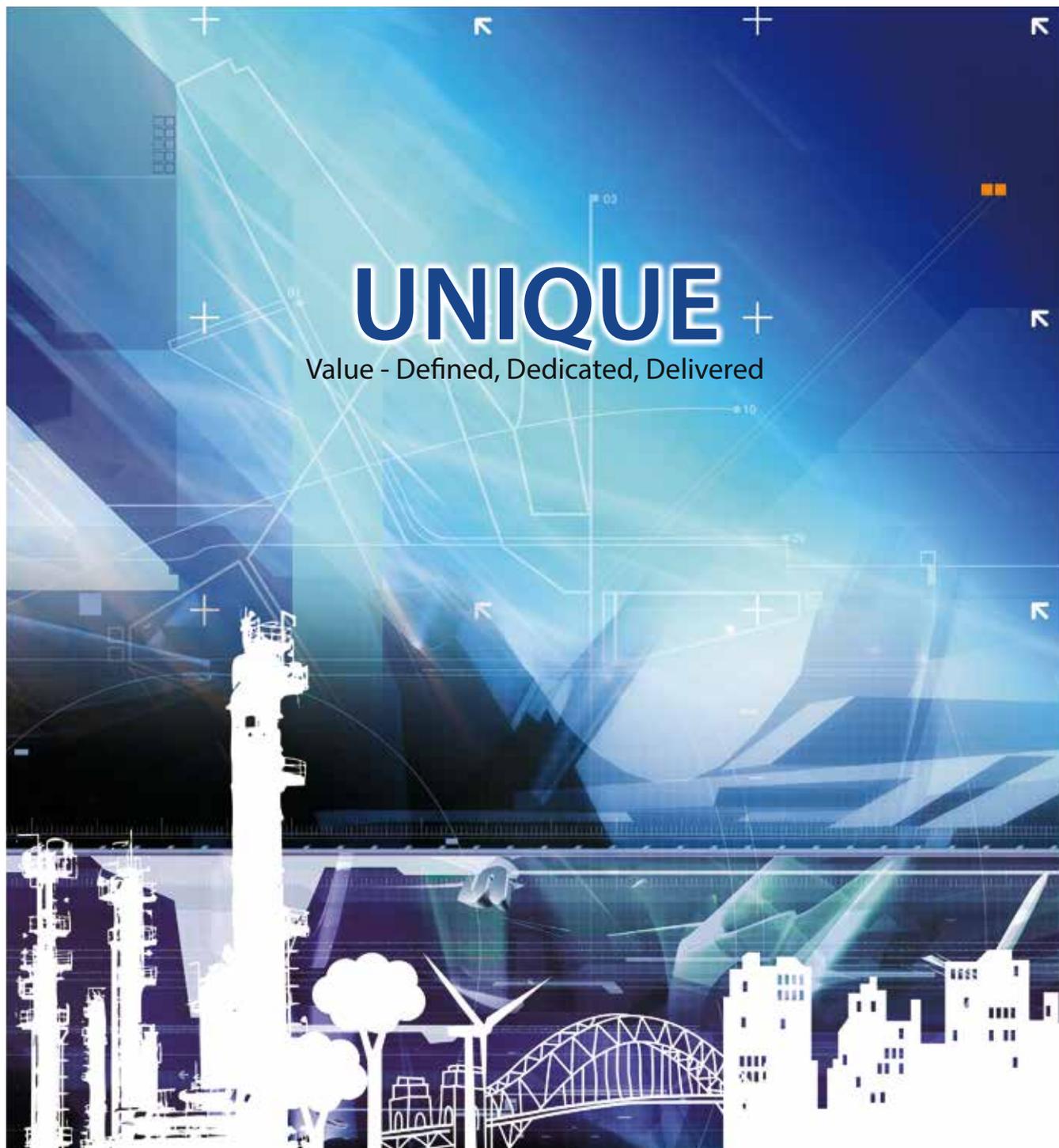
IT solutions and Urban Transportation are expected to gain momentum in the coming year. TCE has successfully pitched to acquire assignments that go beyond the beyond the traditional capex programs to include various services and delivery mechanisms that tap into both capex and opex client spends.

Tata Consulting Engineers stands poised for growth and scale through organic and inorganic means. TCE has streamlined its operations by integrating and consolidating people, processes and systems to be able to add value, innovate and deliver predictable projects on a global platform for clients. The agility and quality that the Company is driving will help tip the scales to position TCE at the next frontier of growth.

Sincerely yours



Amit Sharma
Executive Director & COO



UNIQUE CUSTOMER, UNIQUE SERVICE

Tata Consulting Engineers engaged with customers at various levels

aligned to customers' unique needs, market requirements and TCE's core competencies. TCE has diversified offerings and is among the few consultants globally, to offer a basket of services under one roof. For instance, customers who engaged with TCE for steel and mining projects had a need for utilities such as power plants, TCE met this need by providing cost effective services within the regulatory framework. Such cross-sector expertise is increasingly proving to be a USP, especially in the international markets. TCE's diversification into almost all key sectors presents as a one-stop engineering service entity.

Cross sector expertise and strategic alliances

Specialised expertise

The demand for smart cities in India is a window of opportunity requiring specialised expertise in various sectors ranging from Integrated Computer Technology(ICT), urban town planning and design, water management, waste and waste water management, energy management, sustainability management, transport infrastructure planning, etc. TCE's expertise is already proven in the urban infrastructure, water and built environment space. TCE's subsidiary, Ecofirst Services that offers sustainability services, the Infrastructure business unit and its numerous verticals and the newly formed Urban Transportation business unit have successfully pooled their expertise to undertake exclusive smart-city development projects and the supporting transport infrastructure development. The Gujarat Infrastructure Financial Tech city, Dadri-Noida- Ghaziabad Investment Region of Delhi Mumbai Industrial Corridor (DMIC), Vikram Udyogpuri, Ujjain (DMIC), Dholera city(DMIC) - a global manufacturing and investment destination, are some of the smart city initiatives tha TCE is involved in. With estimated spends of USD 90 billion through public-private partnerships and foreign investments assigned for the Delhi-Mumbai Investment Corridor Project spanning 1483 kms, TCE's integrated cross-sector expertise is a significant contribution to India's development.





Engineering alliance

TCE entered an engineering alliance with a global MNC based in the Middle East to serve as their exclusive partners to provide core engineering expertise in the Chemical sector, notably the petrochemical sector. TCE's engineering expertise drawn from various TCE business sectors will serve its alliance partner and affiliates. Collaborations such as these will continue to take effect with service delivery customised to unique requirements.

Dedicated technology partner

The Power business entered into more agreements in the year 2014-15 as dedicated technology partners with international EPC players in Korea. TCE will join EPC players providing engineering solutions for their projects being commissioned across the globe. This relationship that commenced a year ago has matured with the building of trust in the region. In the year 2014-15, TCE was successful in cross-selling offerings by the Mining business unit and the Construction Management unit to the relationship partners.



UNIQUE NEEDS, UNIQUE RESPONSE

Requirements are wide and varied when serving customers across the globe. Tata Consulting Engineers has infused agility in the way customers are served to facilitate long term engagements with clients and address need-based requirements. Changing economic conditions in different regions determine the scope of engagement and customer value creation. Customer needs range from TCE's dedicated presence on site, working as an extended arm alongside their own teams to deliver projects at other sites, remotely delivered engineering design services optimising TCE's delivery centres, specialised IT-enabled 3D engineering solutions and service through dedicated project offices for long-gestation projects.

Unique delivery mechanisms

Dedicated experts

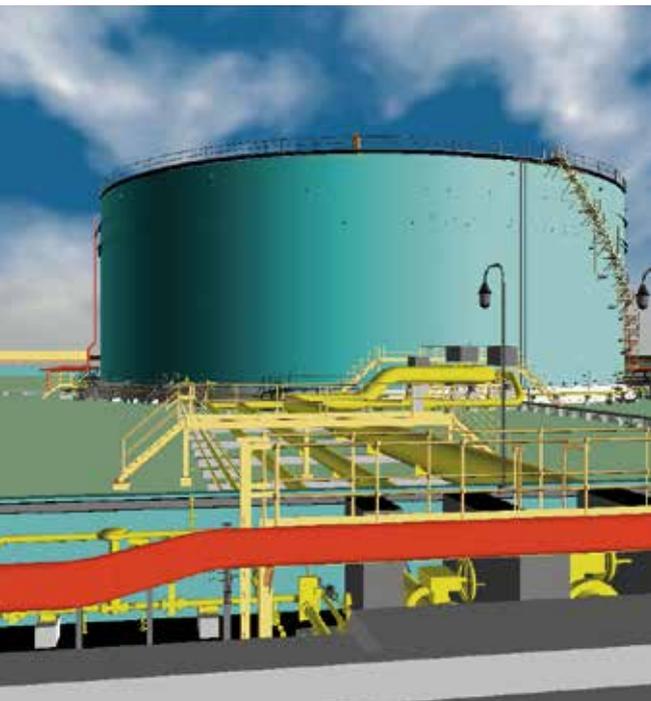
Services through earmarked centres of excellence (CoE) specific to various sectors were continued such that talent pool in specific skills were mobilised to the relevant CoE. This arrangement facilitates dedicated experts available in the delivery centre while providing cross sector services to clients.

