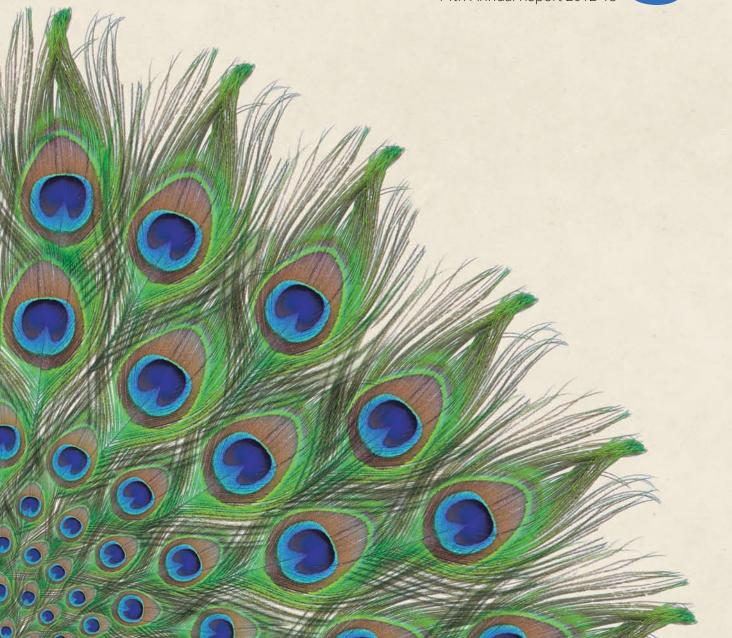


TATA CONSULTING ENGINEERS LIMITED





TATA CONSULTING ENGINEERS LIMITED

14th Annual Report 2012-13

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

of 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.

Spreading wings

The Golden Spiral or the Fibonacci ratio is applied in the engineering designs of some great structures, both natural and man-made. Fractal geometry is the basis for some of the most beautiful designs in nature. The complex array of design and process engineering makes the peacock's feathers an intelligent design marvel. The eye of the feather is an example of precision in pattern design. Its colours are iridescent, creating an optical illusion due to thin-film interference. The only pigment is a brown colour.

Complex engineering apart, the peacock represents intelligence, prestige and prosperity. This is partly what we are and partly what we aspire to be.

Tata Consulting Engineers Limited takes inspiration in the wonders of engineering. We spread our wings to grow and our growth is patterned and engineered.

*The 1st Annual Report was published in March 2000 when Tata Consulting Engineers Limited became a wholly-owned subsidiary of Tata Soris Ltd.

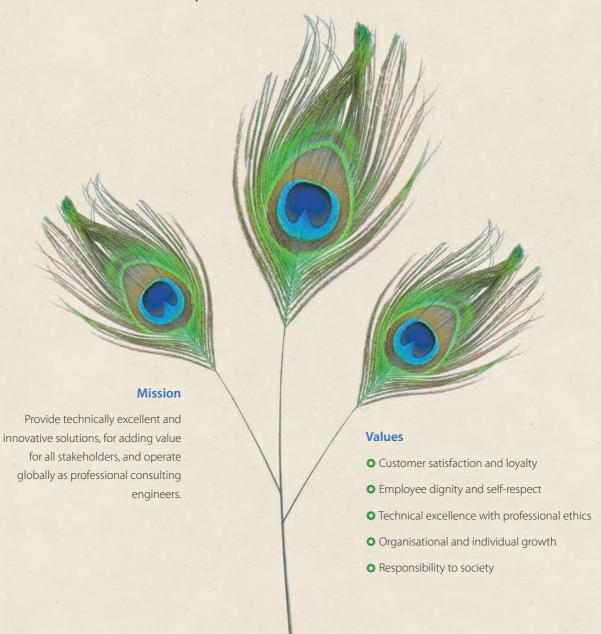
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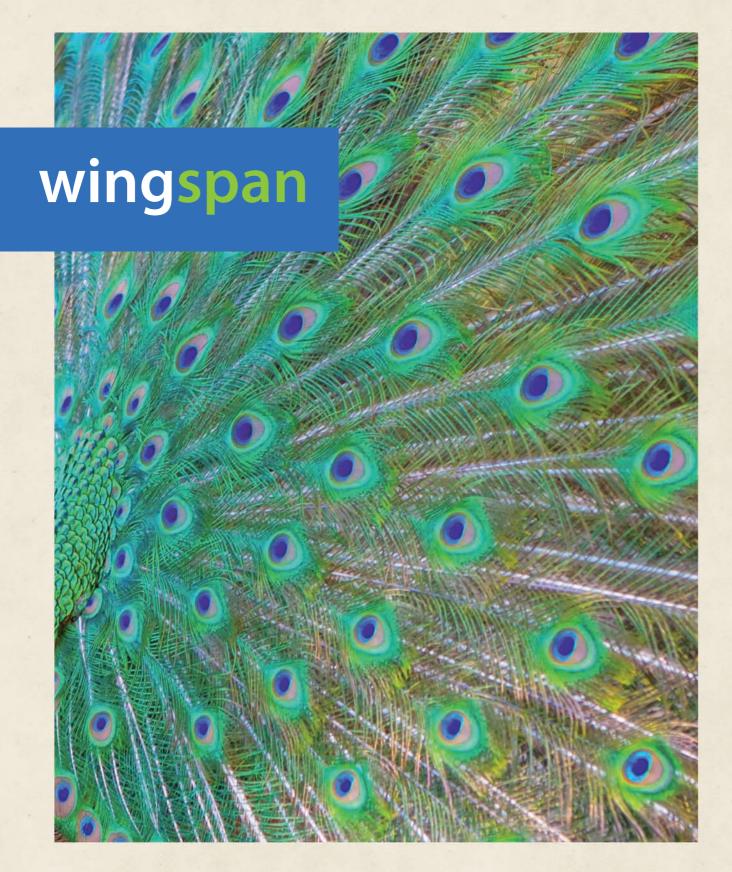
**Special Report of the Principal Principal Report of the Principal Report of t



Vision

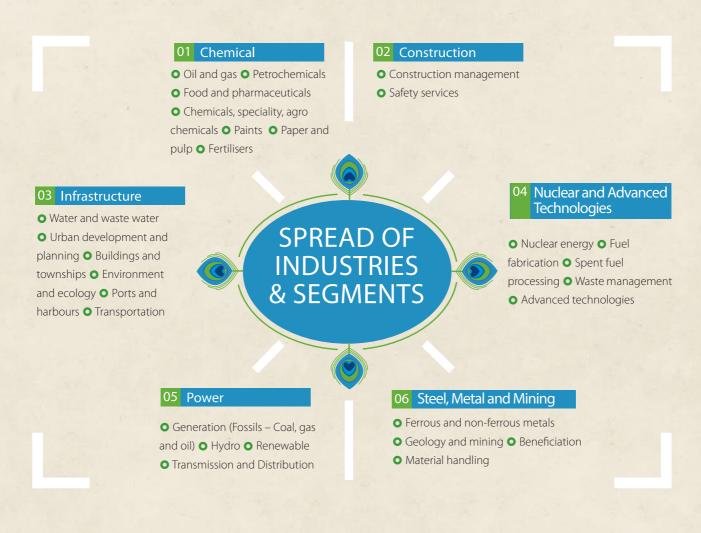
To be an internationally respected engineering consultant offering comprehensive solutions

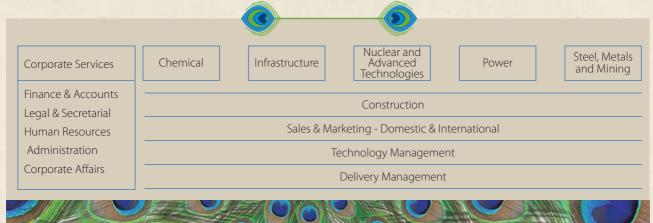






BUSINESS STRUCTURE





EVENTS THAT TOOK WINGS 2012 -13

Alliances and acquisitions



Acquisition of Ecofirst Services

Private Limited – Ecofirst is a total
sustainability solutions provider for the
built environment. This acquisition will
strengthen the sustainability offerings
of Tata Consulting Engineers.

Agreement with Dassault Systemes'

– Synergising of Tata Consulting
Engineers' process expertise and
Dassault Systemes' 3DS virtual
modeling tools to provide technologyenabled services on a simulated
platform to customers.

Collaboration and teaming agreements with government, private organisations, EPC firms for joint business services in domestic and international markets.

Certification



Accreditation for Environmental Impact
Assessment(EIA) by Quality Council of
India/ NABET for several verticals.

Landmark business development

PMC services for the largest fertiliser plant valued at USD 1.9 billion in Nigeria.

Successful commissioning of hydro power plant in Buseruka that will light up several homes in the districts of Uganda.

Commissioning of coke oven Battery # 10 and By Product Plant in Jamshedpur.

