

Innovate and Scale

Tata Consulting Engineers Limited (TCE) is a leading and well-established company in the engineering consulting business. The focus for TCE is to stay relevant in changing times, be relevant in the global markets and collaborate to provide solutions in areas ensuring we meet client expectations. To keep progressing along these focus areas, the Company is prepared with innovative solutions that will further help us scale. Aiming higher and focusing on providing high value to customers will help the Company scale new heights and establish long-term relationships with customers. A climate of innovation will help attract and retain the best of talent to drive the growth engine.



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- **Approach to Reporting**

The Annual Report is aimed at meeting the information requirements of all our stakeholders, including investors, customers, suppliers, employees, contractors, competitors, press, analysts, the government and others.

Materiality

The Report includes information which our Senior Management believes, is material to our stakeholders and it presents an overview of our businesses and associated activities that help in short, medium and long-term value creation. We have presented information around our strategic approach and the Report also discusses what different capitals mean for the Company.

Scope of the Report

We have presented the information on all our business units in a fair, balanced and understandable manner. The performance disclosure is reported for the period FY 19.

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.

Business Review





Resources | pg no 40





Programme Management | pg no 43



Digital and Advanced Technologies | pg no 45

Management Review

For optimal presentation of the information in the Report, the strategic framework, governance overview, performance and value-creation model are all perused by the Senior Management.

Reporting Principle

Through the Report, we are attempting to present our 'integrated thinking' process by aligning our communication with the International Integrated Reporting <IR> Framework by the International Integrated Reporting Council (IIRC) and the Companies Act, 2013. The Report tries to communicate a clear, concise, integrated story that explains how all our resources are put together in creating value for the business and its stakeholders.

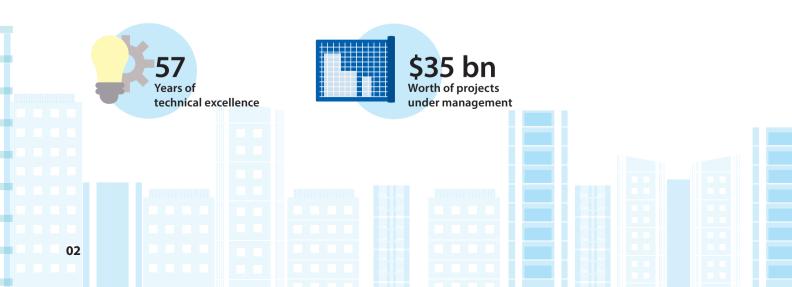
TCE at a Glance

Tata Consulting Engineers Limited (TCE) is an integrated engineering consultant providing concept to commissioning services in Infrastructure, Power and Resources (Hydrocarbons and Chemical, Mining and Metallurgy) sectors. TCE is a 100% subsidiary of Tata Sons Ltd. The Tata group is considered to be one of India's most respected conglomerates.

Established in 1962, TCE has completed about 7,500 projects in over 55 countries. With a strong knowledge base and technical expertise, TCE has a track record of delivering several one-of-a-kind projects. The Company has multi-disciplinary engineering talent with capabilities to manage complex projects worldwide. TCE is among the few companies geared for the Industry 4.0 era, providing engineering solutions for Industrial Internet of Things (IIOT).

Currently, TCE is executing projects (design, engineering and/or site services) at 130 sites across India and overseas. With expertise and technological capabilities, TCE has a dedicated talent pool with core engineering skills, thus serving as an integrated service model for its clients.









delivered globally



The Company's ability to manage complex projects, and experience in building cost-effective and environmentally-friendly solutions, make it one of the most sought after engineering solutions partner across the globe. TCE's digital engineering and 3D-5D delivery models enable the Company to provide niche services tailored to client needs. This is underscored by several success stories in delivering one-of-a-kind projects.

Mission

To provide technically excellent and innovative solutions for adding value for all Stakeholders, and operate globally as Professional Consulting Engineers

Vision

To be an internationally respected engineering consultant offering comprehensive solutions

Core Values

Customer Satisfaction and Loyalty

Employee Dignity and Self-Respect Technical Excellence with Professional Ethics Organisational and Individual Growth Responsibility to Society

03

Businesses



Infrastructure



- Built Environment
- Water and Waste Management
- Transportation

* Share of revenue

Power



- Thermal and Hydro Renewables
- Nuclear
- Transmission & Distribution (T&D)





Services

- Design and engineering
- Programme Management
- Procurement management services
- Construction management and safety
- Digital and advanced technologies

Resources

40%^{*}

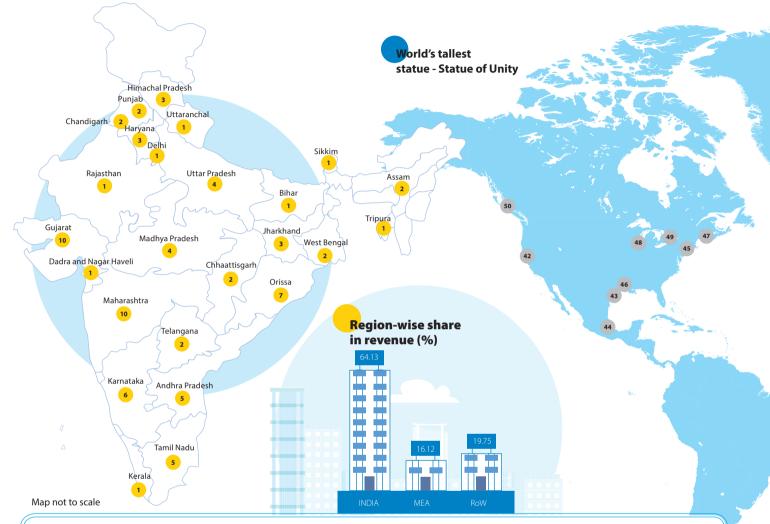
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• Hydrocarbons & Chemicals

. . .

• Mining & Metallurgy

Presence



INDIA

- Assam
- Dibrugarh Guwahati
- Andhra Pradesh
- Kakinada
- Shriharikota
- Vijaywada
- Visakhapatnam
- Yeddumailaram
- Bihar (Patna)
- Chhaattisgarh
- Raipur
- Durg
- Chandigarh
- Mohali

06

Nayaraipur

Dadra and Nagar Haveli (Silvassa)

- Delhi (New Delhi)
- Gujarat
- Ahmedabad
- Baroda
- Bharuch
- Dahod Gandhidham
- Gandhinagar
- Jamnagar
- Rajkot
- Surat
- Vadodara
- Haryana
- Faridabad
- Gurgaon

Jhajjar **Himachal Pradesh**

- Kinnaur
- Kullu
- Shimla
- Jamshedpur
- Ranchi
- Noamundi

- Bellary
- Bidadi

- Jharkhand

- Karnataka
- Bangalore
- Belagavi (Belgaum)

- Hubballi
- Shimoga

- Kerala
 - (Thiruvananthapuram) Madhya Pradesh
 - Bhopal
 - Nepanagar Satna
- Ujjain
- Maharashtra
- Aurangabad
- Chandrapur
- Mumbai Navi Mumbai
- Pune
- Ratnagiri
- Shirdi
- Solapur Tal Khed, Dist. Pune

- Thane
- Orissa
- Banharpali Bhubaneswar
- Dhenkanal
- Gopalpur
- Narendrapur
- Paradeep
- Rourkela
- Punjab
 - Bathinda
 - Mansa
- Rajasthan (Jaipur)
- Sikkim (Gangtok)
- Tamil Nadu
- Chennai
- Hosur

- Sriperumbudur
- Thoothukudi
- Tuticorin
- Telangana
- Hyderabad

Allahabad

Noida

- Secunderabad
- Tripura (Agartala) Uttar Pradesh

Bulandshahr

Sonebhadra

West Bengal

Medinipur

No. of Cities (Domestic Projects)

Kolkata

Uttaranchal (Dehradun)



ASIA

- 1. Abu Dhabi, UAE
- 2. Barka, Oman
- 3. Dammam, Saudi Arabia
- 4. Dhaka, Bangladesh
- 5. Doha, Qatar
- 6. Dongguan, China
- 7. Dubai, UAE
- 8. Fujairah, UAE
- 9. Jakarta, Indonesia
- 10. Jeddah, Saudi Arabia
- 11. Kathmandu, Nepal
- 12. Korea, South Korea
- 13. Lalitpur, Nepal
- 14. Ras Al Khaimah, UAE

- 15. Riyadh, Saudi Arabia
- 16. Selangor, Malaysia
- 17. Seoul, South Korea
- 18. Tokyo, Japan
- 19. Yokohama, Japan

AFRICA

- 20. Abuja, Nigeria
- 21. Aggeneys, South Africa
- 22. Chingola, Zambia
- 23. Djibouti, Ethiopia
- 24. Kampala, Uganda
- 25. Kigali, Rwanda
- 26. Lagos, Nigeria
- 27. Lusaka, Zambia

- 28. Mekelle, Ethiopia
- Port Harcourt, Nigeria
 Rivers State, Nigeria
- .