Dedicated delivery mechanisms

Strengthening delivery mechanisms through a strategic account focus, TCE's large and complex projects in the Gujarat region are being serviced through a dedicated project office. The Gandhinagar Project office set up in early 2013-14 saw the doubling of skilled manpower to serve customers in the Water & Waste water management, Smart cities etc. in the region. The enhanced strength is designed to ensure that the requisite specialised talent is dedicated to the client.

Special services

SEZ or special economic zone was set up to provide special services in advanced technologies, core engineering combined with IT enabled solutions to provide project/ product life cycle management, 3D, 4D simulations, etc. These services are rendered on an ongoing basis to clients in Europe, US and the Middle East. Clients avail of uninterrupted engineering services using complex IT systems while TCE benefits from steady revenue streams, bringing about greater predictability in operations planning and delivery for the client.





UNIQUE CHALLENGES, UNIQUE SOLUTIONS

Tata Consulting Engineers' pursuit in innovation has often risen from the unique challenges that customers face. These challenges may be regulatory, technology related, cost factor, or course correction interventions in large projects. Across the various business segments, customers have approached TCE for unique solutions that have translated to huge benefits in cost, time, effort and resources. Such value additions have encouraged repeat business and enhanced customer value.

Value engineering solutions, enhanced customer value

Breakthrough solutions

One of the world's largest zinc deposits in South Africa has remained unutilised for 30 years with several feasibility studies tendering the mine to be an economically unviable proposition. High capex costs in cutting through the mine to depths of 200 m of complex terrain and other factors made the mining project unviable. The challenge here was bridging the gap between economic realities in terms of price forecasting through the life expectancy of a mine, addressing technical realities due to the diverse and complex geological structure, engineering design possibilities and on ground commissioning. Tata Consulting Engineers' recommendations focused on technological interventions to turn around the project. TCE's core innovation to make the mine a profitable one is through mine planning strategies to get to the zinc ore 200 m deep cost efficiently, introduce process technology in plant engineering to upgrade the zinc and recommend efficient recycling techniques through backward integration. This study submitted by TCE was a breakthrough in kick-starting a mining project that has remained unutilised for 30 years, towards commercial activity.

Cost saving solutions

Project management for the world's largest turbine rotor balancing testing facility with a diameter of 10.5 m x 22 m long with intricate auxiliary systems comes with its own complexities. Part of the turbine and generator manufacturing plant spread over 90 acres of land, the problems faced by the client were unique. The tunnel was the largest (10.5 m diameter). The first milestone was delayed due to technical challenges pertaining to the site where dewatering had to be done.

TCE suggested revisions in the tunnel design which helped to save on concrete and shuttering. This suggestion was implemented and was the largest cost saving for the company. The result was that the client extended TCE's scope of work to include special services.



Optimising performance

TCE was part of the modernisation program of a steel plant in Europe, working with the European teams to provide technical expertise in the energy works. TCE provided solutions in process improvements and equipment maintenance to optimize the performance of the existing plant. The initiative helped the Company increase output of the boilers by 1.5 MWH, reduce water intake by about 25 % and chemicals used for water treatment by 10 %.

Technical solution for deep excavation bottleneck

There was a major difficulty in excavation for 12m deep loop pit inside an existing plant due to lack of adequate space for providing proper slope in excavation. It was originally planned to install grouted pipe piles towards the building column side to retain earth. However, the contractor was not able to drill into the soil. The excavation was stalled for 3 months for want of a workable and safe solution. The protection pile arrangement was scrapped. TCE carried out detailed slope stability analysis for various construction stage conditions and with the use of geotextile, the deep excavation was executed at site with adequate safety. The scheme proposed and adopted for excavation eliminated the need to drive approximately 100 piles.

Smart solutions for townships

- City infrastructure project received huge cost savings with reduction in reservoir slab thickness.

TCE's role in this project was to act as a review consultant. Original proposal by another design consultancy firm was to have a reservoir base slab thickness of 250 mm for a 900 million litre reservoir. However, their design basis did not take into account the effect of uplift force. With due consideration of force due to uplift, the base thickness would have been much thicker and would have been very expensive. TCE reviewed the design thoroughly with respect to ground conditions & hydrological study reports and suggested to alter the scheme by raising the raft level by 1m. The revised design by TCE resulted in substantial savings of concrete and earthwork to the tune of ₹1000 million.

- Smart solutions for a large township project came with suggestions in power transmission voltage levels. The power transmission voltages originally considered were 400kV/220kV/66KV for the township. TCE critically reviewed the necessity of number of transmission voltages and established that two voltage levels were adequate for power transmission instead of three levels proposed earlier. As a result, 220kV level was eliminated. The resultant cost saving is of the order of ₹600 million.
- Transmission and distribution of energy for large townships are crucial elements of the overall planning. The 400kV main substation would receive power for the entire township. The original proposal by the client was to locate the sub station in Eastern side of the township. TCE after critically reviewing the whole concept of power distribution, strongly recommended to locate the substation in Western side as it would avoid laying of two circuits of 400kV, 2 runs/phase of 500 sq mm cables for a route distance of approximately 7 km. The resultant cost saving is about ₹80 million.

Cost effective solutions at storage terminals

- A Chemical Trading Terminal required installation of large number of storage tanks of various diameters along with other facilities. Conventionally, such tanks use steel floating roofs which are heavy. TCE recommended adoption of (lighter) aluminium floating roof instead of conventional (heavy) steel floating roof which resulted in reduction of floating roof height and a net storage space saving of about 6000 m³. The corresponding cost saving was about ₹37 million.
- A project was designed with an initial proposal to install programmable logic controllers (PLCs) with different Safety integrity level (SIL) ratings for emergency shutdown (ESD) system and fire & gas (F&G) system. TCE's recommendation to provide common SIL rated PLC for both ESD and F&G system resulted in savings of about ₹10 million.



Reliable safety

Conventionally infrared type detectors are used for fire detection in warehouses. The problem a customer faced was that the infrared type detector would not perform satisfactorily due to very nature of the material stored in the warehouse. TCE solved the problem with the installation of Linear Heat Sensing (LHS) cable mounted directly in storage racks instead of infrared detectors. This is maintenance free and more reliable and no false reading is expected. Although this did not result in significant savings, the reliability of the system improved substantially.

Large ultra supercritical power plant value addition

A super critical power plant was designed with the de-aerator pressure control valve, located downstream of low pressure feed water heaters (LPFWH). TCE while reviewing the scheme, observed that the scheme as suggested by EPC contractor would require high pumping power of LP drain pump which feed LPFWH drain to the condensate line, particularly at lower loads.

TCE recommended shifting of deaerator pressure control valve from downstream to upstream of LPFWH to reduce the condensate line pressure substantially. This in turn, reduces the pumping power of LP drain pump and would benefit the project in terms of operating cost saving of about ₹20 million over plant life cycle.



UNIQUE PROJECTS

Tata Consulting Engineers' provides services for specialized one-of-a-kind projects. These are typically engineering services for special projects in key areas like the defence, space as well as IT-enabled solutions using core engineering expertise. These unique projects are delivered directly to the customer or through strategic sourcing solutions delivered from the client site.

GSLV Mark III Rocket Launch

2014-15 was a momentous year for the Indian Space Research Organisation (ISRO) when the GSLV Mark III, the highest payload launch vehicle was launched and Tata Consulting Engineers is a proud partner to ISRO's successful project. TCE's design simulation in 3D and 4D engineering provided the precision and predictability required for the project. Complete plant engineering for manufacture of solid propellant rockets including design of mobile launch pedestal came from the TCE design stable. The project also required handling of explosive material and hence the solutions provided by TCE involved engineering automation of the manufacturing process. Translating the concept into an actual commissioned project through support at various levels such as construction management, TCE helped write yet another success story in India's space program.