SPREAD OF SERVICES

Engineering consultancy

- Feasibility studies
- Pre-project reports and technical studies
- Design engineering
- Detailed engineering
- Environment impact assessment
- Sustainability and green technology solutions

Project management consultancy

- EPCM services
- Project management and supervision
- Equipment management
- Commissioning support
- Inspection and expediting services

Construction management consultancy

- Construction management
- Safety management



AWARDS

44th EEPC Award for Export Excellence -Adjudged Star Performer for the year 2011-12

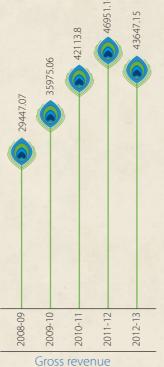


Global Platts Energy Award 2012 -Finalists and ranked among the world's top 12 premium projects in the category 'Premier Project Award - Engineering'

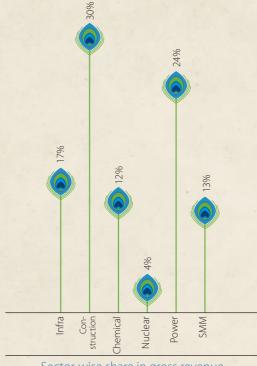
MPS Fossil Power Innovation Award 2012 for Ultra Mega Power Plant

Tata Innovista 2013 – Core Process Innovation Award jointly presented to TCE and Tata Power

FINANCIAL SNAPSHOT



(including other income) ₹ lakh



Sector-wise share in gross revenue

BOARD OF DIRECTORS

R P Singh Vice Chairman

Prasad Menon Chairman

A P Mull Director

A K Vora Director



F N Subedar Director

S Padmanabhan Director

J P Haran Managing Director

Amit Sharma Executive Director&C OO



SUBSIDIARIES

Ecofirst Services Private Limited

BOARD OF DIRECTORS

F N Subedar, Chairman J P Haran, Director I Amit Sharma, Director

EXECUTIVE MANAGEMENT

Chitranjan Kaushik, Chief Operating Officer

TCE QSTP LLC

BOARD OF DIRECTORS

Prasad Menon, Chairman A P Mull, Director J P Haran, Director



SENIOR MANAGEMENT TEAM

Risheshwar Prasad Senior VP, Finance & Accounts

Dhananjay M Dave International Marketing Group

K Gopalakrishnan VP, Legal & Secretarial

Anjan BhattacharyaDeputy CTO

D H Savarkar VP, Human Resources



Vikram Bapat Head, Infrastructure

M V Soman Head, Nuclear & Advanced Technologies

A S Prabhudesai Head,C onstruction

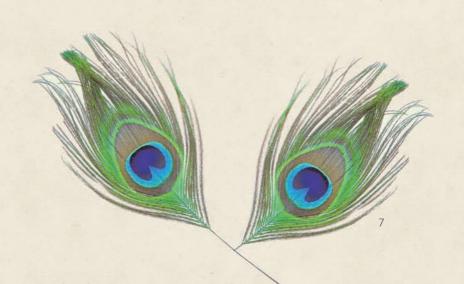
B M Nichat Head,C hemical

Dr Tapan Choudhury Head, Steel Metals & Mining

Mohan Murthy Head, Power











CHAIRMAN'S STATEMENT

Dear fellow Stakeholders,

Setting the direction and paving the way for new beginnings, calls to mind the words of Abraham Lincoln: "The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew and act anew." This statement is most apt in present times.

Tata Consulting Engineers set the goal a year ago:

- To be positioned as a top notch, global engineering solutions provider, and
- Scale up international presence to be the preferred consultant of global organisations

The rationale to this vision and strategy for growth is that in 50 years of existence, Tata Consulting Engineers has built huge technological capabilities in complex engineering solutions. It is now time to spread wings, raise the bar and fly high. I am happy to present the thematic Annual Report 2012-13, 'Spreading Wings', which recounts what we did in the previous year, why we did it and how we plan to succeed in the years ahead.

In the financial year 2011-12, the stage was set for building a responsible consulting practice designed to grow on a global scale. The year 2012-13 saw the Company take some strong measures to prepare for scale and globalisation. These measures were driven through key thrust areas:

- Corporate governance strengthening internal and external governance mechanisms for greater predictability and accountability in the business.
- Operational efficiencies business transformation through re-engineering of the business structure and processes.
- Market focus geography, sectors, goto-market strategies.

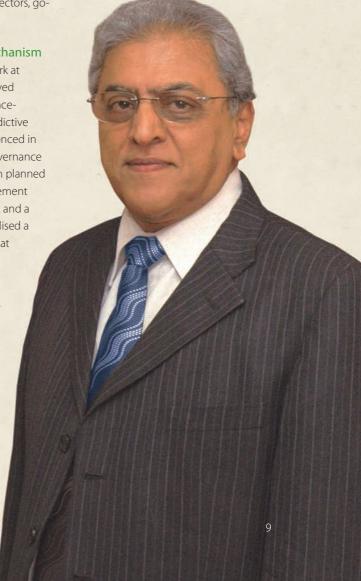
Corporate governance mechanism

The risk management framework at Tata Consulting Engineers evolved from a regulation and compliance-oriented risk approach to a predictive risk management system ensconced in the corporate planning and governance process. The scale of the growth planned calls for a rethink in risk management through a risk prediction matrix and a structure to mitigate it. TCE finalised a risk management framework that envisages:

 Business risk management and high level corporate risk preparedness



Tata Consulting Engineers has built huge technological capabilities in complex engineering solutions. It is now time to spread wings, raise the bar and fly high.



• Risk assessment and mitigation through the entire business life cycle.

We plan to execute the same in the year 2013-14. The Risk Committee that was under the aegis of the Audit Committee will now take centre stage and the focus of the committee will be to evaluate risks on a continuous basis to ensure predictability and accountability at every stage.

Operational efficiencies

Geographically, the focus areas continue to be India, Africa, the Middle East and the US. In India, various sectors were constrained due to inadequate land availability, environmental restrictions and fuel and raw material linkages; however, in the overseas markets, sectors such as energy, utilities, steel, mining and minerals and construction management continued to show positive trends. With about 72% yearon-year increase in business acquisitions from the international markets, Tata Consulting Engineers will work towards establishing a dedicated design centre for the international markets. Such design centres coupled with CAD engineering and IT-enabled solutions will help build a global delivery model with cost and operational efficiencies. 2012-13 was also a year of strategic alliances that paved the way for a consortium-based approach to capture market share and pool complementary capabilities. Such synergies proved fruitful and this will be pursued in the coming year to capture a greater market share globally.

Brand building

Tata Consulting Engineers will establish its brand presence and drive this initiative in the coming years. The global nature of our operations and geographically

diverse presence calls for a strong perception mapping of Tata Consulting Engineers as a large consulting solutions company that provides value for customers world-wide.

The brand recall of Tata Consulting
Engineers as a global engineering
consultant will be established through
brand communications in the coming year.

Sustainability

Incorporating sustainability into the consulting solutions practice was and will continue to be the *raison d' être* as Tata Consulting Engineers expands its global footprint. This will be a key differentiator in providing value-engineering solutions. A key development in 2012-13 was the acquisition of Ecofirst Services India Private Limited to offer sustainability solutions for the built environment and other facilities.

Way forward

The engineering consulting business today stands transformed. Liberalisation and globalisation have made the markets a level playing field with small, large and multinational players in the fray. Collaboration and cost-efficiency are the keywords today. Tata Consulting Engineers will increasingly explore global opportunities and inorganic growth through acquisitions in niche verticals and provide integrated engineering solutions that are cost and profitability-driven.

Financial performance

Macroeconomic situations during the previous year continued into 2012-13. Growth in the domestic power, mining and industrial sectors continued to be sluggish. The power sector continued to grapple with high feedstock costs

and supply bottlenecks. The industry's lack lustre performance impacted Tata Consulting Engineers' bottomline. The International Business made up for the setbacks in the domestic businesses to some extent. The year 2012-13 showed healthy order books in the international markets, the primary business acquisition being, consultancy services for a large fertiliser plant in Nigeria. Overall growth in new business acquisitions were impacted, showing a decline over the previous year. Gross revenues posted were marginally lower than the previous year at ₹436.47 crore. Profitability was impacted owing to the sluggishness across key industry sectors. The current business trends are expected to improve only marginally with national economic growth forecasts ranging from 5 to 6 %. Accordingly, Tata Consulting Engineers is expecting the slow growth situation to continue into the next financial year. The way forward will be to leverage opportunities in the international markets and keep a clear focus on operational efficiencies, which will help the Company safeguard profit margins.

Tata Consulting Engineers has looked inward to fine-tune its internal systems and processes. As the adverse economic conditions begin to bottom out, the Company will be geared to leap-frog into the future and find a place in the top rung of global consultants.

Sincerely yours,

Prasad Menon Chairman



FROM THE MD'S DESK

Dear fellow Stakeholders,

The best thing about good engineering is that even as times change, the built edifice continues to overwhelm, even past its prime. Tata Consulting Engineers is an organisation that has stood resilient with its technology core intact even as the market environment continues to change. Disruptive technological innovation need not always be breakthrough inventions. It is more a game changing application of existing technology. TCE's strength and success will lie in its capability to reengineer existing technology and provide smart solutions. This will be the way forward for Tata Consulting Engineers, thus creating value even in turbulent times.