EUROPE

- 31. Baden, Switzerland
- 32. Berlin, Germany
- 33. Gallarate, Italy
- 34. Hamburg, Germany
- 35. Handelsregister, Netherlands
- 36. Leioa, Spain
- 37. Lisboa, Portugal
- 38. Saint Paul Lez Durance, France
- 39. Northwich, UK

AUSTRALIA

- 40. Brisbane 41. Sydney
- Hi. Sydne

NORTH AMERICA

- 42. California, USA
- 43. Houston, USA
- 44. Mexico City, Mexico
- 45. New Jersey, USA
- 46. New Waverly, USA
- 47. New York, USA
- 48. Oakbrook Terrace, USA
- 49. Ohio, USA
- 50. Vancouver, Canada
 - International Project Locations

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Performance Highlights





Financial capital

Comprises of funds we raise, our earnings, the overall revenue generated

₹729 cr Revenue

book value

₹**1,096 cr** New business / order ₹**106 cr** Underlying profits before tax

₹134 сг вітда



Manufactured capital

Project design, engineering, construction, maintenance and management - stages when we use materials, equipment, tools and technologies

17 Offices (includes project, sales and branch offices)



Intellectual capital

Innovations around technologies for increasing project efficiency and advances in digital technologies, preparing for the era of Industry Internet of Things (IIoT)

63 Technical whitepapers published

New technology offerings

8

175 New automation programmes added

4 Patents filed/pending and granted





Human capital

Collective skills, knowledge and capabilities of our employees and contract staff, which are at the heart of our business operations

81% Utilisation of people

Training man-days per employee

13

94.8 Office index Diversity 14% women 86% men



Natural capital

(technical and behavioural)

Natural resources that our business activities and projects depend on. Efficient operations and optimal use of natural resources ensure all our business activities have minimal impact on the environment. Through our technology-enabled solutions, we also help our clients in preserving natural resources. Some of the projects that we undertake in water, waste management, smart cities, mining & metals, etc. are specifically addressed at natural capital enhancement

3,529 kwh **Energy consumption** (TCE offices)

Innovative projects for natural resource conservation

Commissioning of the Gamsberg project turned around a zinc mine that was unproductive for 40 years. Gamsberg was not considered a viable project due to the high amount manganese embedded in ore and associated complications for zinc beneficiation. TCE's involvement with the client since 2013 in carrying out possible beneficiation techniques has made the project viable. The project adopted a phased approach campaign processing philosophy including modification in concentrator and state-of-the-art floatation cells and commercial production of lead, resulting in additional value. The end-to-end solution optimised the mine's zinc and manganese ore production.

Social and relationship capital

Knowledge sharing with project partners, complying with regulations, providing financial and technical support and ensuring employee involvement in our projects. It also includes the relation TCE shares with the neighbouring communities.



Corporate volunteering manhours

13,154.25 1,009 Employee volunteers

Rainwater harvesting

Rainwater harvesting projects undertaken by TCE in the tribal belt of Jawhar have helped provide a means of sustenance in the water-starved terrain.

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Chairman's Statement

Dear Stakeholders,

We are in a disruptive era driven by technological advances and innovative applications of technology. These are very much evident in the engineering consulting business, making it imperative to turnaround service offerings in tandem with customers' changing requirements. Tata Consulting Engineers Limited (TCE) set forth in this direction in the last few years as a result of which the Company has stood its ground through the cyclical turns in the macro economic conditions, ready with solutions that are customercentric. 2018-19 was a year of all-round progress for TCE.

On the back of its strong credentials, I am positive that the Company will scale new heights of growth.

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Financial

TCE posted a record turnover of ₹ 729 crore as against ₹ 651 crore in the previous year. Profit Before Taxes (PBT) for FY 19 was at ₹ 106 crore, an increase of 45% over FY 18. The y-o-y growth in gross revenues was at 12%. Return on capital employed stood at 15% in FY 17, was at 19% in FY 18 and grew to 25% in FY 19. TCE as a company has always been a profitable entity with sound fundamentals. On the strength of its strong credentials, I am positive that the Company will scale new heights and growth.

Governance & systems

TCE has always focussed on good governance practices and established systems and processes to enforce the same. Anti-bribery & anti-corruption, Prevention of Sexual Harassment (POSH) at workplace, adherence to General Data Protection Regulation (GDPR), whistleblower framework, etc have been institutionalised through policies and guidelines. Business processes have been strengthened through IT systems, making for a transparent mechanism with a view to protect client IPR and build client confidence. The risk management process has been strengthened with a clear focus on addressing and mitigating material risks to the organisation.

₹729 cr Record turnover ₹**106 cr** PBT for FY 19 45% Δ

12% y-o-y growth in gross revenues 25% Return on capital employed

People

TCE is among the few organisations that has a large congregation of engineers with core engineering expertise. This talent is the very backbone for TCE's success. Our immensely talented workforce, passionate about their projects has, time and again, helped deliver great value to its customers. With the increased requirement of digital engineering delivery mechanisms, the focus in FY 19 was of reskilling engineers across business units with training in advanced engineering applications. With a strong order book of ₹ 1,096 crore, the hiring and retention of relevant and skilled talent is crucial for achieving our goals. We infuse young talent and trained them through the Young Engineers Development Programme (YEDP).

TCE engages with communities through its flagship programmes and structured volunteering programmes. FY 19 saw about 1,009 employees participate enthusiastically in CSR initiatives to benefit the community, clocking in about 13,154 hours.

Into the future

In all, it has been a momentous year for TCE. My best wishes to our employees, customers and partners who have placed their trust in us. I would like to thank the Management and the Board members of TCE. Mr. S. Padmanabhan (Chairman), Mr. P K Ghose (Audit Committee - Chairman) and Ms. Hema Ravichandar (Nomination and Remuneration Committee - Chairperson) for their valuable contribution to the success of the Company.

Wishing you all the very best.

Sincerely yours,

Ashok Sethi



Managing Director's Overview

Yet another year rolled by in the pages of TCE's long haul in the engineering consulting business. This time around, as several landmark moments in the past, we have another new story to tell. The last couple of years were those of rigour, as the Company firmly established itself in readiness for the future. I am proud to say that we are ready for the next generation of engineering and are absolutely prepared for the disruptive technologies of Industry 4.0. Our efforts and diligence paid-off as we crossed the golden milestone of ₹ 1,000 crore in business orders and PBT of ₹ 106 crore. In a highly fragmented industry with great challenges in talent retention and profitability, TCE stood its ground as a strong and reliable player in the engineering consulting space. As TCE moves ahead, it's worthwhile to relook at the things that went right and set the Company on the right course.



I am proud to say that we are ready for the next generation of engineering, we are absolutely prepared for the disruptive technologies of Industry 4.0.

Performance review

FY 19 saw the highest growth in the Company's 57-year history. Total revenues grew 12% over the previous year at ₹ 729 crore for FY 19 and PBT at ₹ 106 crore.

Our multi-pronged approach to maintain a wellbalanced portfolio of client accounts helped us tap every possible opportunity.

- The clear focus on domestic-international mix helped us retain our leadership position in the domestic markets and our niche capabilities ensured large businesses from marquee international customers.
- 36% of revenues came from international markets while 50% of our revenues were derived from strategic relationships, providing consistency in earnings. It also established the TCE brand as a reliable and long-term, trusted associate, globally.
- Moving away from total dependence on cyclical capital investment (capex) scenario, an achievement of 23% revenues from clients' opex investments (operational investment of customers in their asset lifecycle management) provided consistent earnings even in adverse investment conditions. This was possible due to our readiness in client requirements for asset upgrades, expansions, environment offerings, and Industry 4.0 solutions, especially in the international markets.
- Lean operations and agility combined with efficiency in working capital management ensured resource optimisation contributing to a strong bottom line.
 Strong internal processes and systems also ensured delivery efficiencies.
- A strategic focus across the businesses and a consistent approach lead to all business units within TCE being profitable.
- Strong order books in FY 18 of ₹ 895 crore provided a good head start for FY 19 and the year closed with a milestone in order bookings of ₹ 1,096 crore. Our strategic focus of client mix, targeting select geographies and unique delivery models specific to each geography, augured well.

Managing Director's Overview continued...



Strategy and operations

The future in engineering lies in digitalisation, standardisation and modularisation. TCE made a foray in delivering a modularised solution for a global power major. The expectation from clients is engineering solutions for digitisation of assets and asset lifecycle management. Asset sweating takes precedence over asset creation. TCE has secured a first-mover advantage in Industry 4.0 and IIoT technologies in the engineering consulting domain.

Our investments in high-end engineering design and project management tools have helped us develop a distributed delivery environment and provided us the leeway to service customers with a globally distributed model enabled by a digital collaboration backbone. Bringing in efficiency to delivery and operations, we adopted several tools for process, project, delivery and financial management. We also formalised our engineering processes with digital engineering tool sets.

TCE continues to work on its strengths of providing solutions in niche areas, serving as engineers to India's Smart City agenda with key solutions in ramping up India's cities as sustainable cities and contributing to development. TCE continued to serve the country's unique needs through strategic projects in space, defence, nuclear power and research projects such as ITER. Our expertise in mining and metals came to fruition with the commissioning of the world's largest zinc mining facility in Gamsberg, which was possible due to innovative engineering to turn around a mine that remained defunct for over 40 years. Water and waste management continues to be the Company's strength with projects being managed in about seven states in the country. TCE's strong operational efficiencies have helped build trusted relationships with large clients in Hydrocarbons and Power in the Middle East, Africa and Asia.

Talent Management

While we focus on asset management for our clients, our biggest asset is its highly skilled workforce of engineers with diverse backgrounds. In a competitive environment for the best available talent, we recruited 105 fresh graduate engineers from leading engineering institutes across India and inducted them through our flagship orientation programme, the Young Engineers Development Programme (YEDP). With disruptive technologies breaking through, the need for re-training existing talent is a necessity. We introduced training across levels for technical, software and knowledge upgrade programmes. FY 19 ensured technical training for 1,395 persons and - overall training for 2,358 employees.



Future readiness

The future is driven by the need for sustainability and 'green' solutions, and the disruption is happening towards this end. In a stressed capital investment climate, long-drawn projects with huge investments are no longer feasible. The need of the hour is extremely quick returns on investments and sustainable models that drive a circular economy. Demand is high on standardised designs and engineering that can be repeated and reused. In response to this market need, TCE has adopted 3D-5D engineering and constructability analysis. The process industry is witnessing increased plant automation, asset-sweating and plant-life extensions, pushing opex spends. TCE has developed unique delivery models and readiness in IIoT technologies for servicing this requirement. The infrastructure space in the domestic market is characterised by capital investments in urban development, transportation and utilities. TCE has established a leadership position in this space. TCE's expertise in opex provides opportunities in water sector that will help in optimising water management efficiencies in the country, which we expect will be a game changer. Clean energy through renewable sources is a commitment that is an imperative. The focus is on clean chemicals and metals, electric vehicles, energy storage efficiencies, etc. TCE's focus in the coming years will be building capabilities towards this end.