Indigenous design of rare valves

The Equilibrium Filling Valve is an engineering design developed to reduce imports and to promote the self reliance in technology for the Indian Navy. In this project, there was a requirement of providing Equilibrium Filling Valves (EFV) at the front end of the Drydock. Equilibrium Filling Valves are usually of very large size and made from corrosion resistant materials. These valves serve the purpose of flooding the Drydock with seawater at a controlled rate in order to achieve equalised water levels between the Drydock and the sea so that the ships can move out of the Dock after the completion of their maintenance operations in the Drydock. There are no manufacturers of Equilibrium Filling Valves in India and the number of Equilibrium Valve manufacturers globally is very limited. The import of these valves would be a very expensive proposition. Also, ensuring the continuous availability of maintenance and after sales service during the complete life cycle of the Equilibrium Filling Valves from an overseas supplier would be difficult. TCE undertook the design of the Equilibrium Filling Valves and demonstrated capability of doing complex assignments to provide innovative engineering solutions.

Research & Development Projects

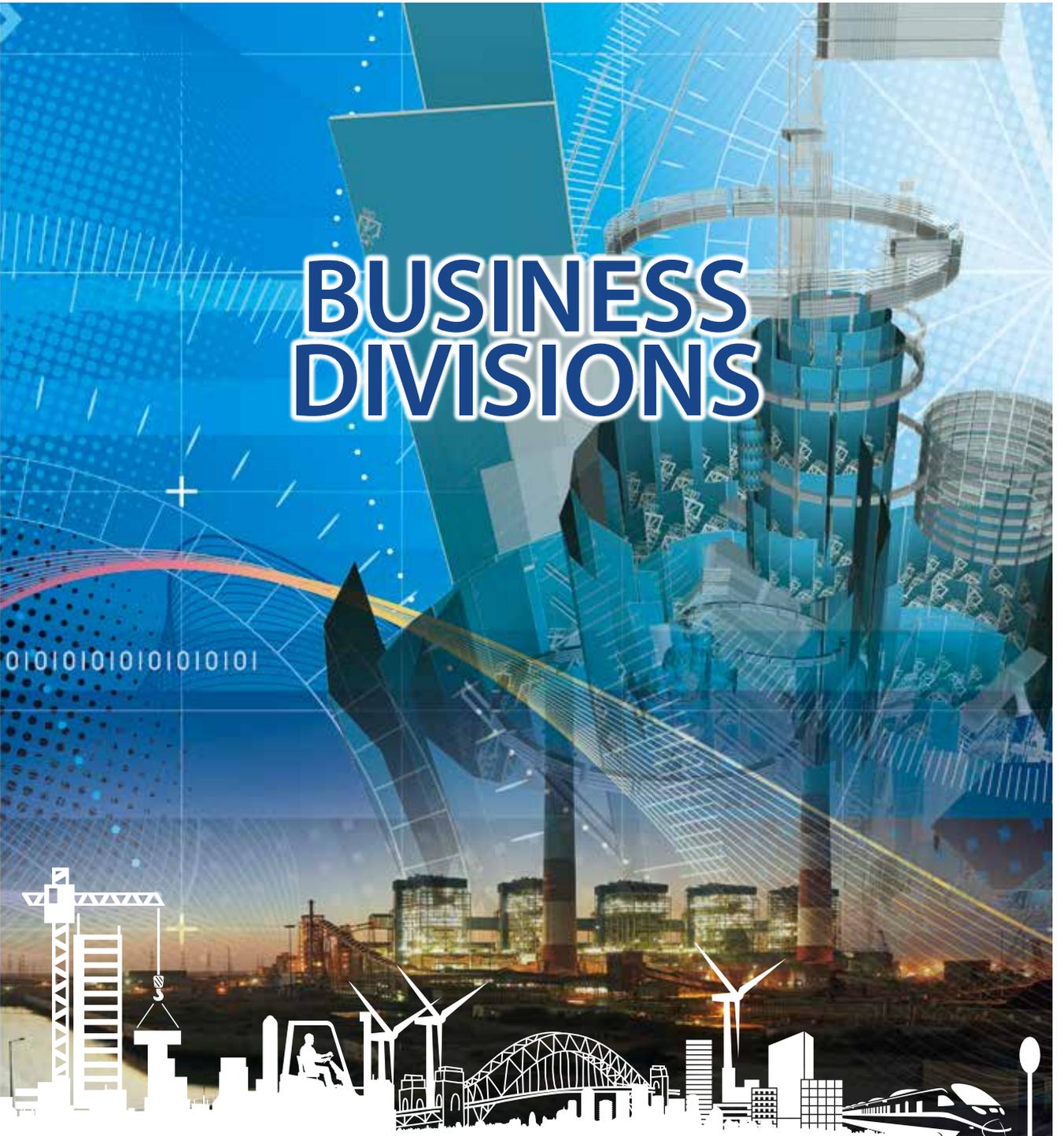
LIGO-India is envisaged as a collaborative project between a consortium of Indian research institutions and the LIGO Laboratory in USA, along with its international partners LIGO-India, LIGO Laboratory and the Indian Initiative in Gravitational Observations (IndIGO) will create a world-class gravitational-wave detector in India. The LIGO Lab will provide all of the designs and hardware for one of the two planned Advanced LIGO detectors to be installed, commissioned, and operated by an Indian team of scientists in a facility to be built in India. The proposed LIGO-India project will help Indian scientific community to be a major player in the emerging research frontier of GW astronomy. The high-end engineering requirements of the project (such as the world's largest ultra-high vacuum facility) will provide unprecedented opportunities for Indian industries in collaboration with academic research institutions. The Department of Atomic Energy (DAE) is part of the consortium and TCE is part of the project through a feasibility studies and site identification.

R & D in coal upgrade process

Tata Consulting Engineers worked with the R & D team at Tata Steel Limited (TSL) for coal upgrade processes – organo refining where the carbon content is targeted for dissolution in a solvent, thus separating it from inorganic ash, coal leaching where the ash content is targeted to be dissolved with a combination of alkali and acid treatment.

TCE provided the Detailed Project Reports (DPRs) to TSL for a pilot plant for organo-refining and a demo plant for the leaching process. The innovative ideas and engineering modifications suggested have reduced the capex by about 25% for each of the two schemes. Suggestions have also been provided for reduction in operating costs. Indian coals contain high level of ash which renders it unsuitable for high end applications including metallurgical requirements. Economically viable processes of de-ashing will enable India to utilise its coal reserve effectively and pursue "Make in India". TCE is working on further improvements for de-ashing of Indian coal through economically viable processes ensuring greater applications. TCE continues to work with the TSL teams for further improvements at the implementation stage through process improvements and engineering value additions.

BUSINESS DIVISIONS



INFRASTRUCTURE

“OUR END CUSTOMERS ARE THE COMMUNITIES THAT BENEFIT FROM OUR WELL-THOUGHT OUT MASTER PLANS. TO US IT IS ALL ABOUT HELPING OUR CUSTOMERS SERVE THEIR BENEFICIARIES BETTER”

Vikram Bapat,
Infrastructure Business Unit



Enriching communities

The Infrastructure Business Unit (IBU) streamlined business focus and operations seizing prevailing opportunities. The year 2014-15 was noteworthy as an exercise in great focus and targeted operations.

Regional Focus

In the domestic market, IBU's presence in Gujarat was reinforced with several landmark assignments. Increasing its footprint in the state, the IBU set forth to enrich the communities in about 160 towns in Gujarat, providing engineering services for underground drainage (UGD) systems and sewage treatment plants (STP). This infrastructure planning for the state of Gujarat enhances the health and hygiene factor of the communities and is



Infrastructure design with the human factor at the forefront

aligned with the 'Swachh Bharat Abhiyaan'. To support the assignments in the state, the IBU doubled the office setup and resources at the Gandhinagar centre.

The international market business development initiatives were focussed around the Middle East and African regions. Such a targeted approach is expected to channelise efforts where the opportunities lie.

Smart cities

TCE has gained expertise in several areas pertaining to smart cities such as city master planning, ICT system design engineering, water management, waste management, sewage treatment plants, power, environment management and

other related infrastructure planning and management. With opportunities in India in the development of smart cities, TCE was the chosen partner in several smart city projects under development. Notable is the Gujarat Infrastructure Financial Tech-City (GIFT) which TCE continues to be associated with. Some of the plan and design recommendations are a first of its kind for the country. District Cooling System is a first of its kind that brings about efficiencies in both operations and cost, through economies of scale, low maintenance and other smart systems to centrally control the cooling. The waste management system is designed as a hightech automated sewage disposal system. Water management, and waste

water recycling proposed by TCE helps the city move towards becoming water neutral. Yet another notable feature is the single underground utility tunnel to manage drains and service pipes.