Strategic and corporate priorities in 2013-14

Technology focus

The thrust for 2013-14 will be customeroriented technology excellence and managing knowledge. Towards this end, Tata Consulting Engineers identified technology experts for every business sector. The idea is to ensure smart solutions that are aligned to customer needs and to manage knowledge efficiently. IT-enablement and transition from 2D to 3D and simulated environment continued across business units. 3D training was also a part of TCE's intensive campus recruits' training programme. This will enable remote working and seamless knowledge sharing within the organisation. The focus for the year 2013-14 will be to leverage technology capabilities to introduce new service offerings under special projects and advanced technologies. These advanced technologies include product life cycle

mañagement - design and development, computer-aided engineering solutions, design engineering for industrial product development and simulations.

Creating value

Tata Consulting Engineers' focus on topline growth will continue by acquiring large capex projects across sectors in the global markets. The Company will leverage business relationships within the Tata Group companies, public sector and private enterprises in the domestic and international markets. To capture the entire engineering consulting value chain, combining engineering process consultation with engineering knowledge process management and associated engineering services, Tata Consulting Engineers will form alliances and collaborations to capture business in new sectors. 2012-13 was marked by several such collaborations such as Steel Authority of India's Centre for Engineering Technology and other global engineering procurement contractors, investment





Our corporate priority for the year 2012-13 was strengthening our risk management strategy. We are committed to quality and excellence in processes. The trust and integrity built into our DNA serves us in good stead and we will insulate ourselves from market and business uncertainties through greater predictability mechanisms built into the operations.

companies and design engineering firms.

Driving bottomline growth, the Company will introduce a slew of operations-related services relevant to each business sector. These short cycle projects provide some insulation against market uncertainties. Plant and facility-related services such as operations and maintenance, outage management, renovation and modernisation, are some areas we will target.

Building on existing relationships, the Company will formalise them and set up the required infrastructure to serve as dedicated engineering service providers to some exclusive clientele. This is intended to create cost-efficiencies and drive value for our long-term customers. This will be the way forward towards establishing a global delivery model with technology enablement and cost arbitrage as underlying objectives. Such measures will provide continuous revenue streams and ensure greater predictability to the bottomline.

Tata Consulting Engineers entered into a partnership with Dassault Systemes to synergise Dassault's IT capabilities and TCE's engineering strengths and provide value-added services to customers by way of high-end simulations and 3D modeling systems. Relationships such as these will enhance the value provided to customers.

The year 2012-13 was a year of implementing tough measures to drive austerity. The Company achieved an overall cost reduction in operations and consolidated expenditure. Going forward, the Company will continue with its prudent and cost cutting measure in the financial year 2013-14.

Our corporate priority for the year 2012-13 was strengthening our risk management strategy. We are committed to maintaining quality and excellence in processes. The trust and integrity built into the TCE DNA serves us in good stead. However, it is relevant to match our ethical practices with insulation from risk – strategic and operational through structured risk management processes. The year marked the completion of several prestigious assignments at the domestic and international levels. Tata Consulting Engineers also clinched several large scale and complex assignments that are of long tenure. Making further inroads into the international markets and approaching

new markets in a collaborative manner is likely to yield high rewards. To realise the gains of such high reward initiatives in a smooth manner requires a robust risk management process. Tata Consulting Engineers will execute the risk management framework that was finalised in the last financial quarter.

The framework takes the following approach:

- a) Risk mapping and profiling across levels strategic, commercial and marketing, project level and other corporate areas wherever applicable. The profiled risks are updated in the risk registers as part of the process.
- b) Risk assessment is a scientific evaluation process with an algorithm to ascertain severity. The risk severity score is arrived considering provisions such as project value, complexity, cost impact, risk impact to business, and other parameters.
- c) Risk mitigation involves a complete review process at the appropriate level based on the severity score. Identified risk managers and process owners build in the control mechanisms to mitigate risks.
- d) Risk monitoring is designed as a structured and ongoing process. The risk committee will conduct timely reviews to determine the risk appetite, address potential adverse impact to the business and recommend appropriate action.

Sustainability

Driving customer sustainability

Tata Consulting Engineers champions sustainable development directly and indirectly. As engineering consultants, we believe it is our responsibility to guide our customers towards sustainable development and reduce their carbon footprint. We take this responsibility seriously and have made sure that several



of our solutions are 'green solutions'. We incorporate into our master plan and engineering services, solutions such as zero-discharge facilities, green belting, water recycling, enhancing resource and cost efficiencies through technological inputs and innovative solutions that are environment-friendly.

A key development in the financial year 2012-13 was the acquisition of Ecofirst Services Private Limited. The acquisition streamlines our sustainability focus and augments our existing basket of standalone sustainability services.

Safety

Tata Consulting Engineers added safety management services to its portfolio. The stringent safety practices in the construction business sector is driven in a focused manner by a dedicated team of professionals. The Company has built this into the engineering practice and the last financial year saw a breakthrough in the launch of safety management services to domestic and international clients.

Sustainability and inclusive growth

Tata Consulting Engineers drives its sustainability under the branded identity - TCEndeavour. Our endeavour is to imbibe safety in every aspect and launch skill-building programmes to increase employability of the marginalised sections. Two pilot programmes for Affirmative Action that will enhance skills for students coming from marginalised sections were finalised in the last quarter of 2012-13. The programme will be rolled out in the first quarter of 2013-14. The Company launched a community programme through engineering and civil works to provide water for a tribal village in the district of Jawhar which is starved of water despite the monsoon rains. This

programme is expected to be complete by the last quarter of 2013-14.

Financial performance and outlook

The year 2012-13 was a difficult year for most engineering companies owing to an adverse capex environment. Tata Consulting Engineers proved its resilience and weathered yet another tepid year of market uncertainties by maintaining the topline closer to the previous year. However the margins were under severe pressure owing to a highly competitive environment. The Company kept its focus on its businesses and delivery excellence and took drastic measures to protect the bottomline while moving aggressively to drive topline growth. The domestic business sectors such as Infrastructure, Chemical and Steel, Metals and Mining sectors' contribution to total revenue was in the range of 12 to 17%. Growth in the Nuclear business was not very encouraging owing to several projects being stalled or moving slowly. The Power sector, on the strength of previous order books, contributed 24 % to the gross revenue. The Construction business sector posted good returns with a share of 30% of the gross revenue. Overall, the trends remained moderate with gross revenues pegged at ₹436.47 crores. The bottomline was impacted with a fall in profit before tax by about 59%. This was owing to unplanned delays in realisation of some large scale projects while resource utilisation could not be maintained at optimal levels due to a slow-growth environment. Even as the domestic sector proved to be extremely challenging, the Company turned its focus to the international markets. The last financial year was extremely positive from the International Business front. Revenues tripled over the previous year

with most of the growth coming from the African markets. In the year 2013-14, Tata Consulting Engineers will target new opportunities in the US markets. We foresee re-engineering opportunities in the oil and energy sectors and the way forward will be to adopt a consortium-led approach with EPC players here. Such partnerships will also enable us to tap emerging opportunities and offer new service lines in Africa where we have a stronghold. We will continue to nurture these markets and strategically address customer requirements.

Outlook

As the economic slump bottoms out. we have strengthened the core and prepared to take on the upswing. Tata Consulting Engineers did the right things - invested in people development, upgraded IT systems, fortified governance mechanisms, cut costs and stayed prudent. The Company has a strong technology base and its key differentiator is the allegiance of skilled talent and long term customers. Our edifice is built on strong value systems and a core that is driven by corporate sustainability. This we believe is the only constant in an ever changing market order. The future opens up to change and with our technical capabilities, we hope Tata Consulting Engineers will emerge as a technology leader in the world of engineering consultancy.

Sincerely yours,

J. P. Haran

J P Haran Managing Director

ENGINEERING NEW **TOMORROWS** - ED AND CHIEF **OPERATING OFFICER**

Q. Tata Consulting Engineers has been in the business for 50 years. As part of the next stage of evolution, how do you plan to get ready for growth?

Over the last 50 years, we have executed many firsts and benchmark projects in India. In recent times, we have been winning international projects across the MENA and Asia. By operating across multiple sectors, we have been able to protect our growth despite cyclical patterns of investment across various sectors. As part of our next stage of evolution, we are focusing on growth through:

- Market spread and competency
- Customer and market-aligned offerings - By building key skills around our customer and market needs.

- Agility, competitiveness and capability building - Our dynamic markets, agility to change course to stay profitable and building capabilities to capture profitable sectors are key. By leveraging advanced technology solutions, engineering tool sets, standards and methodologies, we aim to create an agile and competent workforce.
- Target sectors aligned to market needs and dynamics peculiar to each region of operations - the US, the Middle East, Africa and India
- Growth through inorganic strategies Envisaged inorganic strategies within India for competence addition in new sectors and internationally to gain market traction

We have embarked on a transformation initiative branded as 'RHYTHM'. The exercise sets in motion our renewed focus on people development, customer focus, process and tools alignment and an international focus, and, as the name suggests, in a collective and rhythmic manner.