Sustainable development is the requirement from customers and this will be the driving motive for TCE's growth. Our mantra for FY 20 is innovation and scale with customer centricity as the driving force. In an era of transformation, TCE is poised to leap-frog to the next level in its growth agenda and with the support of our employees, I am sure that we will blaze a trail adopting the sustainability agenda.

FY 20 is also a year of change for the senior leadership at TCE. Our erstwhile Board members Mr. Padmanabhan as Chairman and Mr. P K Ghose and Ms Hema Ravichander as Independent Directors, retired from the Board w.e.f. May 13, 2019. I would like to express my sincere gratitude for the wise counsel and insights offered by the Board in helping TCE's growth agenda and the drive for strengthening business processes. I would also like to welcome the new Board with Mr. Ashok Sethi, Chairman and Ms. Anjali Kulkarni and Mr. Sriram Kadiyala as Directors. I look forward to the support from the new leaders to help anchor TCE on the path of innovation and scale as we ready ourselves for the next growth milestone.

Going forward, TCE looks towards leveraging the young talent available in India. We have built a robust training and induction programme. With the need for new skills in the Industry 4.0 era, we hope to ramp up our campus recruitments and increase the youth quotient within the ranks of the Company. In 1963, Mr. JRD Tata, in his speech on 25 years as the Chairman of the Tata group, said, "Future belongs to the young. We must not only trust them with responsibility but must thrust it upon them whilst they are still young and full of energy, zest, hope and even illusions. However heart-breaking it may be to ourselves, we must make way for the new generations even when we feel we are still in our prime." This is more relevant today, especially for TCE, a company that is about 57 years old! Our task ahead lies in orienting the young engineers into new engineering, creating a new breed of young leaders with a spirit of entrepreneurship and innovation. This, we believe, will springboard us to the next level of growth and keep us centred around our customers and their changing requirements.

Sincerely yours,

Amit Sharma



Q & A with the Chairman

Q & A with Mr. Ashok Sethi, Chairman, TCE

TCE, as a large entity in the design engineering services industry, is well poised to deliver value to the nation through the adoption of cutting-edge technology.

You have been on the Boards of several companies for a decade and on the Tata Power Board for five years. Your expertise spans the entire value chain of the power business and engineering services. What does the future hold for the infrastructure sector and the engineering services industry?

The buzzwords for growth worldwide today are: India and China. Since the announcement of liberalisation in 1978 by the Chinese Premier Deng Xiaopeng, over the course of 40 years, China built huge infrastructure capabilities, tapped trade avenues across the globe and lifted its people out of poverty. In the case of India, the liberalisation that began in the 90s still requires a lot of catching up to do. India stands at an inflection point where it has to seize opportunities to take off. As the world eyes India as a nation with the greatest development potential, the writing on the wall is clear. India is faced with a choice of an existential crisis or growth and development. The Chinese growth strategy was founded on the boost to the infrastructure sector to begin with. Once this was underway, the country was able to leverage the favourable macro-economic trends of that era. India also has huge opportunities to leverage upon. The country is the largest democracy with strong governance systems in place, which is essential to boost domestic growth.

Given the current situation, India's growth can be put on a high growth trajectory only with a focus on developing India's infrastructure. Investments in infrastructure plays a major part in pushing up GDP – it generates employment, boosts ancillary sectors and spurs all-round economic activity, which in turns spurs GDP growth. Alongside GDP growth comes improvement in social infrastructure and consumerism. The icing on the cake is the role that technology development has to play. Present-day India has the greatest digital penetration and thereby augurs well for technology-driven infrastructure development. Currently, the key drivers for GDP growth are sectors such as Infrastructure (roads, transportation, water, buildings, ports), Power (solar, nuclear, T & D) Resources (hydrocarbons, mining, metal, chemicals etc).

These sectors are highly technology driven and need to grow. They are also the most capital-intensive sectors and require skilled manpower while generating large-scale direct and indirect employment. They are governed by costs and the safety of stakeholders. Optimal design solutions, cost effectiveness and safety can be provided only by high-end engineering design companies. Design engineering companies play a major role in helping the nation build infrastructure with the most optimum designs through efficiencies and cost. In order to deliver the efficiencies expected, design engineering firms need to integrate to deliver growth. Small players co-existing tends to dilute the potential for cost efficiencies and quality. TCE, as a large entity in the design engineering services industry, is well poised to deliver value to the nation. Through the adoption of cutting-edge technology. The key value proposition that is expected of the engineering services industry is that of high value solutions and high levels of safety at low cost.

2

You are credited with the transformation of Operations and Maintenance (O&M of the Tata Power Generation, Transmission and Distribution (GTD) assets through digitalisation for reliability-centred maintenance on IIoT platforms. What is the value that such digitalisation offers? Digitalisation is the basic requirement and the first step towards adopting Industry 4.0. This brings us to the question, what brought about the advent of Industry 4.0? The explosion of ICT technologies and their availability globally was the feed while the need for innovation in production services was the demand. Both have to be exploited to create new innovative solutions in production processes. The means of survival today is to exploit Information and Communication Technology (ICT) to create differentiation whether on the manufacturing side or in the engineering aspect. TCE is among the very few organisations in the world to have understood this strategy for differentiation and is able to offer Industry 4.0 specific solutions to the world. IIOT platforms are the biggest transformation agents in the engineering sector, worldwide. The general contention is that increased reliability implies increased costs. The transformation that IIOT platforms have brought about is the fact that ensuring reliability does not come with a cost burden. The solar industry stands testimony to this.

TCE, as an engineering consultant, has diversified and evolved, over the decades, keeping up to the changes in the engineering services industry. Where do you see the Company heading from here ?

I envisage TCE as an organisation with huge potential to grow, especially with the kind of engineering talent the Company has nurtured. My vision for TCE is for it to stand for reliability, safety and value for money and these will be the pillars of the Company while delivering efficient service.

The first step towards growth for TCE will be to create innovative delivery models for serving its customers. This can be achieved by tapping into the potential of people and talent, providing an environment for innovation that will propel TCE into a higher growth path in the coming years. The next step would be to help stakeholders create the next practices and not just best practices. The need of the hour is to help stakeholders to innovate and create value for their own stakeholders. Thus, will roll out a value creation cycle. The third step would be to engage with the communities in such a way that we help in building their capability through education and sustainability. This will result in value creation across the economic value chain and turns out as a win-win scenario for all.

Board of Directors and Management Team



Ashok Sethi Chairman

Board of Directors



Anjali Kulkarni Director



Sriram Kadiyala Director



Amit Sharma Managing Director



Sachin Dewasthalee Chief Financial Officer



Kalpana Jaishankar Chief Human Resource Officer



Sachin Mishra Legal & Company Secretary



S. Vidyanand Power



Manoj Kumar Resources – Chemical & Hydrocarbons



P. R. Shahu Digital & Special Projects



Rajat Kaushal International Marketing Group (ROW)



Ashwani Sadhu International Marketing Group (MEA)



Rajashekar Malur Chief Technology Officer



Rajeev Tanna Chief Risk Officer



Board composition until 13.05.2019



S. Padmanabhan Chairman



P. K. Ghose Director



Hema Ravichandar Director



Tapan Choudhury Resources – Mining & Metallurgy



Manmohan Soman Infrastructure Business



K. Ramesh Program Management



Aditya Kumar Mishra Strategy & Planning



Mallika Sriraman Corporate Communication Corporate Administration & CSR



Col. Anurodh Mishra

Subsidiary **Ecofirst Services**

Board of Directors

Amit Sharma Chairman

S. Vidyanand Director

K. Ramesh Director

Executive Management



Chitranjan Kaushik Chief Executive Officer

Corporate Governance

Our Board of Directors and management committee work in tandem to drive the core values that form TCE's guiding philosophy. Our business decisions are taken by the management committee in consultation with the Board. The different Board committees oversee the governance standards followed at TCE and are closely associated with the execution of programmes and initiatives, maintaining the highest standards of ethics and integrity.

Our governance framework





Key Roles of the Board Committees

Key decisions by the Board

Area	Explanation
Leadership accountability	 Legal compliance, audit, accounts and risk management are overseen by the Audit Committees The Company's HR philosophy and practice is reviewed by the Nomination and Remuneration Committee The Company's commitment towards society and as required under the Companies Act, 2013, the CSR spend is overseen and managed by the Corporate Social Responsibility Committee
Strategy accountability	 No. of Board meetings conducted: 6 Attendance: 100% Strategy and action taken is reviewed in the year and performance on key business goals is reviewed annually Achievements and important Company affairs reported to the holding company annually, key account risk review, succession planning and key talent management review, CSR budget approvals, programme review and third-party audit, discussions on Audit Committee reports are part of the review process
Fiscal accountability	 Legal and compliance audit conducted and recorded by the Audit Committee GDPR implementation was also conducted.
Transparency in operations	 Relevant information, including financials, is shared with all stakeholders on a timely basis Information as stipulated by the Companies Act is shared on the Company's website.
Selection of Governance Board members	Being a wholly owned subsidiary of Tata Sons, TCE has adopted the procedure of the Tata Sons Board, which includes- a. Board selection methodology b. Board governance system The Independent Director requirement is done away by the Companies Amendment Act 2017 and the Corporate Governance Guideline is available on the Company website at www.tce.co.in
Independence and effectiveness of internal and external audits	The Company has adopted the policy for rotation of the audit partners. Managing partner dealing with TCE, in both the cases, is changed every five years. Internal audit reports are presented to the Audit Committee and deliberated by the Board.
Protection of stakeholder interests	 Expectations from customers and employees gathered through surveys and other mechanisms for communication/ feedback Feedback is reported to the Board on exception basis Group HR and Legal also communicate with the Company management on policy guideline changes Stringent applications of key policies such as, Code of Professional Ethics Policy, POSH, Whistle Blower Policy, Gift Policy, Corporate Communications Policy During the year, the Company did not issue any equity shares. The Company has neither bought back any of its securities, nor issued any further shares by way of sweat equity and bonus shares. The Company has not provided any Stock Option Scheme to the employees. The Company has complied with the requirement of converting the shares in the DEMAT form
Sustainability and risk management	Two cases were reviewed under the Risk Management Framework and presented in ARC meeting. Formal risk management process implemented at proposal and execution level.
Succession planning	Succession plans for key positions are made and put up to the Nomination and the Remuneration Committee. Management teams are invited to make presentations to the Board on Company matters for assessing Senior Management's performance and capabilities.