India's ambitious development project, the Delhi Mumbai Industrial Corridor (DMIC) appointed TCE's Infrastructure Business Unit for engineering services. TCE is proud to have envisioned the three nodal regions of Dadri (Uttar Pradesh), Ujjain (Madhya Pradesh) & Dholera (Gujarat).

Dholera city in the Delhi Mumbai Infrastructure Corridor (DMIC) is a greenfield smart city larger than the city of Mumbai with an expanse of 43 sq kms complete with utilities and smart city features. TCE was engaged to do

the master planning and detailing for infrastructure services. The challenge faced in this development was the flat terrain with high ground water table. TCE's solution of using gravity in design of utility ensured that pumping cost was saved. Several of the smart city features were developed in conjunction with the requirements and challenges posed by the soil, terrain and other natural elements. In 2014-15, TCE completed the plan and design for the iconic Administrative and Business Centre of Dholera (ABCD Building), which is expected to serve as a smart-city's hub - the seat of government, planning and ICT control centre around which the smart functioning of the smart city is contained.

Niche specialisation

In the building infrastructure space, the Infrastructure BU consolidated its expertise to offer solutions to the hospital building infrastructure space, specifically, cancer speciality hospital infrastructure. End-to-end concept to commissioning of such projects typically involve user behavioural study, specialised equipment planning, functional management and engineering, specialised MEP solutions and other such nuances.

IBU also focussed upon SEZs and educational campus facilities. The year 2014-15 saw the commencement of a large university campus development in northern India.

Ports & Harbour

The Infrastructure BU was part of a consortium for the development of a ship lift and repair facility with a capacity of 6000 dwt large vessels. The project includes ship lift transfer system and

workshop for ship repair and maintenance. The project, a fitting response to the call for 'Make in India', will enhance Indian capabilities in ship building, repair and maintenance, driving import substitution. Once complete the facility will enable ships to be repaired in India instead of the same being done overseas. Ship repair facilities require niche engineering skills such as hydraulic modelling, siltation studies, ship manoeuvring, design of marine structures and transfer arrangements etc. The consortium based approach effectively helps to pool and share knowledge and ensure best results. This initiative is yet another area of specialisation for the IBU.

The Infrastructure BU also enhanced capabilities in internal delivery systems. The BU migrated to use of 3D tools and simulations and special applications relevant to the Infrastructure sector. The shift to digital platforms from planning to end stage in a simulated environment, brought about greater predictability and safety to project development. Such end-to-end services on a digital platform enhances the scope for opex related services such as maintenance, repair and overhaul related solutions.

With several initiatives gaining traction, and poised to move to the next stage, IBU is on firm ground to capitalise all available opportunities and widen its scope and scale of operations.

Project of the Year

Gujarat Water & Sewage Works

Tata Consulting Engineers' Infrastructure BU is providing concept to commissioning services for the Gujarat Waste Water &

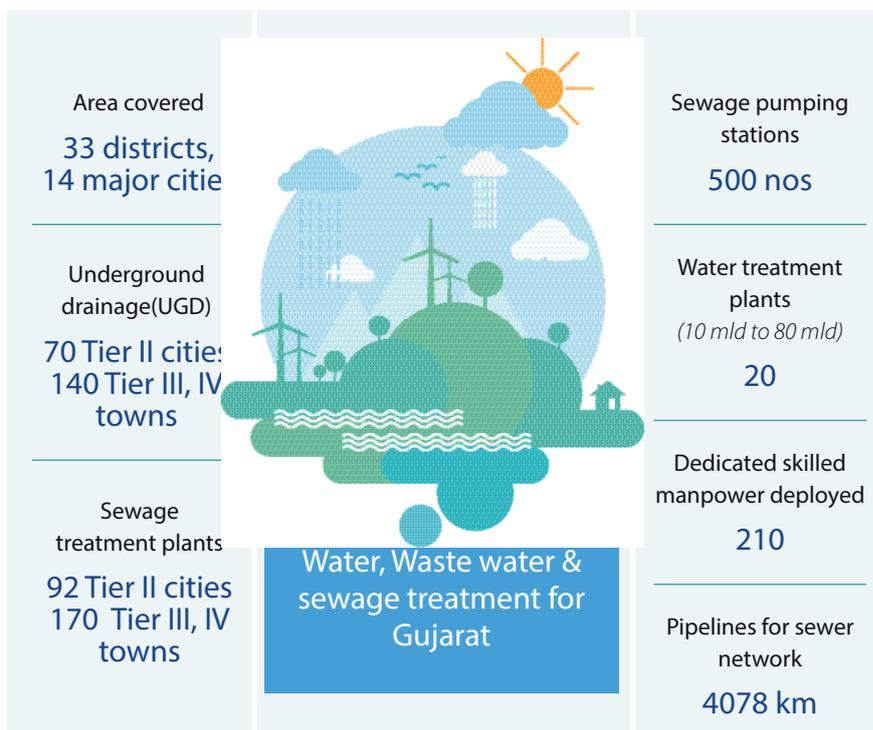
Sewage Systems Board(GWSSB), a mega project to develop underground drainage (UGD), water distribution and sewage treatment plants (STP) across the state of Gujarat. The overall project outlay is over ₹10,000 crores. With efficient waste, sewage and water management, the communities benefit from infrastructure due to improved health and hygiene through efficient management of waste and water. The IBU, with extensive experience and expertise in the area, brought about the best of available technologies for building this infrastructure in the most cost efficient manner and making current systems state-of-the-art.

The challenge was in managing existing systems and infrastructure through relevant upgrades and introducing new elements to modernise them. Some UGDs & STPs were Greenfield. Hence the task was to review in totality and provide customised solutions to each of the 260 towns that were being provided with the UGDs and STPs. Additionally, in regions with low loads due to prevailing demographics, systems were designed with the scalability factor while conserving resources such that the systems best fit current requirements. This ensured capex and opex cost efficiency. Typically, towns in India pose challenges in terms of rail/road connections and railway crossings. Hence underground drainage systems and water distribution became complex with 46 railway crossings, 364 highway crossings, 45 canal / forest crossings. 20 Water treatment plants and a distribution network for water for the entire state was planned by the Infrastructure BU, to reach 80 lakh people.

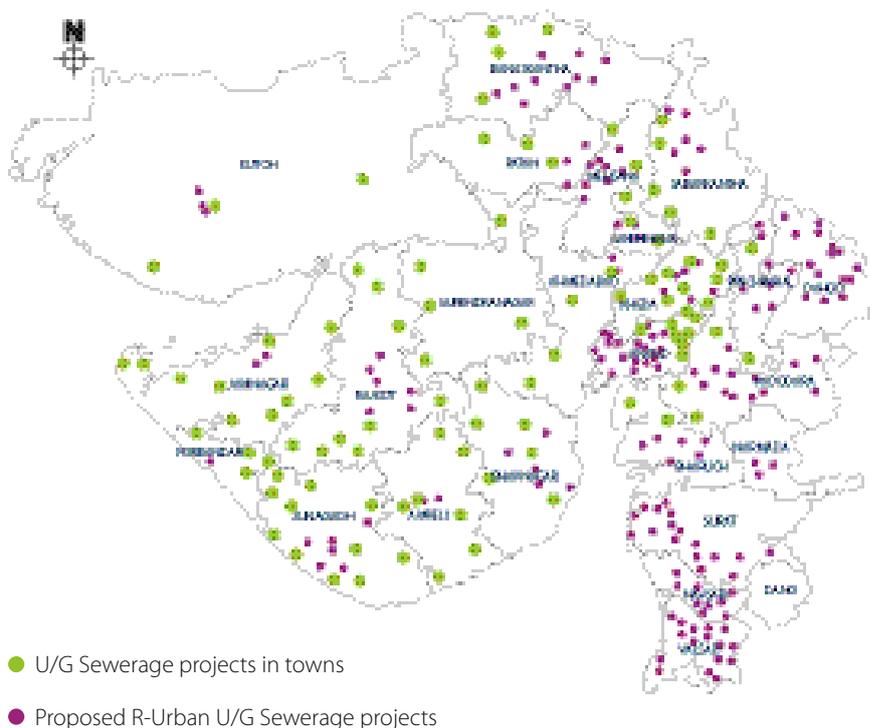
This master plan required tremendous planning and coordination to ensure each location got the best benefit at manageable costs. While most STPs were Greenfield, the right technology to best suit the town had to be carefully selected. Yet another consideration was the maintenance of the systems. The entire system had to be simplified such that the maintenance can be managed at the 'gram panchayat' level of the said town and power consumption kept low. Smaller towns face power outages and hence, cannot be provided with complete automated systems which though high-tech, are not a workable solution.