Q. Your strength is innovation and technology. How do you plan to leverage this to benefit customers?

With an aim towards retaining and enhancing our technical competencies, we are strengthening our technology stream with a clear career path and further investments in advanced engineering toolsets. To cite an example - the ultra mega power plant that was commissioned in 2012-13 was laden with innovative solutions. The production process was optimised to make it a clean coal-fired thermal plant by managing feedstock and equipment efficiently such that there were





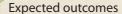
Key transformation aspects

Build on the Centre of Excellence approach for each sector and expand by adopting global, industry-aligned business sectors

Re-model location offices as global delivery centres handling various industry segments

Create dedicated technology streams to strengthen latent technology potential

Enhance process automation and technology enablement across the business



Agility to shift business focus to profitable sectors aligned to market dynamics



Greater customer responsiveness and efficiency; steady revenue streams

Customer service orientation, solutions innovation and knowledge management efficiency

Creating value for customers through seamless working and virtual delivery models



The year 2012-13 saw the launch of a defined, 3D-aligned solution delivery roadmap. We have planned significant investment in engineering IT infrastructure with a focus on remote working, document management, collaboration solutions such as View and Mark-up, and 3D modeling and simulations. This will infuse predictability, better planning and innovation for services and solutions that we deliver to our clients. With these

strategies, we plan to adopt standard work procedures, working norms as well as modular engineering and design work practices. Our services will be optimised, embracing reuse and repeatability.

Q. What is the next level of service delivery that Tata Consulting Engineers aspires to? What measures are in place to achieve the same?

As part of our global aspiration and deeper thrust into niche areas in the domestic market, we plan to focus on the following areas to streamline and improve our project delivery:

- Enhanced focus on project management and planning to ensure predictable outcomes to our clients
- On engineering and design projects

 a greater responsiveness through
 seamless, virtual or remote work
 environment by leveraging 3D
 engineering packages, engineering

- IT tool sets and collaborative work solutions.
- Investment in skilled talent and experts in closer proximity to customers in the domestic and international markets
- Alignment of technical experts to review our services as part of a structured review mechanism
- Leveraging advanced technology tools and automation solutions to ensure error-free deliverables

As part of our evolution, Tata Consulting Engineers aims at continuous improvements through efficient knowledge management to provide cutting-edge technology solutions to customers. Additionally, the technology capabilities will be leveraged such that we focus on 'green' and sustainable solutions to reduce our impact on the environment and provide responsible engineering solutions.







WINGED FOR GROWTH, VALUE FOR CUSTOMERS

As an engineering consultancy solutions provider, Tata Consulting Engineers has endeavoured to keep up to speed in the area of technology. The technology capabilities in the sectors the company operates in are truly world-class. In the same vein, the changing winds of market requirements necessitate a continuous upgrading of capabilities and resource development in new areas. This also requires that our customers get exactly what they need. Balancing customer requirements and existing capabilities are indeed challenges. Spreading wings for growth to Tata Consulting Engineers translates to:

- Providing value to customers across the globe
- Being present in high-growth sectors
- Working within a collaborative model for market penetration

Our growth strategy is fashioned around our customer requirements; the markets we focus upon are customer-driven, the driving principle being value-addition for our clients while being profitable. This has worked well for us, as customers look towards us for our consistency, expansive array of services offered across industry segments and the ability to address niche customer needs as a single entity. Our challenge now is to continue to be a preferred consultant to our existing customers by constantly striving to

augment the value proposition, and being current and relevant to customers' needs. In 2012-13, we focused on building capabilities that would provide additional value for customers. This focus we believe will ensure that we keep a sure foot on customer requirements, even as we step up the growth momentum. This renewed focus is beginning to bear fruition.

The year 2012-13 was an eventful year for the Company. Our customers placed their trust in us and patronised us for several decades. Respecting this relationship, we took a re-look into our business and prioritised on key initiatives which we believe will provide value to our customers. In a fragmented and competitive environment, we set our sights on key areas that will strengthen our capabilities and validate our commitment.

VISION FOR TAKE-OFF

The vision

Tata Consulting Engineers has a vision of being an internationally preferred engineering consultant ranked among the top consultants worldwide. This, along with achieving three times the current growth by 2015-16, will be the goal that will drive the organisation's focus through the next couple of years.

The calling

The year 2012-13 was a year of strategising

and business process re-engineering for Tata Consulting Engineers. With sustained businesses and long-term relationships built over the decades, our clients have increasingly looked to us for enhanced service offerings and technological consulting. The projects we deliver are more complex and multi-disciplinary owing to the breadth of the services and multiple sectors we operate in.

Tata Consulting Engineers at the end of 50 years of operations has seen the need to re-align to market dynamics. Our requirements today:

- Continue to rise to increasing client expectations
- Compete in international markets with global players
- Manage the transition from a singlesector service model to multi-sector, multi-disciplinary service model.
- Leverage the full potential of technological capabilities to achieve profitability and scale
- Capture market share to offer high-end services.
- Address the increasing complexity of projects and the challenge of managing a global delivery model through structural and operational transformation



The plan

Tata Consulting Engineers has launched an ambitious business transformation initiative that was conceived in 2012-13. The programme branded 'Rhythm' has been finalised and will take off in 2013-14.

'Rhythm' is intended to bring about a transformation in the operations and growth by driving five key levers:

- Customer and market focus
- Technical excellence
- People focus
- Delivery excellence
- Predictability

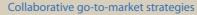
The above focus areas will be addressed in 2013-14 for Tata Consulting Engineers to springboard to the next level of

growth and scale in a competitive, global environment. The strategic focus has already been defined in the financial year 2012-13 and execution is underway. The business transformation programme will be executed in a phased manner through 2013 to 2015. This drive will truly spread Tata Consulting Engineers' wingspan, take flight and realise the ultimate potential.

Strategic focus

Acquisitions for niche capabilities

• Acquisition of Ecofirst Services to provide sustainability solutions for the built environment



- Dassault Sytemes for 3D enhanced solutions
- Partnership with steel giant for steel industry-specific offerings
- Sector-specific synergies to tap domestic and international opportunities
- Consortium-led approach for synergies in service offerings



CREATING CUSTOMER VALUE PROPOSITION



Consolidated sector offerings

- Focus on growth-oriented sectors in the regions present and capture large-scale businesses
- Centralised strategy and planning specific to each sector



 Ramp-up service levels and agility through strong regional delivery mechanisms



Technology-enabled solutions

- Simulated delivery systems through 3D modelling tools and engineering applications
- Risk and cost management efficiencies

Operational efficiencies

ACQUISITIONS AND ALLIANCES

TCE has recognised the need to incorporate sustainability into its solutions. Increasing demand in converting the existing facilities to sustainable and resource-efficient operations is a key requirement around the world. The entire gamut of sustainability services integrated into the engineering services will provide value to customers. Activism and public outcry on the impact of economic activity has been a point of consternation between industry, NGOs and the communities. Ensuring sustainable development through scientific studies and engineering solutions is an opportunity that Tata Consulting Engineers has identified. Capturing this opportunity, Tata Consulting Engineers acquired Ecofirst Services in 2012-13. By dovetailing professional engineering with the sustainability services of Ecofirst, Tata Consulting Engineers will deliver sustainable design solutions that are environment-friendly, resource-efficient and profitable.

Ecofirst Services Private Limited

Ecofirst is a sustainable design consulting firm, providing total sustainability solutions for developmental projects. With its resource-centric approach, Ecofirst provides an array of integrated services woven around sustainability concepts. It designs solutions for water, energy,



waste, biodiversity and climate change adaptation. Ecofirst also provides detailed designs for sustainable infrastructure and MEP, sustainable landscape, support for architectural and material planning on sustainability initiatives.

Acquisition rationale

Tata Consulting Engineers has a track record in the infrastructure sector for handling complex projects related to buildings and townships. TCE's process expertise in other key sectors, construction services and other environmental solutions services will be enhanced with a dedicated sustainability solutions subsidiary. Ecofirst will look for Greenfield opportunities in the sustainable development for buildings, plants and infrastructure. Other Brownfield opportunities, such as transformation of existing facilities to environment-friendly operations, solutions for efficient resource management, especially energy and water, are areas that we hope to pursue. TCE will leverage Ecofirst's branded sustainability offerings in the domestic and international markets.

Opportunities in sustainability engineering

- The market for sustainability thought process is maturing. Increasingly, pressure on natural resources and consequent impact on the cost of development are being felt. At the same time, benefits of the sustainable approach make evident a direct relationship with the life cycle cost.
- Global flow of developmental

- funds increasing adoption of global environmental and risk assessment practices before funds commitment are infusing a business sense in sustainable initiatives.
- An impact of sustainable design practices have been felt by the market, which is reflected in the booming 'green' building market and developers' willingness for the procurement of better quality services. This has made sustainability a base line for delivering design solutions.
- Developing economies' thrust on 'green' growth governments are driving sustainable and resilient ways through investments and regulation towards clean energy, energy efficiency, water management, smart grids, infrastructural and industrial development.
- Increasing NGO activity and community angst against the impact of infrastructural development, industrialisation and ecological concerns create opportunities for scientific engineering rationale and solutions to manage 'green growth'.
- Energy and water management as well as waste recycling makes business sense. Industries and township developers are increasingly focussing on sustainable design engineering and ecological management. Opportunities for climate change-related studies and 'green' certifications are on the increase.
- Industries and establishments are moving towards energy, water and



cost-efficiencies by migrating to 'green' solutions as a risk mitigation exercise. This provides scope for professional engineering services in sustainability.

Integration

People and processes

The acquisition of Ecofirst in 2012-13 served not only the business interest of the organisation but set a precedent for more such events in the future. The process of integration in terms of people, process and technology continues into 2013-14. The integration of people and communication on the acquisition to all stakeholders was completed successfully. Cultural and process integration are continuous processes which are progressing satisfactorily.