Risk Management Overview

TCE has adopted the Enterprise Risk Management process that recognises and seeks to address the key risks at Business Unit (BU) and broader TCE level. Risk process covers bid stage to execution stage for projects, and also evaluates strategic, financial, operational, legal and reputational risks, amongst others. TCE has adopted a business lifecycle approach to manage risks that arise at three key stages - prebid/bid stage, project execution stage and BU / corporate functions / enterprise level.



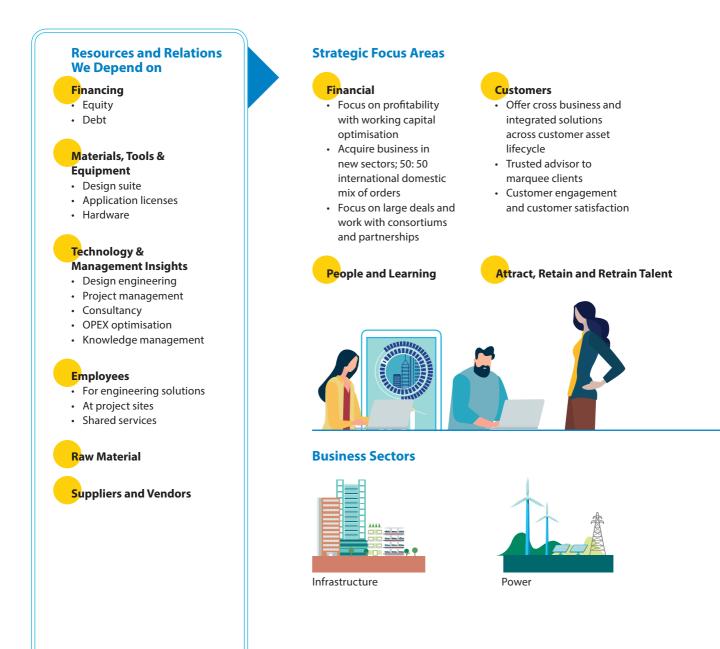
Risk Profiling: Key Risks and How We Mitigate Them

Risk Category	Key Risk Areas	Mitigation Strategies	Capitals Impacted
Economic uncertainties	 Demand for our services is mainly capex based. Sectors in which our clients operate may get impacted by economic downturns, reductions in government or private spending, political uncertainty, etc. Uncertain global economic and political conditions may negatively impact project funding 		٢
Business order booking & revenue flow	 Ambiguity in large order bookings due to a lengthy and complex bidding and selection process, which includes several factors such as market conditions, government and environmental approvals Delay in timing of awards or cancellations of such projects could impact our forecasted results Cash flows from projects can fluctuate significantly over the execution period depending on the timing of contract, financing contingencies, approvals, delays, etc. 	 Develop new key accounts & enter new areas through partnerships, etc. Build customer connect & deepen relationship, for key accounts Ensure right quality and quantity of manpower for achieving project delivery in time and quality Enhanced focus on contract & claims management through review rigour at various levels to ensure project delivery with profitability 	

Risk Category	Key Risk Areas	Mitigation Strategies	Capitals Impacted
Project / cost overrun	 Long project gestation results in costs increase beyond budgeted estimates, project delays and scope creep Impact on profitability due to deficiency in design, unanticipated technical problems, change in design requirement, multiple iterations, vendors' or subcontractors' inability or failure to perform, etc. 	 Proper due diligence during bid time and higher accuracy of manhour estimates for given scope of work especially for large projects having long tenures Follow project and contract management best practices to avoid delays and cost overruns Use of technical tools for efficient project management 	
Manpower resources	 Our business success depends on our ability to hire, retain, and utilise qualified personnel. Need for specially-skilled manpower that is project specific as per the needs of our clients, impacts recruitment turnaround time The uncertainty of our contract award timing poses challenges in manpower planning 	 Multi-pronged strategy with focus on key talent retention and recruitment needs Better and flexible manpower planning practices Source from consultants' pool for specially- skilled manpower 	8 😌
Dependency on few customers	 The loss of or a significant reduction in business from one or a few customers could have a material adverse impact on us Unilateral reduction, delays or cancellation of contracts from longstanding customers and their ecosystem 	dependence or concentration on any single client.	۲
Liabilities	 Impact due to liability as per contract conditions in project execution Exposure to monetary damages, claims or reputation risks due to deficiencies in third-party contractors 	 Adequate professional liability insurance at organisation and project level Proper due diligence at bid time to avoid taking up of large liabilities, compliance to contract requirements and professional best practices 	" 🎨 💽
Locked working capital	 Time lag in project progress or performance milestones vis-a-vis payment receipts from the customer. Delays in payments from clients on the bills submitted 	 Due diligence and factoring in locked capital or cash flow impact Better working capital management and collections in line with contract terms 	
JV / Partnerships	 Inability to fulfill contractual obligations by our JV partners, partnerships and similar arrangements Limited ability to control the actions of our JV partners, including non- performance, default, bankruptcy or legal compliance 	 Proper due diligence of JV partner during pre-bid/ bid stage, esp. on financial ability, experience and track record Strong back-to-back contractual arrangement to share r liabilities and penalties by JV partnership 	i 🍋 🧔
Geopolitical developments	• Exposure to unfavorable political developments and weak foreign economies in the international markets such as changes in foreign government policies, regulations and protectionist measures. Potential non-compliance with regulations and evolving industry standards, renegotiation or nullification of existing contracts, economic instability, currency fluctuations, etc.	 Proper due diligence during bid time in terms of country or location risk. Avoid excessively risky, unsafe, economically unstable geographies Have systems and processes to ensure compliance to all key regulatory, government and contractual compliances, standards, laws, etc. 	
Intellectual Property (IP)	 We protect our IP through contractual arrangements, registration, licensing, etc. Our employees and contractors are subject to confidentiality obligations from client side to protect their IP. We have contractual and other mechanisms in place to deter or prevent misappropriation of confidential information and infringement of IP We may be exposed to such risks including litigations pertaining to scope and protection of IP rights, which could prove to be costly and could adversely impact management's attention and time 	 Strengthen processes, contracts and other mechanisms to safeguard our IP as well as the IP generated during project execution Robust controls and security systems for protection of client IP 	

Value Creation Model

At TCE, creating sustained value for all the stakeholders is at the core of our strategy. Using our resources and relationships and taking actions aligned to our strategic focus areas, we create sustainable long-term value.



Outcomes

- Highest profitability in TCE history of ₹ 106 crore; highest order books of ₹ 1,096 crore
- 45% business from international markets
- 23% of new business from opex services
- Consortium-based approach established : TCE a leader in Smartcities and water projects

Customers

- 20% of business orders through cross selling and offering integrated solutions
- 50% sales revenues from key/strategic accounts
- Customer feedback index at **70%**

Processes

Processes were strengthened through several automation applications for technology (knowledge management), people process, sales & operations. Way of Working (WoW) process was adopted in more sectors. This helped streamline deliveries and improve sales along with longterm relationships with customers

Learning/People

- Focus was on reskilling and training. All-round training was at **13** man-days per employee & technology training was at 4 man-days per employee. Attrition of key talent was curtailed at **8%**. **122 young engineers** were hired from campus and made industry ready through the YEDP
- Safety was a key focus on site and in offices. Safety index was at **4.09** at sites

Responsible Member of Society

- Infrastructure solutions for making tribal villages water positive was successful in the model village. 2 new clusters were adopted to provide water management solutions to benefit about 2,000 people from tribal areas
- Skilling for employment was conducted for **60 students**
- 391 migratory workers' children were provided with bridge schooling
- Health camps covered about 322 people from tribal areas
- Total CSR spends were at ₹ 1.72 crore
- Corporate volunteering clocked 13,154.25 hours

Processes

- Strengthening processes for operational, technology excellence
- Productivity improvement & cost optimisation

Responsible Member of Society



We use our capital inputs to help us carry out activities that align to our vision

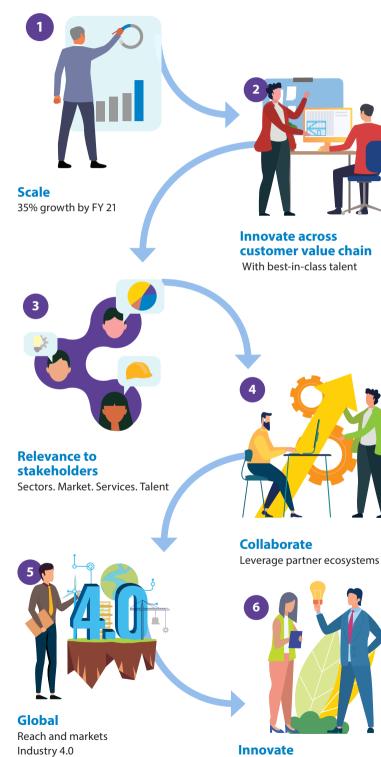


Resources (Hydrocarbons & Chemicals, Mining & Metallurgy)