Apart from these were the technical challenges and improvisations required. Cutting the cost of energy for pumping, the drainage pipes were designed by reducing depth. Additionally, energy efficiency was brought about by optimising the number of pumping stations, thereby reducing the operations and maintenance costs. In all, 70 towns will be covered with UGD and a total of 92 STPs will be set up. Water distribution systems will be covered in 10 towns. With the value additions provided to the customer, GWSSB has increased the scope of TCE's involvement in the assignment. The Infrastructure BU is committed to delivering customer delight at every step of the way.

The Infrastructure BU continues on its mission to accomplish yet another landmark feat, touching the lives of a large populace in the state such as Gujarat with advanced systems for sanitation, health and hygiene.



U/G Sewerage project for towns & R-Urban



POWER BUSINESS UNIT

“POWER BUSINESS UNIT STRIVES TO CONTINUOUSLY ADD VALUE TO ITS CUSTOMERS THROUGH INNOVATE ENGINEERING SOLUTIONS. WE HAVE RE-ALIGNED OURSELVES TO PACKAGE OUR SERVICES SPECIFIC TO CUSTOMER REQUIREMENTS AND CHALLENGES. WE LOOK FORWARD TO BUILDING MORE SYNERGIES AND WIDENING OUR GLOBAL FOOT PRINT IN THE POWER SECTOR.”

S Vidyand,
Power Business Unit.



Power of synergies

The Power Business Unit (Power BU) had a successful year through synergies created by way of strategic partnerships. This had paved the way for new opportunities for the BU as an engineering partner to manage large projects globally.

The overall state of affairs across the various sectors of the Power BU was that of mixed opportunities. Lack of growth in the domestic power sector particularly in thermal power generation continued in the year 2014-15 with no major projects taking off. Regulatory stimulus to facilitate the supply of fuel for power generation is yet to fructify. The latter part of FY 2015-16 is expected see some activity in domestic thermal power in line with reforms in the sector. Hydro sector showed some signs of revival with small and mid-sized capacity projects being implemented. Owing to the increasing thrust on clean energy, the renewable energy sector indicated positive



Lighting up communities. Powering the growth of nations.

trends. Strengthening of Transmission & Distribution systems in the country has thrown opportunities in distribution automation and HVDC projects. Balancing the set back in the domestic sector were the opportunities in the international markets. During the financial year some marquee deals and service agreements were signed with large EPC players post the breakthrough in the Korean market in 2013-14. A focused strategy is being evolved to enter the Middle East, Africa and S.E Asian regions.

Tata Consulting Engineers responded to market dynamics – both national and international, with a plethora of services suited to clients world-wide. The Power BU with its strong engineering credentials in the sector has delivered several innovative solutions that are a first of its kind. This expertise is being increasingly sought after by OEMs(original equipment manufacturers) for optimisation, and modularisation. Serving as a dedicated arm

to OEM and EPC players for capex related services, TCE's Power BU hopes to render services for opex projects that will ensure consistency in revenue streams for the business.

The Power Business Unit will continue its marketing focus in the country's large power plant requirements and on the international front, focus in the regions of Saudi Arabia, UAE, Oman, Qatar, Egypt, South Africa, Europe & USA with offerings tailored to the requirements of the regions.

Project of the Year

During the FY 2014-15, PBU has emerged successful in finalising a large deal with a South Korean EPC player for detailed engineering services for two combined cycle power projects in Algeria - 1450 MW & 1163 MW.

This project was a standing example of the on-shore and off-shore model working smoothly with engineers deputed to the

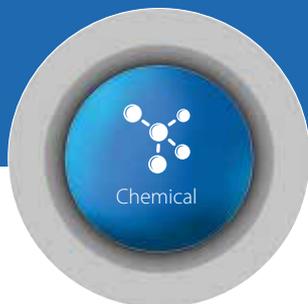
client's offices in Seoul backed by a home office team at the Bangalore delivery centre.

The project team overcame several challenges in terms of aligning to new customer expectations, coordination with other agencies for systems, aggressive engineering schedule, and submission of documents in bi-lingual versions – English & French. The customer appreciated the innovative design approaches, delivery speed and high level of commitment of the project team. During the last financial year, the client had engaged in an internal evaluation of various engineering firms they are associated with. TCE ranked as "number one" in the evaluation process surpassing many other global engineering firms. Subsequent to this assessment, TCE was rewarded with repeat business from the same client – TCE entered into a MOU with the client and was awarded the preferred partner status for future projects.

CHEMICAL BUSINESS UNIT

"WE ARE MOVING TOWARDS A PARADIGM SHIFT IN SERVICE DELIVERY. WE ARE BRINGING A CULTURAL CHANGE THAT ALIGNS ITSELF TO CUSTOMER-CENTRIC THOUGHT PROCESS. THIS, WE BELIEVE, WILL STRENGTHEN OUR CUSTOMER EQUATION AND WILL ENSURE SUSTAINED RELATIONSHIPS WITH OUR CLIENTS."

Manoj Kumar,
Chemical Business Unit.



Rewriting the customer equation

In the changing dynamics of the present economic situation, Chemical BU is seeking growth opportunities in line with unique market requirements and customer needs. The projects that the Chemical BU has undertaken have been predominantly capex in nature. However, in the changed economic scenario, capital expenditure has seen a lot of pressure due to lower investments. The Chemical BU has shown agility in capturing available opportunities in opex projects which called for a new thinking, a new delivery mechanism.

The Chemical BU has set up a dedicated service arm to provide engineering services pertaining to the petrochemicals



A vision of things to come in plant engineering:
Accuracy
Predictability
Cost efficiency

sector for a global organisation in the Middle East region. The business unit will work as an extended arm of the customer with a combination of on-site and off-site delivery mechanisms. As a trusted partner, TCE's Chemical BU is providing engineering services for plant modernisation, upgrades, debottlenecking and optimisation for existing facilities. Such projects will provide higher levels of predictability and also establish the Chemical BU in the inside battery limit aspects in hydrocarbon sector in the region. The Chemical BU also envisages this as a prelude to greater opportunities for TCE in capex projects with other clients in the region.

The Chemical BU focused on streamlining internal business processes to improve

project delivery and system compliance. There was a shift to almost 90% delivery using 3D tools, resulting in higher levels of accuracy and satisfaction to clients. New entrants in the organisation were trained in specialised engineering IT applications and 3D simulation tools to enhance their skills to global standards. Special emphasis was given to project management training resulting in the highest number of engineers completing international PMP certification. This, in times to come, will result in much better project governance and customer satisfaction.

Project of the Year

The world's largest oral care facility of 150,000 TPA capacity for an international

FMCG major was commissioned last year with the Chemical BU providing EPCM services. With built up area of 33,000 sq m, the facility is among the firsts where the entire complex is a green complex, silver-rated by LEEDS. The facility is an example of the Chemical BU and TCE's focus towards incorporating design features for sustainability. The project was implemented completely on 3D platform. The value-added services provided by CBU's engineering team brought about customer delight. The Chemical BU hopes to build more such satisfied customers through specialised services relevant to each region, each customer.



STEEL METAL & MINING

“OUR USP IS DELVING DEEP INTO ENGINEERING PROCESSES AND FINDING THE NICHE SOLUTION THAT IS TRULY OUT-OF-THE-BOX. THIS HAS ENTICED OUR CUSTOMERS TO EXTEND RELATIONSHIPS WITH US. WE VALUE SUCH RELATIONSHIPS AND STRIVE TO SUSTAIN THEM.”

Dr Tapan Choudhury,
Steel Metals & Mining Business Unit



Unearthing Value

The Steel Metal & Mining Business (SMM BU) offers core engineering services pertaining to the iron and steel sector, mining industry and other metals sectors. The capabilities of SMMBU span across all facets of project life-cycle starting from conceptualisation till commissioning and commercial production. In addition, we are in the process of building value-added services with a focus of cost and productivity in operating facilities. The SMM business has added value in most of the key process areas pertaining to iron and steel manufacturing. The engineering services provided in the mining sector encompasses concept to feasibility and mineral exploration to mining, continuing until mine void filling. The SMM business's key strength is the in-house talent of experts in the field in various aspects of steel, metals and mining. The year 2014-15 was marked by several value additions that the business delivered to clients across the various sectors. Customers increasingly seek integrated services in utilities alongside the specialised metals and mining related services. For instance,



Unforeseen
benefits,
Predictable
outcomes

utilities in power, facility infrastructure, construction management and engineering procurement services, other ancillary services related to a steel plant or a mine that TCE provides, makes for a strong value proposition.