Business integration and synergy

Business integration will continue into the new financial year as the Company is currently in the process of opportunity mapping to create value with the additional intellectual capital that the acquisition has brought in. Business plans and a strategic focus on integrating the service into the existing sectors are a part of the current planning process.

ALLIANCES AND COLLABORATIONS

Tata Consulting Engineers has entered into several working agreements and partnerships with public sector and private organisations with the objective of creating synergies that complement the expertise of both parties. We have worked successfully in collaborative environments, working with multiple stakeholders

- Collaborate
- Complement
- Co-create value

to deliver projects of long tenure. The integrity built into the TCE DNA, the respect for intellectual property and the values that bind have encouraged TCE to realise a model of collaboration to pursue ambitious business goals.

The rationale behind such collaborative approaches:

- Complement expertise in specific sectors to provide high-end solutions required to manage complex projects
- Bring together and present as a single entity varied skills and offerings such as process knowledge, ancillary service offerings, technology capabilities, resources, among others
- Co-create one large entity to provide a gamut of services for large scale, multidimensional projects across the globe
- Create value for customers with a large basket of specialised and niche services
- Leverage in-house talent pool and enrich capabilities in new verticals
- Manage and fulfil regulatory requirements for governmental projects that are unique to each geographic region in a cost-effective and strategic manner

Some synergies created in 2012-13:

• Tata Consulting Engineers entered into

- a partnership with Dassault Systemes to leverage TCE's process expertise and Dassault Systemes 3DS technology platforms. The synergy helps to add value to customers by way of solutions that are in a simulated environment using Dassault Systemes' IT tools and TCE's engineering capabilities in various sectors
- Synergies with public sector enterprises and quasi-government organisations for providing combined solutions in specific sectors such as steel, water management and infrastructure
- Collaboration with EPC, EPCM players to create synergy and capture greater market share across the world
- Other collaborations with international design and engineering firms to explore joint business opportunities



PROCESS AND TECHNOLOGY

In 2012-13 Tata Consulting Engineers spruced its business processes to ensure that operations are customer-centric, agile, profitable, cost effective, technologically relevant and knowledge-driven.

Key initiatives to streamline operations

Tata Consulting Engineers' key initiatives to streamline its operations are:

- Focused on a growth-driven business through a sector-centric model; the strategy is to renew focus on highgrowth industry sectors and subsectors
- Ramped operations in geographic regions where the Company established a strong foothold over the years.
- Ensured delivery excellence by providing greater impetus to delivery centres across the country and overseas locations seamlessly aligned to business sectors.
- Software upgrades and training ensured technology-enabled solutions comprising 3D tools, simulations, among others.
- Leverage technology excellence and process expertise by aligning technology experts to each business.
- Mobilised a dedicated workforce for key overseas locations such as Africa and the Middle East
- Mapped human resources to align with the business agenda, driving customer orientation and technology excellence; ramped training and skill development to meet business requirements
- Laid a greater business development

- focus on industry sectors to ensure focused and targeted sales acquisitions.
- Automated systems to manage key functions and areas of operations such as human resources marketing, projects delivery and technology management.

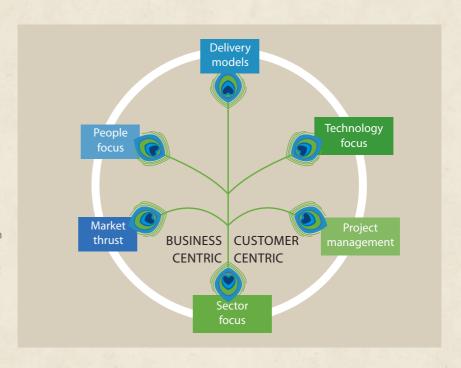
Technology focus

The technology focus shift will consider IT system upgrades for technology-enabled delivery mechanisms, process upgrades to ensure that technology solutions capabilities are enhanced and total IT infrastructure upgrades that will support a global delivery model. These upgrades will ensure:

- Seamless and virtual workflow processes with remote delivery mechanisms
- Transform high technology solutions to

- smart solutions
- Quality, compliance, risk and predictability mapping woven into the business process
- Benchmark to the highest international standards

Virtual delivery systems in a 3D environment and ITenabled engineering solutions are the valueadditions we bring to our customers. This technology focus is relevant to us due to our increasing global clientele and complexity of solutions we provide.





PEOPLE FOCUS TAKES WINGS

Tata Consulting Engineers Limited attributes the wealth and well-being of the organisation to the intellectual capital within. This understanding underscores the need and focus to develop the people within, nurture talent and provide growth potential for employees. Given the competitive environment of today, Tata Consulting Engineers focused on establishing strategic human resource management practices and processes.

The journey in human capital management

Human capital forms the core of TCE's operations and strategic focus in this direction addresses:

- a) Human resource systems and processes
- b) Composition of the human resource pool
- c) Required human resource attributes and behaviours for customer delight
- d) Effectiveness and perception mapping

Towards this end, TCE launched several initiatives:

- HR systems and tools such as the Human Resource Management Systems, Performance Management System, and Workforce Analytics. These address the demands posed by diversified operations spanning several locations in India and overseas and help to drive the human resource mobility process.
- Mapping human resource requirements in line with the onshore-off-shore delivery models; talent management process to identify and deploy talent across the sectors within the organisation; leverage the tacit knowledge of generation X -

generation Y to create new synergies.

- Driving the people focus aligned to a transformation programme that was launched in the last quarter of 2012-13 to imbibe the required attributes and behaviours needed to manage planned growth.
- Employee Value Proposition survey to map the TCE employee brand proposition, which will jump-start the HR process alignment to meet survey expectations. The process will be initiated in 2013-14.

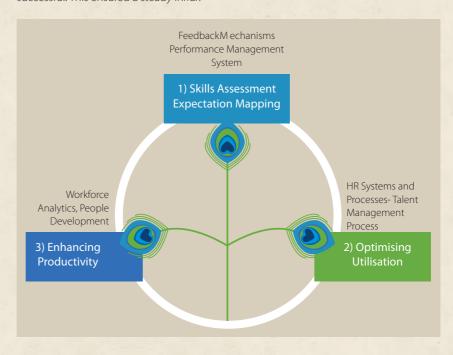
Tata Consulting Engineers, in 50 years of operations, has successfully addressed the challenge of retaining an experienced workforce while addressing attrition amongst young talent. To address this challenge, the HR practice of hiring at the campus level every year and providing a one-year specialised training programme to make them industry-ready, proved successful. This ensured a steady influx

of fresh talent trained to the Company's specific requirements.

Tata Consulting Engineers has in the past drawn its middle-level and senior managers from within the organisation. With scale and globalisation of operations, Tata Consulting Engineers balanced the age profile and infused youth into the HR profile through a combination of campus recruitment, lateral hires and leadership programmes for middle management to leverage in-house talent.

Managing knowledge workers

In a rapidly changing and competitive environment, businesses having human resource capital as pivotal to its operations – need to consistently examine and rework HR strategies to meet business goals. Managing knowledge workers in a structured manner, Tata Consulting Engineers takes a three-pronged approach as shown in the diagram below:



We manage the aspirations of about 3,000 employees with age demographics spanning four decades.

HR systems and processes

The growth in the people strength of Tata Consulting Engineers to about 3,000 people has necessitated developing robust HR processes and automating them for ease of use and transparency. The performance management system – Performance Review Integrated Skill Management (PRISM) is fully IT-enabled and web-based for providing access to employees across geographies. The Human Resource Management System (EPICentre) and PRISM are fully-integrated, such that HR data can be generated holistically.

Workforce analytics

The diversified nature of operations in terms of industrial sectors and geographical presence calls for a greater mobility of workforce. The on-shore off-shore delivery model necessitates the need to manage workforce information in real-time and virtually. Workforce analytics is an IT-enabled HR system that provides relevant employee information to the concerned managers and business heads to manage manpower resources effectively in real-time. This system serves as an effective manpower planning tool

and HR MIS. The system provides instant dashboards on workforce demographics, nature of employment with the Company, recruitment status, employee strength, attrition reports, employee dossiers, performance data and other customised reports. Human Resource MIS and PRISM data is fully integrated into the system. Workforce Analytics launched in 2012-13 serves as an indispensable tool for decision-making by the concerned manager in real-time and virtually at the click of a button.

Talent management process

Well-integrated HR systems provide instant dashboards on employee information, which helps identify high-potential employees. The talent management process at Tata Consulting Engineers is a structured process that relies on systematic HR data to identify top talent. A central talent management committee reviews high-potential candidates. The identified talent pool is assessed and based on a performance track record, roles and development areas are identified. The Talent Management Process, now into the second year, is an effective process for leveraging in-house talent. The year 2012-13 saw a business restructuring exercise in the last quarter. Almost all the positions that arose from this exercise were filled from the latent talent pool through this process. In 2012-13, about 5% of employees were identified as high-potential employees and about

2% of these were assigned new roles. With growing demand for multi-skilled resources to service the international operations, top performers at Tata Consulting Engineers have a lot to look forward to.