- Program management
- Digital and advanced
- technologiesEngineering studies,
- design engineering,
- Opex services

Strategic Framework

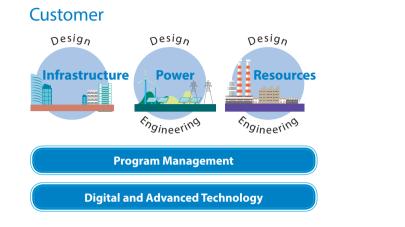


Sustainable solutions Service portfolio Target









Approach

Leverage strengths, minimise risks

Strategic Map

Within ENR 100 rank (w.r.t. revenue from outside home country)

International-domestic revenue mix 50:50 Trusted advisor to strategic clients and preferred partners in their growth business (75/25)

Asset lifecycle footprint of minimum 30% opex

₹ 1,000 crore revenues by 2021 & organically grow to ₹ 2,500 crore by 2026

Leverage strengths, minimise risks Innovate **Relevance to customers** Collaborate scale Scale relevance Global reach Global reach **Digital asset management Urbanisation and MEGA** Cities - smart Infrastructure, Digital engineering for a **Industry 4.0 solutions** smart city, smart grid, smart IIoT : Plant automation / circular and sustainable mobility **IIoT** / asset digitalization economy Innovation in opex and / smart plant capex solutions in line with Clean and green energy and market requirements electrification of everything

Innovate and Scale

Our core strengths lie in our diversified presence, spanning over six decades in providing engineering consultancy services across various sectors, inclusive of Infrastructure (water and urban/build environment), Power (nuclear, other conventional power and energy sources) and Resources (chemical, steel, metal and mining).

Evolving Context

The growth in the infrastructure segment with policy support and investments by the government in smart cities and sewage and water treatment have been very encouraging for our business. With the advent of IIoT and renewed focus of clients on varied engineering services supported by digital technologies, we see a great opportunity associated with opex revenues.

Our focus on opex-based dedicated engineering services for large multinationals across the globe through exclusive delivery centres has been instrumental in reducing revenue volatility associated with capex projects that are inherently vulnerable to macroeconomic and political factors.

23% Of new business from opex services

45% Of business from international markets

- VII

Prepared to Innovate and Scale

There is an onslaught of digital engineering led standardisation, modularisation driving circular and sustainable economy, urbanisation and mega cities, clean and green energy and additive manufacturing, including 3D printing. Our businesses are, therefore, aligned to innovative sustainable solutions and services portfolio and meet customer requirement across the value chain using the best talent in the industry.

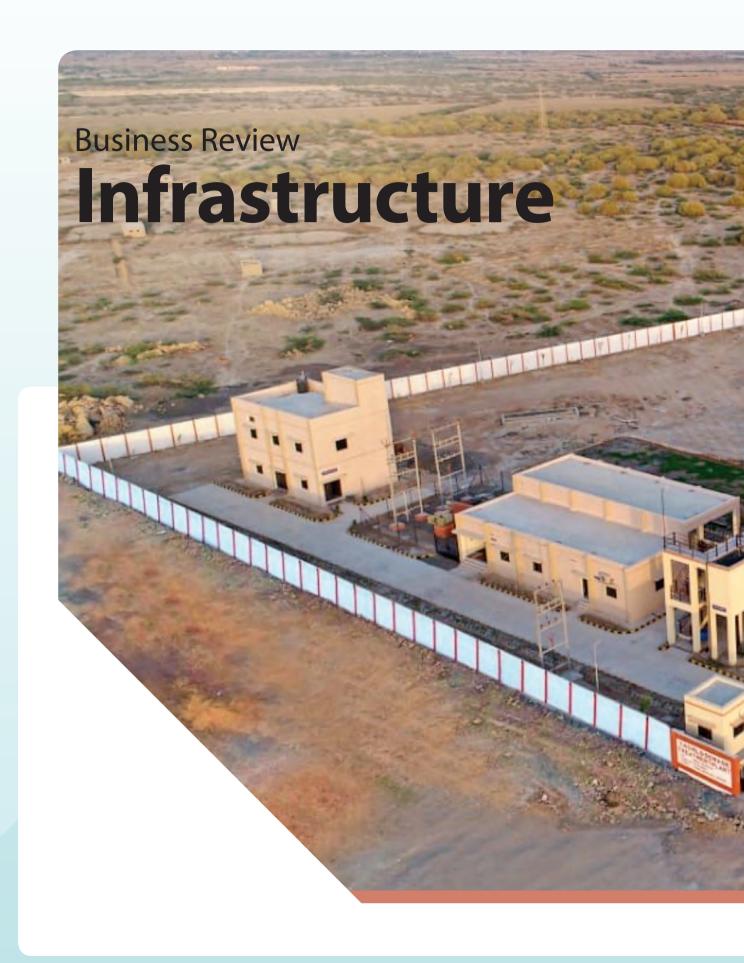
Further, our business strategy is based on the 3S Pillars:

- **Simplicity:** Retaining our core competency of being an advanced engineering solutions provider, a simple global structure and our clear and focussed strategy
- Synergy: Leveraging the Tata group's synergies as the group's engineering and design consultants, building strategic partnerships with global players and a devising collaborative way of working internally
- Scale: Well positioned to enable growth levers for the nation, enable scale aspirations of Tata group's firms and retain leadership in the domestic market

₹**106 C** Highest profitability in TCE history

₹1,096 cr Highest order books

35% Growth targeted by FY 21





Infrastructure

The infrastructure business creates new spaces that benefit the society at large. TCE has successfully managed complex engineering projects across the infrastructure spectrum, securing a high degree of differentiation in building large-scale infrastructure facilities.



Areas of expertise

Water and environment

- Providing water, wastewater and sewage treatment systems, among others, to assist authorities in water conservation and leakage management
- Offering geotechnical investigations and underground design innovations to industries
- Managing environment improvement projects such as heritage conservation,

rainwater harvesting, pollution control, biodiversity conservation, green building solutions

Built environment

- Building a city within a city with complete planning, design and commissioning
- Providing engineering solution for large capacity industrial units and manufacturing facilities
- Developing smart cities that sustainably use resources and catalyse economic growth

Transportation

Creating standalone urban transport infrastructure, including airports, rail systems and ports planning, development and commissioning; as well as connecting tech cities and large SEZ spaces

Key trends shaping the global industry

Urbanisation: By 2030, 66% people will live in cities and there will be increased emphasis on smarter infrastructures, smarter cities and smarter grids. The pace of urbanisation will be faster in developing economies. Focus on the needs of the urban market will enhance, meriting the creation for new urban entities as well the oversight of a holistic integrated planner. The Indian demand for infrastructure development is in the government's 100 smart city development and the brownfield upgrade of smaller cities under the AMRUT projects.

Climate change: The rise in global warming and climate change concerns translates into extreme weather events and high level of water stress. There is a growing demand around identifying alternate water sources, efficient distribution of quality water in towns and cities. The degree of privatisation in the water industry will expand, with a wide range of opportunities, for smart water management, alternative water sources (desalinisation) market and water reuse/recycling, along with irrigation and rivers.

Mobility: As the population growth surges forward, hand in hand with urbanisation and industrialisation, more efficient transportation services are in high demand, particularly mass commuting services both within and between cities. Smart mobility is the focus, with a greater demand for efficient public transport driven by clean technologies. Urban rail services (metro/ mono), high-speed rail and super-fast hyperloop train technologies, as well as fossil fuels alternatives to power transportation, are areas of opportunities. Notably, electric vehicles are projected to usher in the next phase of the transport sector's evolution. The onus is on developing transport infrastructure that is based on renewable energy sources.

Digital engineering and digital tools: Creation and management of assets using digital tools, together with the interfacing and collaboration of physical and digital assets. Building Information Modelling (BIM) is expected to gain ground, as a reliable, shared knowledge resource for information and decision-making. TCE delivers most of its infrastructure engineering on digital suites.

Key trends shaping the domestic market

- At 6.8% of GDP growth, India is one of the fastest-growing large economies
- India is projected to require US\$ 4.5 trillion worth of investment in its infrastructure, by 2040, to sustain its pace of economic growth
- The world's 10 fastest-growing cities are located in India
- Unmet water demand, by 2030, will be twice the available supply
- 10 high-speed corridors, spanning 6,000 km and requiring ₹ 10 lakh crore for the next 15 years are in the works
- 1,000 km of metro rail, with increasing density in existing cities, is planned across 20 cities in the next six years
- Port development is expected to see an investment of ₹ 57,000 crore in the next three years

TCE's Infrastructure BUs are consultants for an ambitious waste-to-energy project in Mumbai that is designed to process 3,000 TPD waste to convert to 25-30 MWe energy. The successful completion of this large-scale project is expected to serve as a blueprint for India's waste management process going forward.

Expanding horizons and opportunities

The infrastructure sector will continue to evolve, integrating various industries, rather than simply focusing on installation and services. To stay relevant amid a rapidly changing world, TCE will leverage its innovation excellence and project expertise to scale new heights and establish enduring relationships. In India each year, the addressable consulting market is delineated here.

Going forward, TCE will participate in the urban rejuvenation programme; reinforce the water management vertical, expand presence in metro rail services, ports, river interlinkages and transportation; and explore partnership / collaboration opportunities for high- speed rail networks.

Business Review **Power**





Power

TCE's Power business is a market leader in providing value-added concept to commissioning services in Power generation (Thermal, Nuclear, Renewable, Hydro), T&D. With changing requirements, the Power business also provides opex services such as modernisation, plant upgrades, asset lifecycle management, etc. Having made its mark in engineering and project management of various thermal power plants across the global, TCE's Power business has stayed relevant by adapting to the changing needs of more greener and environmental-friendly power plants. Also, the business has leveraged several super-critical, large MW plants globally. The business has stayed relevant and leveraged opportunities in modular plant design, helping large OEMs and Engineering, Procurement and Construction (EPC) players reduce time to market with modularised and standardised solutions.