The SMM business unit, in 2014-15 was engaged in several large domestic and international assignments in steel and mining. The business ramped up its work force to address the requirements of these large scale projects. Going forward, the SMM BU sees opportunities in Greenfield projects and Brownfield projects involving plant and process modernisation in the domestic and international markets.

The SMM BU has displayed remarkable capabilities in Brownfield projects addressing challenging situations and commissioning with minimum downtime. Notable assignments completed in the previous year was the coke oven battery plant for a steel major, basic engineering and procurement for blast furnace and engineering procurement services for a large steel plant among others.

The business unit moved to an IT-enabled

platform using state-of-art 3D & 4D tools and simulations across the value chain. This brings about accuracy (leading to minimal rework and within stipulated timelines); predictability in planning and project management along with efficiencies in capex cost management. The high-end IT tools relate to - geological resource and 3D modelling for coal, metals and non-metals, mining production scheduler for strategic mine-planning and optimising profits, mine ventilation designing and simulation, mineral processing simulation, geotechnical data modelling and slope stability tools.

In the mining sector, geology, mining and mineral beneficiation including infrastructure and material handling are some of the areas that the SMM business managed successfully. The year 2014-15 saw several pre-feasibility, feasibility studies, detailed project reports for mine exploration, planning etc for domestic and international firms. Several unique projects in material handling and beneficiation were undertaken to provide value to customers in copper, diamond, coal, iron mining.

Project of the Year

A large chemical plant in the US faced a challenge in the waste water and slime ponds. One of the ponds was excavated for a chemical to be fed back into the production process. However, this was hampered due to water seepage from the other waste fills. TCE's SMM business provided a solution to arrest the water seepage and provide solutions for excavation of the material safely with minimum residue, minimum cost and low maintenance. The entire project was managed with no downtime for the existing facility. Such value additions and smart solutions have helped build long term relations with customers. TCE's engineering expertise such as these in both Greenfield and Brownfield projects, make the SMM business a preferred partner to large clients. Going forward, the SMM business will consider a collaborative approach where knowledge and skills can be pooled and value delivered.

The smart approach and engineering innovation is the differentiator that this business brings to ensure a sustained association with its customers.



NUCLEAR & SPECIAL PROJECTS

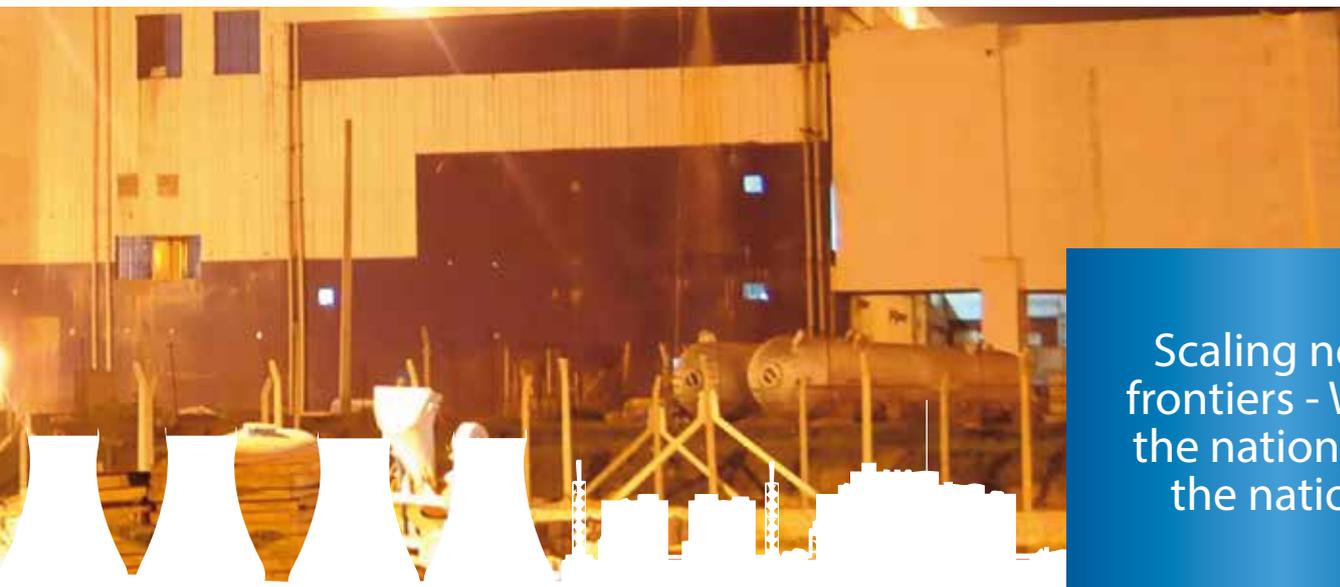
“ WE ARE READY WITH PROCESSES, SYSTEMS AND ADVANCED TECHNOLOGY CAPABILITY TO GET ON TRACK WITH THE COUNTRY’S ENERGY PROGRAM. NOW WE LOOK FORWARD TO PARTNERING WITH INTERNATIONAL ORGANIZATIONS TO DRIVE OUR PRESENCE THROUGH THE VALUE CHAIN.

Manmohan Soman,
Nuclear & Special Projects Business Unit



Precision & prediction

Nuclear projects are complex projects that need technical expertise; manufacturing needs special facilities & talent. Tata Consulting Engineers has worked closely with the Department of Atomic Energy, nuclear power generation enterprises and downstream equipment manufacturers through the country’s nuclear power program. Such critical projects are regulation driven. Catastrophes such as the Bhopal gas tragedy and more recently, the Fukushima incident have made government and governing bodies extremely cautious and risk averse. Due to immediate energy requirements for India, The Department of Atomic Energy (DAE) decided to opt for Light Water Reactor (LWR) technology from other developed nations. India has an abundance of thorium which is a feed-stock for nuclear power generation. Uranium, however needs to be imported. India’s nuclear power generation program requires reforms and legislation to fast-track the programs. Risk sharing is



Scaling new frontiers - With the nation, for the nation

an area of concern. The challenges in implementation of a nuclear power project is the requirement of continuity in the nuclear power program. This has been hampered as regulatory push to clear the path for nuclear power generation is still awaited while some programs were stalled. Regulation and creation of insurance pools to share risks are expected to fast-track India's nuclear power program.

Despite the constraints, the Nuclear & Special Projects Business Unit had a successful year in 2014-15. Though the regulatory environment did not move at the pace that is expected, existing projects – two 2x700 MWe-are in progress.

The Special projects division saw several landmark achievements. Opportunities in the defence sector, primarily shipbuilding, with design engineering for a mission critical naval assignment was undertaken by the business unit.

GSLV Mark III, the Indian Space Research Organisation's (ISRO) highest payload launch vehicle, saw a successful take-off. TCE's Nuclear & Special Projects business

was involved in the complete plant engineering for manufacture of solid propellant rockets and the design of the mobile launch pedestal. This project involved handling of explosives and hence, engineering automation of manufacturing processes was developed by TCE. The engineering consultancy services for design of the mobile launch pedestal called for a high amount of precision and planning. The Special Projects division is currently working on a second vehicle assembly building where the rockets will be assembled integrated and tested prior to launch. This involves hi- tech automated systems in a mechanical and controlled environment.

The Nuclear & Special Projects business conducted the DPR study for site selection for an ambitious international scientific project, the Laser Interferometer Gravitational Wave Observatory (LIGO). LIGO-India is envisaged as a collaborative project between a consortium of Indian research institutions and the LIGO Laboratory in USA, along with its international partners.

Such unique projects are the niche services that TCE is specialised in and has been delivering to customers with relationships built over the years. NBU also offered new service streams such as re-engineering of equipment to optimize production, OEM upgrade for one of a kind machines and facilities.

With a thrust on cleaner energy through nuclear power the Nuclear Business is also considering downstream services working with suppliers & OEMs related to the sector.

Project of the Year

Nuclear BU is part of the Kakrapar (KAPP-3,4) project, providing integrated engineering for the nuclear power plant with a capacity of 2 x 700 MWe. This project designed in a 3D environment using simulations and modelling, is a first for the nuclear industry in India. The Nuclear Business unit is shifting towards a complete 3D and 4D environment, using high-end IT applications providing the precision and predictability required for this sector and the unique projects.