Employee value proposition

A key HR initiative for the year 2012-13 was ascertaining the Employee Value Proposition (EVP) for the organisation. The objective of the exercise was to ascertain the current perception of Tata Consulting Engineers as an employer and ascertain the aspirations of the employees as to what the 'dream employer' value proposition should be. The survey sought feedback on attributes categorised under five key classifications - rewards, opportunity, work, people and organisation.

The EVP was ascertained through a survey conducted across generation X and generation Y employees within the organisation, employee alumni, new recruits waiting to join the employee rank combined with mapping the outcomes of a focus group intervention comprising the leadership team.

The EVP statement is slated to be announced in 2013-14. All HR processes and systems will be aligned to the derived EVP statement. With this programme, Tata Consulting Engineers hopes to address attrition and build the employer brand to create a satisfied and engaged workforce.



PEOPLE DEVELOPMENT



Drumming to a common goal - Transformation programme 'Rhythm'

Fresher's Programme

The Young Engineers' Development Programme (YEDP) is Tata Consulting Engineers' signature programme that transforms fresh campus recruits into industry-ready, practicing engineers through a year-long, rigorous training programme. With a mix of classroom training and project experience, new recruits go through structured training and assessment processes within a live working environment.

Two years into its launch, the programme went through a transformation in 2012-13 to match the delivery systems currently in practice within the Company. Trainees were oriented into IT-enabled delivery systems such as 3D platforms and other high-end tools used to render engineering services to clients. Actual project environments were simulated and trainees were oriented to live-environment all through the programme along with project site visits. This was done to ensure that processes, systems, documentation and delivery standards are ingrained and adopted immediately upon deployment. Annually, the YEDP programme inducts

an average of about 100 fresh recruits into the mainstream engineering talent pool within Tata Consulting Engineers.

Development programmes

Ongoing development programmes are spread across hierarchical levels based on relevance to the profile, business requirements, building a middle management talent pool and transitioning existing middle-level managers' to leadership roles.

The Leadership Acceleration Programme or LAP-III and IV are programmes for middle and senior managers conducted in-house with external and internal faculty. The senior management programmes are offsite programmes. Top management programmes are conducted through the Tata Management Development Centre (TMDC).

Project Management Capability Building

The Project Management Capability Building programme is a certified course in advanced project management. The programme is conducted in three phases through a combination of in-person training and self-study. Phase-I comprises training aspects, Phase-II comprises readiness for certification and Phase-III comprises assessment and certification. Introduced in 2012-13, about 107 skilled employees were covered in the programme.

Safety Training

While employee safety and safe practices are religiously driven, employees who are part of the construction business are mandated to undergo the Safety Training Programme delivered through the e-learning platform. The programme offers role-based courseware and assessments, which employees can take even while working at project sites.

Virtual Learning

Tata Consulting Engineers launched the Virtual Learning Management System – System for Managing Individual Learning (SMILe) that brought to the desktop a knowledge bank of courseware, e-books, videos and online events. The launch of this repository makes available to employees, a virtual library of about 50,000

2012-13 TRAINING OVERVIEW



Programme	Objective		
Young Engineers' Development Programme (YEDP)	Induct fresh engineers into the mainstream engineering talent pool		
(LAP-III)	Middle and senior management development		
TMTC Training Programme (LAP-IV)	Leadership development programme		
Project Management Capability Building	Certification in professional project management		
Safety Training Programme	Advanced safety programme that is customised to employees' roles in		
	addressing the specific needs of the construction business		
Virtual Training	Self Development Skill-building courseware and knowledge repository for		
	any-time access		

books, around 4,600 e-learning courses, around 3,000 multimedia courseware. The virtual learning programme enables knowledge development in a distributed environment. The programme enables professionals based at client sites, remote locations and global offices access learning courseware in real-time or download for later use at locations even without internet access.

Resource mobility management processes

Aligning HR processes to business needs has been the focus in order to ensure effective talent management, which Tata Consulting Engineers addresses as a key priority. The growing international operations of Tata Consulting Engineers have necessitated mobilisation of the workforce to the geographies of presence. Africa and the Middle East were the focus for 2012-13 where key talent was placed.

Tata Consulting Engineers was able to service its customers on the strength of a dedicated talent pool available in-house. The mobilisation of manpower resources came with several challenges, which had to be addressed in a structured manner. A resource mobility management process was established to address the needs of employees who relocated overseas. Key aspects of the process comprised: administrative assistance for relocation, cultural orientation kits for employee and family and a dedicated help desk services to address employees' needs, among others.

Going forward, Tata Consulting Engineers will also consider increasing its diversity profile to recruit local talent overseas, if required. However, the Company is well positioned to leverage in-house capabilities and hopes to ramp up overseas placements by 150%.

Key initiatives planned for 2013-14

- Re-look into current HR policies, working with Tata Quality Management Systems(TQMS)
- Realign HR processes with Employee Value Proposition outcomes
- Revise hierarchy systems to put in place a flat organisational structure, working with Group HR. This will help towards greater agility among the rank and file of the organisation
- Launch 'Learn While You Earn Programme' through a tie-up with India's premier engineering institute, BITS Pilani, for a three-year executive programme to address the young employee's need for higher education even as attrition is being addressed.
- Existing project managers to acquire project management certification



FLYWAYS TO GROWTH



The International Business Group of Tata Consulting Engineers Limited is the engine that will springboard the Company's revenues by offering new avenues for growth. While the Company has over the past undertaken several projects globally across 57 countries, the recent turn of events in emerging markets has fuelled a high level of economic activity. Tata Consulting Engineers has successfully leveraged such opportunities and is well positioned for growth.

The International Business Group has shown robust growth with business

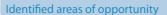
acquisitions growing at a year-on-year average of about 72 % in the past three years. The coming years will see the continuation of the positive outlook based on current acquisition trends.

Several factors contributed to the robust performance in the overseas markets -

- Large capex project experience
- Technology capabilities in key sectors
- Favourable shift in the perception of India as a technology hub
- Core engineering skills, quality output and robust delivery processes

- Challenging macroeconomic situations worldwide that drive the cost arbitrage derived from engaging Indian technology firms at various stages of the engineering project lifecycle
- Increasing demand for technology skills to be deployed at project sites in emerging markets
- Unique global delivery model that combines engineering process consultation with engineering knowledge process outsourcing and associated project consulting

Africa



Power, chemical, refineries, metallurgy, mining, infrastructure and water management services

Key initiatives specific to the region

- Consortium led approach to capture markets
- Dedicated marketing front in Eastern, Western and Southern Africa for focused business development
- Dedicated delivery centre for international projects
- Dedicated off-shore delivery centres to support the global delivery model



Aliko Dangote, President of the Dangote Group, Nigeria, Africa.

Tata Consulting Engineers has built and strengthened relationships with some of the biggest industrial groups such as The Dangote Group.

The African economic growth story in the past few years has been promising. The favourable business climate in the region, coupled with improved credit lines for developmental activity, has set capital investments rolling. Combined

with robust yields in commodities growth, urbanisation and agricultural produce, the GDP in Africa is expected to grow at 6 %.

Tata Consulting Engineers has gone out aggressively to tap opportunities in this emerging market. Opportunities arising from capital investments are complex and multi-disciplinary with long gestation periods. These are prestigious projects that Tata Consulting Engineers has undertaken and the full potential of the Company's technological prowess will be realised with these opportunities. Tata Consulting Engineers also plans to form a consortium with global EPC and design engineering firms to tap opportunities from all fronts.

Africa is moving from being a trading hub to a fast-growing developing nation. As such, the focus has shifted to local industrialisation, skill development for the local populace, employment generation, export of products that are value-added and enhanced from raw material stage to beneficiated and pelletised material. Additionally, operational investment opportunities are growing due to rapid

industrialisation and upgrading of builtup facilities, especially in the energy, infrastructure and water management sectors. Such operational investments are opportunities for rolling revenue streams with shorter delivery cycles than capital investment projects. Tata Consulting Engineers will approach these opportunities independently or in partnership with utility and energy players.

Above all, with a global and distributed delivery model, the Company focused on developing design centres across locations. The cost arbitrage, coupled with core engineering skills and quality delivery realised from dedicated design centres, is a value that will translate into still more opportunities in the international markets. Building a global delivery model that incorporates knowledge process outsourcing for cost arbitrage creates value for the customer. The technology excellence and high-end capabilities, combined with a comprehensive bouquet of services, provides cross-selling opportunities in various sectors.

Middle East

The Middle Eastern economic growth is determined by two aspects – the oil exporting countries and the oil importing countries. The oil exporting countries of the GCC posted robust growth, which is expected to sustain. The growth impetus came from stable oil prices and the rich reserves that these countries built. The oil importing countries faced problems by way of domestic challenges and the slowdown in external economies, especially Europe.

Some GCC countries' governments, backed by robust growth, beefed their economies with infrastructure spending and investments in operational facilities to generate employment. These countries are expected to diversify their economies to boost private sector investments, which, in turn, will create jobs locally. Foreign investments in the private sector, stronger growth and cash surpluses from robust oil prices will help buffer against any volatility in the future. The governments in these countries are also investing in

healthcare, education and infrastructure in the region. Tata Consulting Engineers has worked in developing townships, hospital infrastructure, educational institute design engineering, among others. The UAE, Qatar, Jordan, Oman, Kuwait and Saudi Arabia are regions where Tata Consulting Engineers has developed historical links over the past decades. Tata Consulting Engineers hopes to build on its past relationships and look for new opportunities here.