The Power BU is responsible for about 6,780 MWe total nuclear power installed capacity and 4,300 MWe of nuclear power currently being generated in India

Exploring new avenues in smart grids, smart energy, smart metering, scada, renewable and clean energy generation, interchange storage and distribution, Storage to be first distribution & storage

More than five decades of experience in providing 'concept to commissioning' value-added engineering services



Areas of expertise

- Thermal energy: Coal, gas, captive and cogeneration
- Nuclear energy: Power generation, fuel fabrication, fuel reprocessing, waste disposal
- Renewable energy: Solar, wind, biomass, hybrid, battery energy storage and waste-to-energy
- Hydro power: Small, medium and large
- T&D: Transmission lines, substation, distribution and system studies
- Opex services: Plant renovation, modernisation and performance improvement projects and various Industry 4.0 solutions in existing facilities

Key trends shaping the global industry

- Solving the trilemma of energy security, energy equity and environment sustainability underscores the transformation in the sector
- In tandem with the pace of economic development, demand for power is growing at an accelerated rate in developing economies, as compared with the advanced countries where energy efficiency gains offset the growth in demand
- Gas-based power and renewable energy and hydro energy sources and nuclear power are poised to provide sustainable form of power generation
- There is increasing investment in T&D to strengthen connectivity
- Digitalisation of power plants and electricity networks, with a closer integration of supply and demand, are driven by Industry 4.0 technologies
- OEMs and EPCs focus on standardisation, modularisation and reuse to gain competitive advantage and reduce time to market

Key trends shaping the domestic market

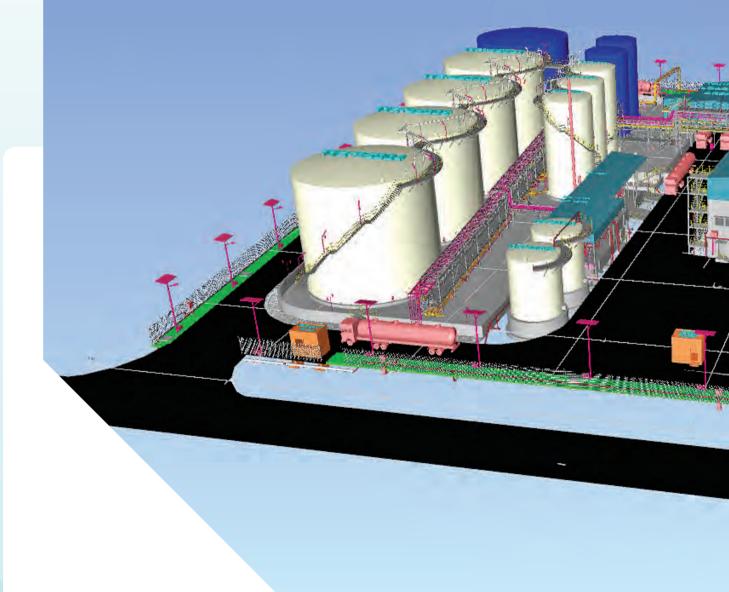
- Projected capacity addition of 300 GW in the next five years with a greater thrust on energy conservation and efficiency
- Greater stress on nuclear energy and renewable sources of power generation.
 75% of capacity addition is likely to be met through green sources (solar, wind, hydro, nuclear and waste-to-energy)
- 'Power for all' initiative translating into a higher investment in T&D corridors, rural electrification, microgrid and smart metering
- Deriving greater value from existing assets through digitalisation, Internetof-Things, smart grid and prudent asset performance management
- Retrofit of emission controls and Flue Gas Desulphurisation (FGD) systems (where feasible) in existing coal-based thermal power plants and the implementation of other compliance norms to conserve water and generate clean energy

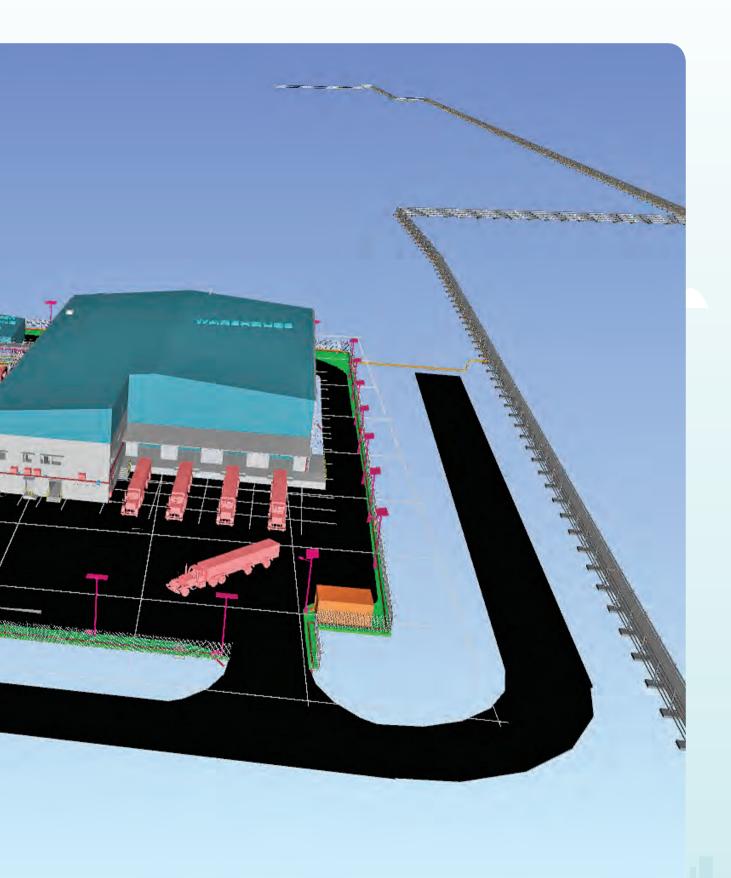


Going the extra mile

In response to the emerging trends, TCE is stepping up its core service offerings in the Power business, reinforcing its strengths and judiciously pursuing the opportunities presented by the Industry 4.0 revolution. TCE will expand its customised requirement-based solution offerings by partnering with marquee clients. TCE also focuses on digitalisation and IIoT services relevant to the Power business and opex services for plant upgrades and asset lifecycle management. As renewables come of age, TCE is moving towards offerings across solar and wind energy and energy storage technologies for electric the vehicle industry.

Business Review Resources





Resources

TCE's Resources sector has a track record of providing comprehensive engineering services from concept to commissioning. This translates to consistently delivering smart engineering solutions for its customers across the value chain.



The HCBU provides comprehensive EPCM services to clients in the fields of oil, gas and refineries, petrochemicals, fertilisers, chemicals, speciality chemicals, cement, food & pharmaceuticals, glass, tyres and allied industries

Opportunities and growth plans

The HCBU envisages growth opportunities in the Indian markets fuelled by high consumption. Large investments are expected in the refinery sector, petrochemicals, LNG regasification terminals and speciality chemical sectors. In the international markets, growth opportunities lie in digitalisation and asset sweating driven by customer needs for efficiency improvements and tighter emission controls.

India's refining capacity is planned to be increased from 230 MMTPA to 440 MMTPA by 2030. All the refineries are now integrated with downstream petrochemical complexes to improve ROI and also to cater to the increasing demands of plastic polymers in the domestic market. Apart from the capex projects in the domestic market, TCE expects to have good opportunities in the international market for the following types of projects:

• Plant upgrades, automation and revamps

- Asset integrity management
- Efficiency improvement and debottlenecking projects

Globally, the increasing need for green technologies is spurring growth in the sector. TCE sees opportunities in bio ethanol and bio CNG investments in India and requirements for engineering solutions arising from stricter environmental norms requiring plant revamps.

The HCBU is well poised to leverage these opportunities with a healthy mix of domestic and international clients.

This strategy is expected to help the sector maintain its growth momentum in the coming years. FY 19 saw the strengthening of TCE's relationships with marquee clients and more such long-term engagements in the pipeline.

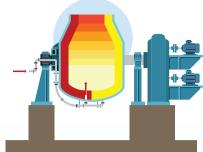


Mining & Metallurgy



12% Contribution to order books



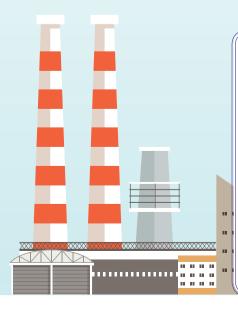


Areas of expertise

With more than 12 years of expertise in the Mining & Mettalurgy sector, TCE provides engineering solutions across the value chain in iron, steel, coal and base metals. The Company focusses on ferrous and non-ferrous metals in the areas of process metallurgy, material handling, iron making, coke making, steel making, ferro alloys and rolling mills. The focus areas in the mining sector are geology and mine planning, mineral processing and beneficiation, and material handling.