CONSTRUCTION MANAGEMENT

“RISK SHARING, ESPECIALLY WHEN IT COMES TO SAFETY, PERTAINING TO MAN, MACHINE AND THE FACILITY REQUIRES A COLLABORATIVE APPROACH. THROUGH THE PROJECT MANAGEMENT VALUE CHAIN. WE WOULD LIKE TO LEAD THE WAY IN SAFETY AND BRING ABOUT A CULTURE CHANGE IN ORDER TO ALIGN OUR PARTNERS AND CONTRACTORS TO MAKE SAFE PRACTICES A HABIT.”

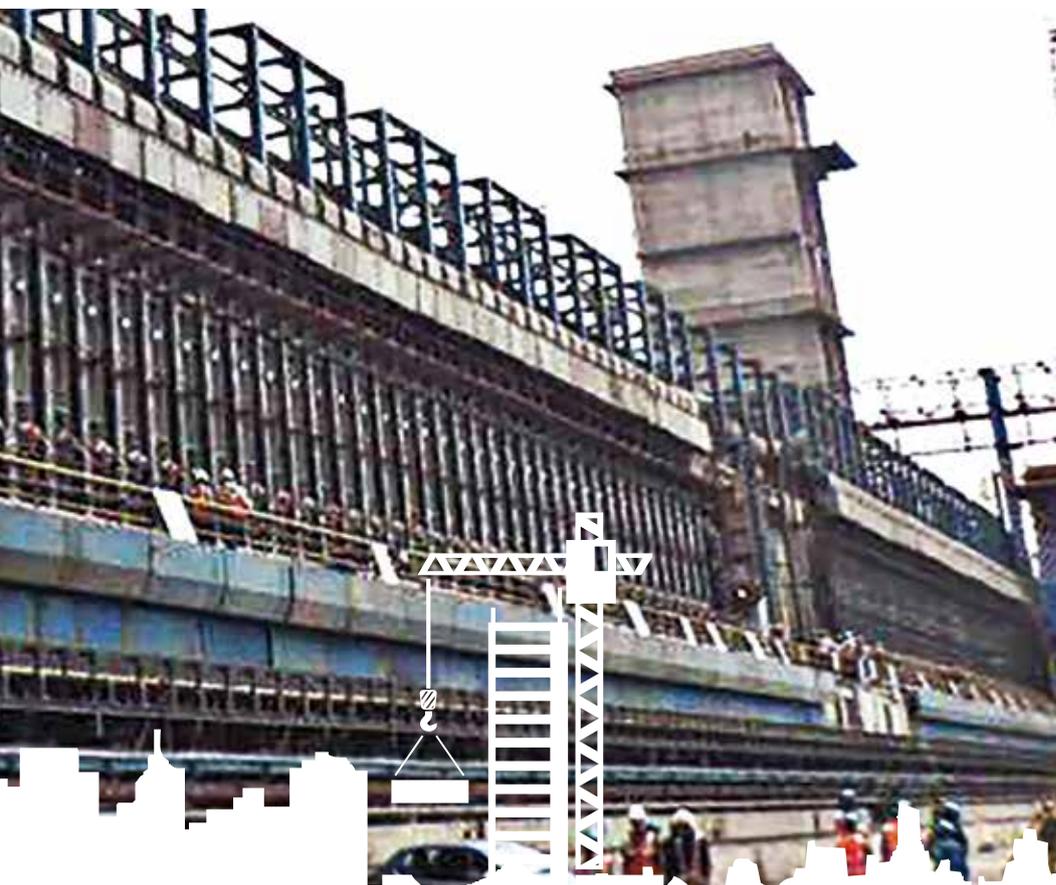
K Ramesh,
Construction Management Business Unit



Foundations for growth

The Construction business unit (CNBU) serves both as a standalone service provider as well as a horizontal business unit service to all the business units of Tata Consulting Engineers. CNBU extends offerings to provide exclusive Safety Management services to clients. This unit completes TCE’s ‘concept to commissioning cycle by providing end-to-end construction engineering services.

CNBU is notable for the diversity of engineering talent available on the rolls comprising civil, mechanical, electrical, safety, refractory and instrumentation. CNBU has earned the respect of its customers with a track record of dedicated project management, commissioning



Building the foundations for progress:
Safely
Smartly

support, safe man hours and best practices.

During the year 2014-15, PMC BU provided project Management services for the prestigious coke oven battery which was inaugurated in Jamshedpur by the Group Chairman. CNBU is also engaged to provide PMC and construction management services for one of the largest grassroots steel plant at Kalinganagar. The pre-commissioning on 1st coke oven battery plant has commenced with the heating up of the battery.

The business is largely dependent on capex projects in the power, infrastructure and metals & mining sector. Due to the

economic slowdown, these large projects have been moving at a slow pace which adversely impacted anticipated growth for the Construction Management business. The international markets provided opportunities for CNBU in the regions of Nigeria, South Africa and Ethiopia.

The Construction Business drove some new line of services – downstream services such as O & M and forward integration through opex-based fixed tenure for services. This new thrust is expected to ease the dependence on capex projects. Creating value for customers, CNBU is engaged in dedicated services, functioning as an extended arm for large MNCs in various regions across the globe.

Several internal processes and systems were strengthened in the year 2014-15. With about 95 sites functioning, it was critical to keep a distributed pool of engineers engaged. Training programs were conducted through digital channels with site personnel congregating at the nearest venue for ease of training delivery. Communication programs, grievance management and monthly calls to keep site engineers connected helped in building ties with the rest of the organisation. Social media sites also helped to keep site staff informed on events and happenings within the company. A renewed thrust on safety and safe practices was driven to benchmark to international best practices.

Safety systems and practices will now be driven through an internal committee and monitored continuously. The construction site engineers were given greater visibility through branded safety gear and uniforms.

Project of the Year

A large chemical company had hired an international consultant for PMC services. The complexity of the project and the dynamics involved in managing various vendor partners locally proved to be a tough task. The project faced inordinate delays due to issues in interdisciplinary coordination. Statutory submissions were delayed which had a ripple effect on the necessary approvals to cross project milestones. These translated to huge cost escalations for the company. Tata Consulting Engineers was invited

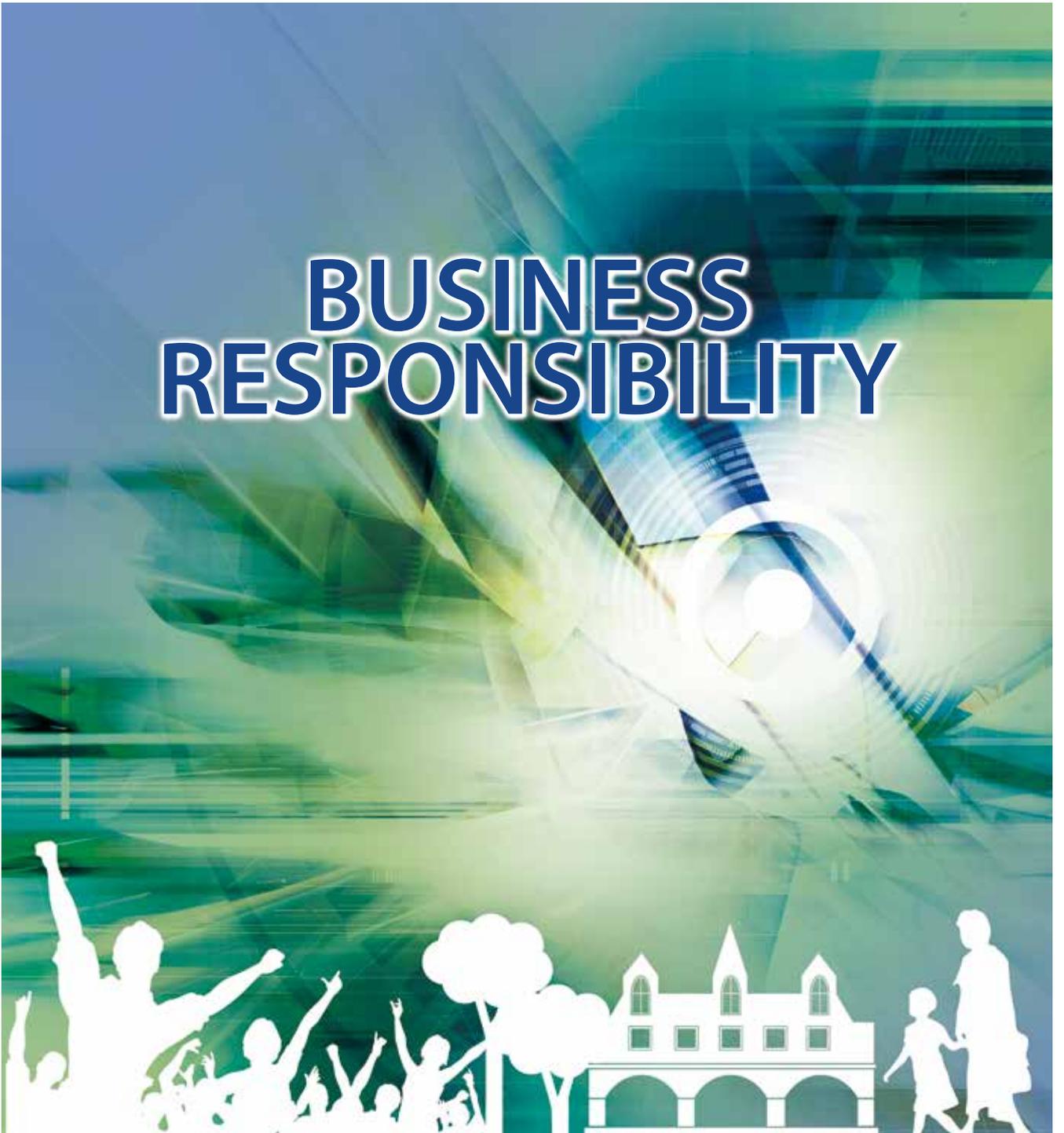
to set things right and take the project to its conclusive milestones. The Construction management team worked on sorting out the PMC roadblocks and completed the project on time for a landmark inauguration. The CNBU teams coordinated with the architect, contractors and clients to review the project. They also worked with the liaison agency and other stakeholders, addressing bottlenecks hampering project execution.