Identified areas of opportunity

- Oil and gas, petroleum
- Infrastructure
- Combined cycle power plants
- Transmission and distribution

Key Initiatives specific to the region

- Several consortium agreements with international EPC and design engineering firms to capture markets
- Strengthened manpower resources in the region
- Dedicated delivery centre
- Dedicated off-shore delivery centre to support the global delivery model

USA

Due to the global economic slowdown and shift in focus towards the emerging economies as growth engines driving demand, cost arbitrage emerged as a key determinant. Tata Consulting Engineers' technology strength in the energy sector and the re-engineering opportunities resulting from the shale gas breakthrough makes the United States a key market for

opportunities. Tata Consulting Engineers has invested in IT-enabled design engineering solutions, virtual modeling and other state-of-the-art applications for engineering design. This will help build a back-end for design engineering services while key on-shore engineering process activities will be managed on-shore. Both ways, the cost combination of arbitrage and Indian technology talent acts as a

value-addition for customers. Additionally, hardcore procedural engineering needs can be met with a collaborative approach where Tata Consulting Engineers can align with large multinationals and provide integrated solutions for large scale projects. This strategy is expected to capture the markets from all fronts and also help the Company diversify its portfolio.

Identified areas of opportunity

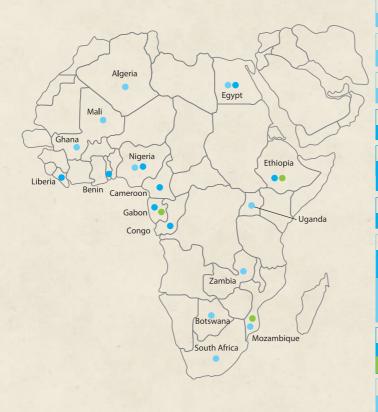
- Oil and gas and related storage
- Transportation and pipelines
- Re-engineering opportunities
- Sustainability solutions
- Fertilisers
- Power
- Transmission and Distribution

Key plans specific to the region

- Plans to form master service agreements with international EPC and design engineering firms to capture markets
- Drive the cost arbitrage factor and build on the KPO model in combination with engineering solutions
- Dedicated marketing front for US
- Dedicated delivery centre
- Consortium-led approach to capture opportunities in emerging markets where TCE is established

In the next couple of years, TCE will focus on building on this global delivery model in a cost-effective manner to drive top line and bottom line growth.

SPREAD OF OPERATIONS



AFRICA - Current Assignments

Egypt Algeria 3x400 MW Power Plant Ain Sukhna Product HUB-Conceptual design FEED & ITB Project Independence 2 33kv Sub station project design package Ghana 510 MW Power Plant Ethiopia Liberia **PVC Resin Project** 4 MTPA Iron Ore Project 3,000 TPD Cement Plant Iron & Steel Making Cyber City – Min. of Commns Uganda & Info Buseruka Hydropower Waki Mini Hydropower Cameroon 3,000 TPD Cement Project Zambia Nigeria 120 MW Hydropower Project 360 MW Kariba Hydro Project Security Camps 600 MW Power Plant at the 400 MW Combined Cycle Power collieries 600 MW Power Facilities 500 MW Combined Cycle Power Mozambique Gabon Thermal Power Project

South Africa

Capacity Expenditure Assessment 6x600 MW Duvha Power Outage Management

Combined Cycle Power Project

Congo

3000 TPD Cement Project

Moatize 2 Coal Mining

Botswana

Thermal Power Project

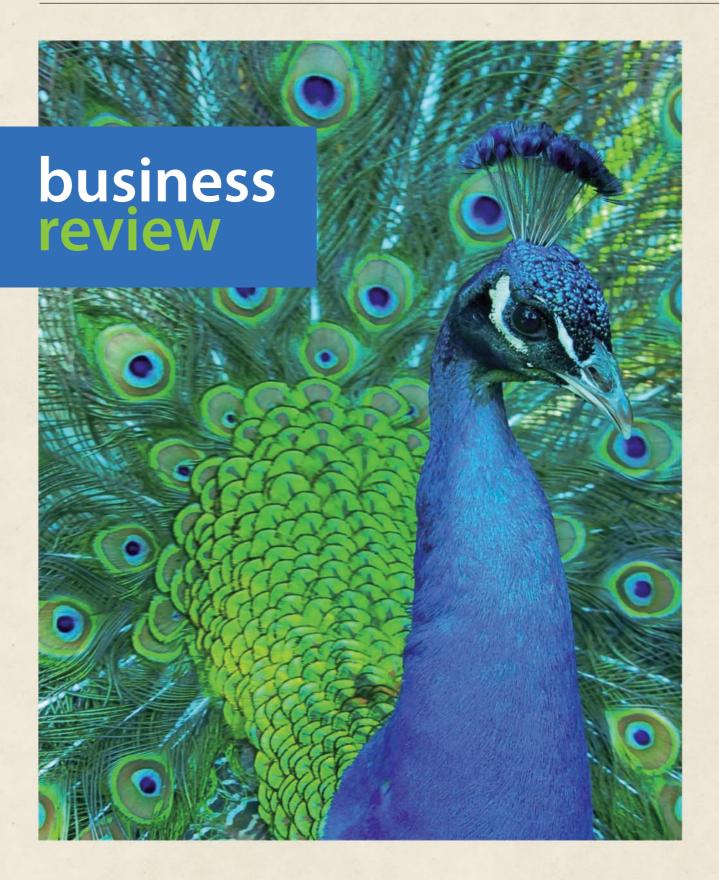


MIDDLE EAST - Current Assignments

	Jordan	Qatar
	Disi Project	Waste management facility at
		Ras Laffan
		Lusail Primary Infrastructure
	Saudi Arabia	Halul Island
	4,000 MW Qurayyah Power	
	Project SEC 380KV Transmission	UAE
	Line Rabigh Power and	HML Petrochemical Storage
	Desalination	Terminal at Hamriyah Free Zone
		Sharjah
		Water Supply System for Fuajiral
		Distribution
	Oman	Proposed Thermal Power Plant,
	Switchgear Protection System	Ras Al Khaimah









INFRASTRUCTURE







- Established among the top five infrastructure engineering consultants in India
- Working on nine IT Parks, key educational institutes in Hyderabad and Delhi
- Involved in prestigious projects of national importance such as the Ganga Action Plan, water supply project for metropolitan cities in India, etc.
- Tech-city development projects such as the G.I.F.T. City, Knowledge Park in the capital city, are undertaken to drive urban infrastructure development
- Involved in the largest dredging project in India for a large port in India
- Achieved accreditation for eight key sectors for Environment Impact Assessment(EIA) studies
- International projects in Qatar and Nigeria

What the Infrastructure business unit plans to do in 2013-14

- Drive businesses in the Middle East, SAARC and African regions
- Drive opportunities in transportation and airports sector
- Expand service offerings in ports sector
- Work with EPC/Boot contractors to capture design engineering services
- Build up architectural capabilities and establish as a frontrunner in architectural services
- Ramp up delivery mechanisms and drive customer focus to capture repeat business
- Establish touch-points for relationship building to capture businesses at every phase in long-gestation projects
- Look out for inorganic growth in order to grow in niche sectors

The Infrastructure business unit's operation is characterised by large scale, multi-disciplinary assignments with long gestation schedules. In this aspect, Tata Consulting Engineers has successfully built a name in several key verticals. The engineering consultancy assignments typically handled by the sector are urban infrastructure, SEZ and township management, buildings, water management

The relationship building initiatives undertaken ensured customer satisfaction, underscored by the fact that 50% of the business pipeline are repeat orders.

and other such projects that have a high degree of complexity to it. Several of these projects arise from investments from government bodies, both from the Centre and States. Projects run into several years and there is a great onus on schedules and delivery mechanisms. Tata Consulting Engineers ramped up technology and delivery systems, processes and

people to enhance delivery capabilities. The relationship building initiatives undertaken ensured customer satisfaction, underscored by the fact that 50% of the business pipeline is from repeat orders. Going forward, the Infrastructure business unit will strive to balance business from repeat orders and new sales orders, the rationale being most assignments in the infrastructure sector are acquired through competitive bidding processes and past successful relationships. This makes clinching new businesses equally challenging with long drawn sales cycles.

Performance outlook

The slow growth in the economy continued through 2012-13 and new investments in infrastructure in the domestic sector are expected to be

moderate in 2013-14. To ensure steady and long-term relationships with clients, the sector will strive to establish itself as a preferred service provider to some of its long-standing customers. Working with EPC contractors to address the design engineering needs will also ensure short-term revenues. Going forward, tapping international businesses in the SAARC, Middle East and African regions will be the marketing strategy that will build growth for the sector.

In 2012-13, the Infrastructure business unit's contribution to gross revenue was at 17%. The year ahead will be marked by addressing continuous revenue streams in the short-term and profitability in the long-term, especially in the delivery of long gestation projects.