Areas of expertise

- Design engineering, EPCM and commissioning services
- Process
- Asset health assessment and improvements
- Layout and logistics
- Sustainability
- Slime management
- Portfolio management
- Digitalisation
- Operational advisory



Key trends shaping the market

- Globally, consumption growth is on the fast track and investments in core facilities are expected to pick up pace, in emerging markets. India, in particular, will see huge investments over the next decade, as it builds core infrastructure to cope with the demand surge. The steel, zinc, copper and aluminium sectors are expected to see growth due to increased investments
- Disruptive technologies have given impetus to new and emerging raw materials. Solar, renewable energy generation and electric vehicles are the prime drivers for these raw materials.
 Emerging metals that are raw materials for the e-mobility segment such as rare earths, lithium, nickel and cobalt are expected to see new investments.
 The world is transitioning to the concept of 'circular economy', encouraging a sustainable mine-to-metal process through the entire value chain
- Within India, the opportunities in iron and steel making lie in low- grade ore

beneficiation, rebuilding and replacement, capacity additions and asset-related opex services There is a huge demand for plant upgrades along the metals value chain, asset integrity management, process efficiency improvements and debottlenecking

• Stricter environmental norms to restrict plant emissions and incentives to revamp plant assets and optimise production

Growing demand across infrastructure, oil and gas and automobile sectors, is catalysing the demand for metals. TCE is exploring capacity expansion opportunities in growth metals (Aluminium, Copper and Zinc) in the domestic market and leveraging strategic partnerships to elevate consulting, benchmarking and optimisation of service offerings. Digitalisation continues to be the overarching theme to many of TCE's initiatives. TCE has a first-mover advantage in advanced process simulation and analytics. Combined with IIoT engineering and digitalisation will be the way forward for TCE's growth in the sector.

The most unique turnaround for a zinc mine in Gamsberg

The world largest single-stream zinc concentrator was inaugurated in February 2019 by the South African President, Cyril Ramaphosa. TCE reached yet another milestone in a complex project, managing it from concept to commissioning.

The zinc mine in Gamsberg, was defunct for 40 years. TCE's initial Definitive Feasibility Study provided solutions to make this mine profitable. The zinc mine in Gamsberg was not considered a viable project due to the high amount of manganese embedded in ore and associated complications for zinc beneficiation. TCE was involved in the project since 2013 in carrying out numerous investigations of the various possible beneficiation techniques. TCE has made the project viable by adopting phased approach for the project, campaign processing philosophy including modification in concentrator and state of the art floatation cells and introduction of commercial production of lead resulting in additional value. The entire project was managed on 3D/4D engineering platforms.

This is a world-class project and a first of its kind that TCE has successfully helped to commission.

Business Review Programme Management



Programme Management

The Programme Management Business Unit (PNBU) serves as a horizontal service line for infrastructure, power and resources sectors. The offerings span EPCM services, project management, commissioning support, engineering programme management and planning, and quality, inspection and equipment management.



Key market trends

Investments and growth across key sectors where TCE is present in, such as, infrastructure, minerals and metallurgy, chemicals and hydrocarbons, and power, promises growth opportunities for the PMBU. Each of these sectors are integral to the nation's economic progress and TCE's PMBU is a lead player in India and is well positioned to leverage its competitive strengths The projected CAGR for the infrastructure, power and Process industries is in the range of 21-25%. The PMBU is a key player in the customer value-chain across the sectors that TCE is present in, serving as a key link to complete the clients' requirements from concept to commissioning. This offers good growth potential for the BU.

TCE has invested heavily in digital engineering tools to serve the requirements of clients adopting Industry 4.0 technologies. Construction management services can provide tremendous value additions and cost efficiencies through digitalisation. TCE's focus will be on digitalisation using 3D-5D technologies. This will help critical decision-making in a simulated environment and increase construction efficiencies.

Safety services is a key focus for the PMBU. TCE, in its efforts to digitise processes, has introduced a safety portal called 'Suraksha'. It provides access to PMBU engineers and other staff across TCE sites for knowledge and sharing of best practice. TCE will continue to adopt new technologies and work with partners to leverage capabilities and provide value to customers. Moving in this direction, smart construction management practices combining digital tools and engineering expertise is the unique value proposition that TCE has to offer its customers.



Business Review Digital and Advanced Advanced Digital of the second second

Digital and Advanced Technologies

The Digital and Advanced Technologies business is a horizontal business unit that provides services in Digitisation, Asset Information Modeling, Industrial Internet of Things, Product Engineering and Special Projects and also Technology with IIoT that supports other business units of TCE, including Infrastructure, Power and Resources. This BU helps convergence of information and operation with the Industrial Internet of Things (IIoT).

This convergence helps bring in predictability, cost efficiency, speed and value engineering in the conventional capital projects, as well as in the operational sustenance activities of TCE's clients. The key service offerings of this unit include digital services and product engineering. TCE provides end-to-end advisory, implementation services for digitisation and advanced asset

Key market trends

Internationally, investments are growing at a rapid pace in digital solutions for the engineering and construction industry. Moreover, the emerging digital solutions are adjacent to TCE's core competencies.

Some of the transformative digital technologies that are disrupting the engineering and construction sector include, pre-fabrication and modular construction, advanced building materials, 3D printing and additive manufacturing, autonomous construction, augmented reality and virtualisation, big data and predictive analysis, wireless monitoring and connected equipment, cloud and real-time collaboration and BIM.



Scaling up

In line with the key trends, going forward, we plan to build our business on IIoT, FEA and BIM. We also aim to grow our asset digitisation business and are focused on building an internal centre of excellence for digital engineering.

In the process, TCE will also be focused on building the partner ecosystem with software OEMs, IIoT service providers, analytics solutions providers and other outsourcing partners.

management for industrial plants and systems across sectors

As part of the digital services, TCE's offerings include 3D modelling, 4D simulation, asset digitalisation, asset information modeling, engineering IT services, IIoT and Building Information Modelling (BIM) services.

Product engineering offerings include, new machine development, design validation, Finite Element (FE) analysis, machine localisation, machine component development and special projects. TCE has also made its mark in one-of-a-kind product engineering service provider and is a proud partner to India's satellite launch and space programme.

Talent Management

At TCE, we believe our people are our most important differentiating factor and it is their hard work, determination and passion that enable us to deliver successful projects time and again. We offer a conducive work environment that nurtures talent and prioritises the safety of our people. With a culture steeped in learning, we offer ample skilling and reskilling opportunities.

We are confident that these steps help us create an engaging and positive workplace, provide opportunities to reward and recognise talent, and help deliver differentiated services to our clients. Our business facilitates teamwork and we encourage collaboration and facilitate knowledge management. We use various tools and platforms to help us collaborate with remote teams smoothly and build engagement.

During FY 19, we progressed towards infusing new talent in our team, besides reskilling engineers across our BUs, with training in advanced engineering applications to cater to digital engineering delivery mechanisms.





Recruitment

We hire fresh graduates and postgraduates as part of campus hiring from top-notch engineering colleges across India. We also engage in lateral hiring, along with strategic hiring and the pre-onboarding phase is managed digitally through TalBoard for these experienced candidates.

Orientation

We have structured induction programmes for recruits at TCE, whether freshers or experienced:

Young Engineers Development Programme (YEDP): We have a methodical benchmarked process for training graduate/postgraduate hires through our 12-month training programme, YEDP, aimed at making them outcome-focused within five months. The Programme enjoys good traction in campuses. YEDP trainees receive 3D tools training and their final project comprises preparing designs using a 3D-platform.

In Touch: All lateral hires undergo the In Touch programme. It focuses on providing them an overview of TCE; values; information about our various businesses and functions, including safety, quality, business-enabling functions; and a project-specific induction. Additionally, each recruit is assigned a 'buddy' who helps them assimilate with our culture. It orients new hires and improves their overall first experience in the organisation.

Retention

Our employee retention architecture rests on the robust pillars of talent management, talent development, career management and rewards and recognitions programmes.

Individual Development Plans (IDPs): We develop leaders at strategic and tactical levels to prepare for changing capability and capacity needs through this programme. We ensure that we create talent pools with industry-specific domain knowledge at each BU, which provides agility to manage growth. Additionally, we focus on cross-skill training and retraining to help our people acquire new competencies across technologies, roles and functions. At the project level, workforce continuity is facilitated through identification of back-ups for key roles and a structured handover process.

> We ensure that we create talent pools with industry-specific domain knowledge at each BU, which provides agility to manage growth.

Training, Learning and Reskilling

We nurture our people and train them on behavioural, procedural and competency-related skills through various structured programmes. By mapping the skills of our teammates, we ascertain their current skills and skill gaps, on which they are mentored and trained.

We offer e-learning for increasing international cultural sensitivity and project management skills among our people. The training and development interventions (other than induction programmes) are grouped under:

- Continuing education
- · Leadership development
- Strategic developmental initiatives identified to align with short and long-term goals

Individual training: Individual training needs are identified at the time of appraisals, wherein appraisers identify programmes based on the aspirational competencies of the person and competency gaps. Thereafter, individual learning plans are created under SMILE/ Skillport for soft skills.

Technical learning: After the appraisal process, the HR manager prepares a list of consolidated training needs, derived from the appraisal process, with the BU Training Managers (BUTMs) who incorporate them in their annual training plans.

Behavioural training: The HR department plans these soft skills training programme. Customer-focused training needs are included in the annual training plan of every person onboard.

Talent Management continued...

We encourage our people to upload their value additions and innovations in the intranet and participate in contests such as Tata Innovista. We also inspire them to participate in seminars, paper presentations and publications, sharing of case studies through Job Completion Reports (JCRs), knowledge sharing sessions and others that help in internalising key learnings. Innovative ideas are shared across, the board, motivating others to think out of the box. Employees are encouraged to share improvement ideas through iThink and Reflexions.

Safety and Health

We have a formal Safety, Health and Environment policy that acts as a guideline in ensuring the health and safety of our people. Besides, ISO 9001 audits, TBEM (Tata Business Excellence Model) assessment feedback, ICSS feedback and periodic checks by the concerned authorities provide inputs for designing/improving these processes.

Engagement

Our employee engagement model at TCE drives 'Affinity - Satisfaction' dynamics. People engagement is driven through various initiatives townhalls, channel of informal communications, formal briefings and updates, etc. Several activities are conducted to keep the youthful spirit of the organisation.