Using their past expertise and strong PMC acumen, the CNBU teams got the project moving and ensured completion within agreed timelines. Suggestions, technical inputs, coordination, macro view of complete project management, cost saving solutions, etc were some of the value additions that helped to salvage a project that had gone awry and brought it back on track.

Safety Performance 2014-15	
Construction Site (95 active sites)	
Avg Safety index	4.24 (Severity Index)
Safety training to stake holders manhours <i>(Tool box/Induction/First-aid/Job specific)</i>	4,047,129
Safety Audits	1321
Safe man hours	211 Million Man Hrs



BUSINESS RESPONSIBILITY





BUSINESS RESPONSIBILITY

Business Excellence

Tata Consulting Engineers' Business Excellence function drives the strategy and standards for the organization. In the year 2014-15, TCE was assessed in the Tata Business Excellence Model's internal assessment for processes and systems and was evaluated with a good performance indicator. For the financial year 2015-16, TCE will continue to improve processes and set higher benchmarks in excellence.

Safety

Safety Performance 2014-15

TCE offices

Mumbai 247 Park, , Mumbai SEZ, Chennai, Pune, Kolkata, Delhi, Jamshedpur, Bangalore

Avg Safety score/month	89.16 %
Safety training man hours	1091 hrs
Safety Audits	91 Nos.

Construction Site (95 active sites)

Avg Safety index	4.24 (Severity Index)
Safety training to stake holders manhours (Tool box/Induction/ First-aid/Job specific)	4,047,129 manhours
Safety Audits	1321 Nos
Safe manhours	211 Million Man Hrs



Diversity

Tata Consulting Engineers took the initial step towards diversity and introduced the Diversity Policy. The Company introduced measures to make the work environment conducive to women employees. The overall gender diversity ratio for male to female is 85 : 15 percent. 23 % of the total workforce is engaged in the Construction Management Business Unit. TCE's female employees are concentrated in the design centers and corporate functions which constitute an overall 19 % of the total workforce.

In the year 2014-15, TCE increased the influx of young graduate engineer trainees to about 300. The Young Engineers Training Program that the GETs go through is a comprehensive skilling program for campus engineers to make them industry ready.

Corporate Social Responsibility

TCE's CSR activities conducted under the name TCEndavour planned and executed various programs in line with the four focus areas – Infrastructure, Healthcare, Education & Sustainable Livelihood

CSR Committee:

- Mr. S.Padmanabhan, Member Chairman
- Ms. Neera Saggi, Member Director
- Mr. J P Haran, Member Director

Key Initiatives in 2014-15

Infrastructure

Uttarakhand Rehabilitation Program

Working with the Tata Relief Committee, Tata Consulting Engineers is providing engineering and project management services for the construction of Aanganwadi Centres, weaving centers and polytechnic to benefit children, women and young adults. The construction of four aanganwadi centers at Uttarakhand has been completed and the remaining four ICDS are under progress. TCE will also provide project management services in developing a weaving center for women.



Sustainable Livelihood

Skill Building Centers

TCE will work with Tata Strive, the skill building arm of Tata Community Initiative Trust to establish vocational training centres. TCE is providing engineering services and infrastructure support along with other Group companies. The Skill building centers will have a range of courses based on local/national/international opportunities. The objective of developing such skill building centres is to improve skills of individuals at remote locations and thereby increase employability.



Healthcare

Jawahar Water Project

In the year 2014-15, the rain water harvesting tank was handed over to the gram panchayat. The availability of potable water during the summer months was a relief to the 50 odd homes in the hamlet. Currently, plans are underway to provide non-portable water in Korchipada, Jawahar district. Feasibility studies are under way to assess options for check dams and wells. This is expected to provide the village with water for cultivation to address basic needs. The long-term plan includes sanitation and healthcare facilities for the village.



Education

Program	No of Beneficiaries
Basic computer aided drafting program for ITI students & youth	27
Basic Computer Education	89
Softskills training for students from College of Engineering Pune	40

Volunteering

TCE volunteers come forward to support through volunteering for the benefit the society. TCE volunteers joined the Group initiative, Tata Engage to volunteer the time for social causes. The various program ranged from spreading happiness amongst oldage & orphanage centers, cleanliness drives, health & hygiene, skill building programs

Resource management

Water consumption in KL		
2012-13	2013-14	2014-15
35150	32960	33570

Electricity savings data in units		
2012-13	2013-14	2014-15
4642858	4158796	4040823

Paper usage			
Type of paper	2012-13	2013-14	2014-15
A3	1408	1206	1108
A4	9480	7896	7296
Plotter roll	3784	2890	2914

CORPORATE INFORMATION

Offices and addresses

Registered Office

Matulya Centre
"A", 1st Floor,
249, Senapati Bapat Marg,
Lower Parel(West), Mumbai-400013, India

Corporate Office

247 Park,
Tower "A", 4th Floor,
LBS Marg, Vikhroli(West),
Mumbai-400083.

Branches – Domestic

Bengaluru

Sheriff Centre,
73/1, St. Marks Road,
Bengaluru – 560001

Janardhan Towers,
133/2 Residency Road,
Bengaluru – 560025

Pune

Sai Trinity, Central Wing,
S. no. 146/1/28, Pashan,
Pune – 411021

Delhi (NCR Region)

Green Boulevard,
Ground Floor, Tower B & C,
Plot no-89A, Sector 62,
Noida – 201301

Jamshedpur

Pipeline Road, Sakchi,
Jamshedpur – 831001

Mumbai

SEZ Unit No 1103, 11th Floor,
A wing Kensington,
Hiranandani Business Park,
Powai, Mumbai-400076

Gujarat

1st Floor, Project Office No.
106-109 B Atria Complex,
KH-0 Sargasan Cross Road,
Gandhinagar – 382421

Chennai

6th Floor, SKCL Central Square,
C-35, Cipet Road,
Guindy Industrial Estate,
Guindy, Chennai – 600032

Kolkata

Technopolis, 5th Floor, A Wing,
BP-4, Sector V, Salt Lake City,
Kolkata – 700091

Subsidiaries

Qatar

TCE QSTP-LLC,
P O BOX No. 210422, Qatar Science & Technology Park, Doha, Qatar

**under liquidation*

Mumbai

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Overseas Offices

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P.O. Box 62990, Abu Dhabi,
United Arab Emirates

Nepal

Ward 10 Gangapdevi Marg,
Budhnagar, Kadmandu, Nepal

Kenya

MSA Building, Mombasa
Street, Nairobi, Starehe District,
P.O.Box – 13746, Kenya – 00800

Bankers

HDFC Bank | ICICI Bank Limited | Bank of Baroda
State Bank of India | Yes Bank | Citi Bank

Auditors

Deloitte Haskins & Sells LLP
Chartered Accountants

TATA CONSULTING ENGINEERS LIMITED

Engineering a better tomorrow

Corporate Office: 247 Park Tower 'A', LBS Marg, Vikhroli (West), Mumbai - 400 083

email: mail@tce.co.in **website:** www.tce.co.in

Registered Office: Matulya Centre 'A', 1st Floor, 249 Senapati Bapat Marg
Lower Parel (West), Mumbai - 400 013, India

TCE Corporate Communications