Communication

We concentrate on enhancing a two-way communication process. We use townhalls, communication meetings, intranet portal and our in-house magazine — TCExpression — for key communication. Our senior leadership members also interact informally with our teams to inform them about organisational developments and the market conditions. We have provided a designated email for encouraging our people to send in their queries. TECH Speak — a blog — that is available on the company website, Tech Tweets — a mailer — and a knowledge management portal promotes two-way communication on relevant technology topics.

Motivation

We have several awards such as the Value Awards (announced twice a year) and iThink Awards that recognise contributions on ideas toward the growth of the organisation and provide suitable rewards.

Another people engagement programme is -

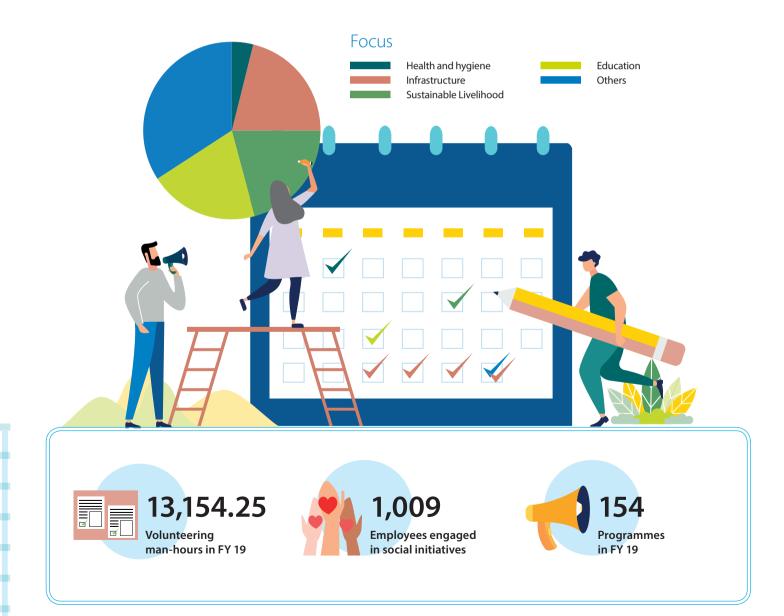
 WE-Connect: Our managers conduct informal assessment of employee satisfaction through frequent interactions with them while managing the day-to-day affairs. Additionally, the location HR also assesses employees' satisfaction rate through this programme.





Corporate Social Responsibility

Powered by our different flagship programmes, along with various volunteering initiatives, we are delivering on our social responsibility. Our Corporate Sustainability Policy framework offers the foundation to build our social well-being programmes by leveraging our core capabilities. Our primary focus areas are: Infrastructure, Sustainable livelihood, Health and hygiene, Education and others.



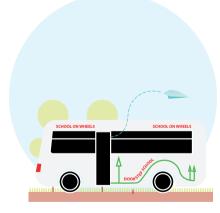
Corporate Social Responsibility continued...

Sustainable Livelihood

We strive to improve the quality of life for the most economically and socially backward communities. Our programme on sustainable livelihood covers scheduled tribes in Khoripada, Malghar and Dapti villages of Jawhar district. Till date, the programme has benefitted about 2,350 people from tribal areas.

Jawhar Sustainable Livelihood Programme

Our floriculture and horticulture programmes have helped double the income of 350 tribals, with successful rainwater harvesting, farm ponds and solar panels to pump and irrigate water. To ensure the benefits of the Programme reach more people, we are scaling the programme to include new clusters to benefit 2,000+ tribals in the region.







Education

We believe education is the tool that sharpens the mind and facilitates the ability to discern. This belief has led us to come up with a two initiatives to bring education to children from economically backward homes:

 School on Wheels: A bus remodeled into a classroom visits three sites to school migratory workers' children. The programme commenced with the enrollment of 75 students who were trained every day. This serves as a bridge school for the children, who have no access to education and also helps them with remedial classes. The School on Wheels also serves as a mobile library

The programme was scaled to include more students by incorporating a fixed education centre near the site. Since its inception in 2016, a total of 665 students have enrolled and 61 students have successfully joined mainstream schools. The total number of students who joined schools in FY 19 was 367.

• Skill building for students in night schools: We organise job-oriented training for night school students. Sixty students enrolled in IT-related courses, which increases their chances of employability. The programme aims to ensure placement for at least 70% of these students

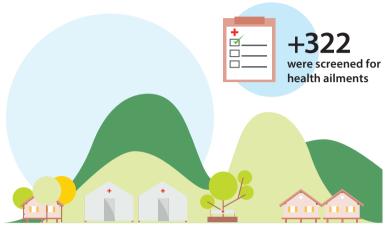


Provided engineering services to develop school infrastructure solutions for a client in the mining community

Infrastructure

Creating infrastructure for underprivileged communities enhances their quality of life. We are focused on contributing towards this goal by leveraging our core strengths. During FY 19, we provided engineering services to develop school infrastructure solutions, working with clients, NGOs and the Tata group.

- We are working with the Tata Relief Committee in the disaster-struck area of Uttarakhand by providing engineering services for rehabilitation of schools, educational institutes and women's weaving centre
- Swachh Bharat toilet construction in rural Gujarat
- Engineering solutions to hone the skills of special people and renovation of schools for children from the underprivileged community
- Engineering services for rebuilding a school to benefit children from the mining community



Environmental Sustainability

We make every effort to cut down the use of resources such as water, paper and energy by using more efficient equipment. We are also trying to diminish our carbon footprint by reducing travel and paper use and using digital modes of communications, IT applications and internet technologies. We manage our electronic wastes through recycling. As a consultant, we take on the moral responsibility of providing sustainable solutions to customers who are conscious of their carbon foot print.

Health and Hygiene

Health and hygiene of a community is the indicator of its development. In the tribal belt, lack of water and absence of sustainable income have resulted in malnutrition and hygiene issues. Our services include awareness on health and hygiene, and support for vegetable farming to address nutrition deficiency among the people.

- Healthcare in model village: We provide healthcare services such as health screening, diagnostics and treatment in the tribal village. During the year under review, ~322 people were screened for health ailments in two health camps and 71 people were checked in an eye camp. We also organised advanced diagnostics and treatments.
- Swachh Bharat Mission: We wholeheartedly support the national cleanliness drive, Swachh Bharat Mission. Across locations, our volunteers engage with communities to create awareness on waste segregation, efficient waste management, beach and lake cleaning, etc.

Employee Volunteering

Our corporate volunteering efforts cover varied initiatives across locations.

Health and hygiene

- 1. Blood donation
- 2. Cleanliness drive
- 3. Tree plantation
- 4. Awareness sessions on health and hygiene

• Education

- 1. Youth employability programmes
- 2. Awareness session in schools
- 3. Remedial classes for underprivileged students
- 4. Educational activities for special kids

Other activities

- 1. Kids' activities in orphanages, municipal schools, etc.
- 2. Care of inmates in old-age homes

Corporate Information

OFFICES AND ADDRESES

Registered office

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

Corporate Office

Unit No. NB 1502 & SB 1501, 15th Floor, Empire Tower, Cloud City Campus, Opp. Reliable Tech Park, Thane-Belapur Road, Airoli, Navi Mumbai - 400 708

BRANCH – DOMESTIC

Bengaluru Sheriff Centre, 73/1, St. Marks Road, Bengaluru - 560 001 Janardhan Towers, 133/2 Residency Road, Bengaluru - 560 025

Pune

Sai Trinity, Central Wing, S. No. 146/1/28, Pashan, Pune - 411 021

Delhi (NCR Region)

Green Boulevard, Ground Floor, Tower B & C, Plot no - 89A, Sector 62, Noida - 201 301

Jamshedpur

Pipeline Road, Sakchi, Jamshedpur - 831 001

Kolkata

52

JC 30/A; Sector III, Salt Lake, Kolkata - 700 106

PROJECT OFFICE

Gujarat

1st Floor, Project Office No. 106-109B, Atria Complex, KH-0 Sargasan Cross Road, Gandhinagar - 382 421

Chennai

First Floor, TVK Buildings, Old No 38, New No 52, Eswarankoil Lane, Alandur, Chennai - 600 016

SUBSIDIARIES

Mumbai

Ecofirst Services Limited Unit No. NB 1502 & SB 1501, 15th Floor, Empire Tower, Cloud City Campus, Opp. Reliable Tech Park, Thane-Belapur Road, Airoli, Navi Mumbai - 400 708

TCE South Africa Subsidiary

TCE South Africa (Pty) Limited, IQ Business Park Number 3, 3RD Avenue, Rivonia, Gauteng - 2128

OVERSEAS OFFICES

US-New Jersey Branch office Suite 301, 100 Enterprise Drive, Rockaway, New Jersey - 07866, USA

Abu Dhabi Branch Office P. O. Box 62990, Abu Dhabi,

United Arab Emirates (UAE)

Nepal Branch – Liasion Office Ward 10 Gangapdevi Marg, Budhnagar, Kathmandu, Nepal

Kenya Branch - Liasion Office

D-8 Krishna Centre, Woodvale Grove Road, P. O. Box 13746 00800, Westlands Nairobi Kenya

The Netherlands Branch Office

C/o Vistra Amsterdam, Atrium Building, 8th Floor, Strawinskylaan 3127, 1077 ZX, Amsterdam

BANKERS

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

AUDITORS

B S R & Co. LLP, Chartered Accountants (Statutory Auditors) Ernst & Young LLP (Internal Auditors) Robert Pavrey & Associates ,Company Secretaries (Secretarial Auditors)

DIRECTORS

Mr. Ashok Sethi Ms. Anjali Kulkarni Mr. Sriram Kadiyala Mr. Amit Sharma





TCE Corporate Communications

Corporate Office:

Unit No NB 1502 & SB -1501, 15th floor, Empire Tower, Cloud City Campus, Opposite Reliable Tech Park, Thane Belapur Road Airoli, Navi Mumbai – 400 708

mail@tce.co.in | www.tce.co.in CIN No.: U74210MH1999PLC123010

Registered Office

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