A CASE IN POINT

Engineering a tech-city of the future

An international finance tech-city for a rapidly developing state in India is intended to be India's foremost destination for financial services and other multi-services sector. The State Government established a joint venture company for the development of the tech city. This ambitious project of the State Government is designed to stand proud on the banks of the river Sabarmati, built to be a colossal township spread over 25,000 acres with office buildings on 880 acres. Tata Consulting Engineers Limited has been appointed as engineering consultant and is presently handling the city planning and detailed engineering. The magnitude of the project and the planning required showcases Tata Consulting Engineers' capabilities as a high-end engineering solutions provider. The project run-time is expected to

extend to about 11 years.

Scope of the Company's involvement entails total infrastructure master plan covering:

- Power supply
- Water supply distribution Raw water pumping station and pipeline, water treatment and master planning of water supply distribution network for 673 acres.
- Wastewater collection and treatment
- Master planning for storm water drainage management
- External fire safety systems
- Solid waste management
- Largest district cooling systems
- Irrigation systems

Transportation - External connectivity, improvement of existing access roads, connectivity to national highway, arterial, sub-arterial and internal roads, vehicular and pedestrian underpasses, flyovers, metro line with stations.

Tata Consulting Engineers' engineering expertise entailed innovative solutions that provided cost-effective options, environmentally sustainable waste management and water management solutions, resource conservation measures and ensuring that the city is built on a 'green' concept. This project is not only the pride of the state which is in the limelight for its growth but also a proud accomplishment for Tata Consulting Engineers' Infrastructure business as this is a platform that showcases the company's capabilities.



CHEMICAL



What the Chemical business unit did in 2012-13



- Successful commissioning of Euro-IV project for a petroleum corporation and decorative paint project
- Captured new business in the petrochemical sector viz. PVC, Methanol , Nylon-6 among others
- Engineering services for various product terminals involving refrigerated LPG tanks
- Landmark new business order to provide engineering consultancy for the largest gas-based urea fertiliser plant in Nigeria
- Engineering services for many food and pharma projects

- Engineering services for the largest pulp and paper manufacturing plants
- Engineering services for facilities working on a breakthrough technology for red mud processing
- Introduced 3-D tools and technologies to provide simulated design plans
- Trained man power in state-of-the-art IT tools and technologies
- Improved operational efficiencies and renewed focus on profitability

What the Chemical business unit plans to do in 2013-14

- Explore business opportunities working with Korean EPC firms to capture business in emerging markets
- Increase training of manpower on simulation tools and IT-enabled delivery solutions
- Focus on large scale fertiliser and oil refinery business in the regions of Nigeria, Mozambique, Ethiopia and Ghana on the strength of past relationships.
- Strengthen existing relationships for new business opportunities of higher scale

Innovative 'pigging' process simplified piping design, reduced plant complexity and cost for Asia's largest decorative paint plant.

The Chemical business unit commenced the financial year 2012-13 with moderate order bookings. However, good business was secured during the course of the year. New businesses were strengthened in the oil and gas, petrochemical and fertiliser industry sectors. Storage facilities, upgradation of existing facilities, optimisation of feedstock management were some of the opex-related opportunities that kept the order book ticking. The slow growth syndrome continued through the year with few large capex projects. The food and pharmaceutical verticals, were driven by investments in API facilities was driven by generic drug manufacturing following a lapse in patent rights. Demand for decorative paints is driven by the industrial and automobile sectors. The fertiliser segment provided opportunities through natural gas conversion, LNG storage and transport, and coal conversion to ammonia and urea. The pulp and

paper sectoral opportunities arose from an increased demand for writing and printing paper. Overall the domestic market indicated a flat trend, resulting in moderate growth in new business acquisitions for the Chemical business unit.

The international business scenario continues to be promising especially in Africa. The year 2012-13 had a major breakthrough for the Chemical business unit's fertiliser vertical with Tata Consulting Engineers being appointed as project management consultants for Nigeria's largest fertiliser unit to manufacture 2x2,200 metric tonnes per day (MTPD) of ammonia and 2x 3850 (MTPD) of granulated urea. The availability of crude oil and petroleum poses huge opportunities in the oil and gas and refinery segments in Western Africa. The Chemical business unit has already clinched large projects in the region. Based on these success, the Company hopes to establish long-term relationships with clients through repeat orders. The US region throws opportunities in shale gas storage and transportation. Detailed engineering, project management and engineering procurement opportunities are likely to materialise in the coming year.

The Chemical business unit in the past worked successfully with international

engineering procurement contractors, especially from Korea who made inroads in the refinery sectors. The Chemical business will work closely with these EPC players by adding value through engineering technology solutions.

Key innovations were achieved by undertaking projects such as:

- Asia's largest decorative paint manufacturing project
- Development of technologies for recovering valuable metals from red mud for a scientific research foundation
- Experience with global companies in the food and pharmaceuticals sector
- De-inking plant relevant to the pulp and paper vertical
- Scale up and process design for a zirconium plant
- Process design for a radio chemical plant





A CASE IN POINT

A decorative paint plant for one of the largest paint manufacturer in the country



The responsibility of end-to-end engineering services for a decorative paint plant with an initial capacity of 300,000 kl per annum of paint was a dream project for the Chemical business unit. Tata Consulting Engineers was entrusted with basic and detail engineering, procurement services, inspection and expediting and construction supervision services for a decorative paint plant. The Chemical business unit provided value-addition to customers. The design engineering and planning was done on a fully-integrated 3D engineering platform with a client review interface. This helped in infusing predictability to the project. PDMS modelling of the entire plant, including civil, underground facilities, mechanical, equipment, piping, electrical and instrumentation also ensured greater accuracy and quality in the design.

An innovative aspect of the project was the 'pigging' for transfer of liquid raw materials and products. This technology helps transfer various chemicals through a dedicated pipe and is also useful in cleaning the pipelines. This helped to reduce the number of transfer lines, thereby reducing the complexity of the plant around the equipment. By simplifying the piping requirements, it was possible to make the plant fully automatic. An automatic equipment cleaning system (automatic CIP) system was also part of the engineering plan.

The plant is designed based on the 'Zero Discharge' concept. The effluents in all forms i.e. solid, liquid and gaseous effluents are treated within the plant. Solid effluents are managed through an incinerator followed by heat recovery and scrubber. Liquid effluents go

through primary, secondary and tertiary treatment. Various types of scrubbers for gaseous effluents have been designed and implemented. The treated water is reused in the plant. Roof top rain water is collected and stored in roof water storage tank. This roof water is pumped to the water treatment plant and then is directed into the production process. The 100% tertiary treatment and recycle of sewage reduced fresh water intake by about 40%. Around 30% of total plot area has been earmarked as greenbelt zone.

This was a back-to-back large-sized project, which was successfully commissioned. The plant stands as a modern facility with state-of-the-art technology and environmentally sustainable features incorporated in the design and plan.

POWER







- Positive trends in international markets with new sales orders for the Power business unit
- Service offerings to include outage management, testing and due diligence for power plants
- Partnered with large companies to serve as dedicated engineering partners
- Completion of India's landmark super-critical thermal power plant

What the Power Business Unit plans to do in 2013-14

- Open up new service lines:
 - Services in operation and maintenance areas
 - Renovation and modernisation services of existing power plants
 - Services to OEM to optimise key processes in plant operation

- Fossil Power Innovation Award 2012 from Modern Power Systems for the Ultra Mega Power Plant
- Finalists in the Platts Global Energy Award 2012 under the category 'Premier Project - Engineering' for the 5x830 MW supercritical coal fired unit. The world's top projects were shortlisted
- Drive for Greenfield and Brownfield projects in the African states of Nigeria, Kenya, Ghana, Namibia and Malawi
- Partner with financial consultants and Engineering Procurement Contractors (EPC) to capture end-to-end pre-project and project-related services
- Establish a marketing presence in the US, South Korea, Nigeria and Kenya



Tata Consulting Engineers is a stalwart in its technical capabilities relevant to power plants and related services. These capabilities have matured tremendously over the years and several innovative solutions in power plant engineering have made us proud and ensured customer delight.

From a macroeconomic perspective, the worldwide pressure on fuel has eased. However the dynamics in the sector with respect to India, rest of Asia and the rest of the world are varied. The challenges in the power sector in India continued across the value chain – from power generation to power transmission and distribution. Power generation in India is primarily through coal-fired power plants. Securing cost-effective coal remained a challenge. As such, slowing growth in the Indian power sector is expected to continue through the financial year 2013-14. Going forward, renewable and hydro power projects are expected to gain prominence. With available technology capabilities, coupled with adequate impetus to this segment, TCE is ready to leverage emerging opportunities.

In the international markets, the African countries are ramping up their power generation facilities with more than 30,000 MW capacity power plants proposed to be added in countries such as South Africa, Nigeria, Mozambique, Zambia, Algeria, Ghana, Malawi and Zimbabwe. In the Middle East, especially in Saudi Arabia and Kuwait, several new, gas-based, open cycle and combined cycle power projects are being developed to meet the peak power deficit and expected growth in demand.

Tata Consulting Engineers is looking to translate the events in various regions into opportunities.

The African region shows promise on two aspects:

- Gas exploration intensified along the West African coast in 2012 with major discoveries reported in Ghana, Cote d'Ivoire and Equatorial Guinea. This eases supply of fuel for gas-fired power plants. Greenfield projects to augment power supply is a likely opportunity.
- Brownfield opportunities for combined cycle power plants, reengineering for conversion of power generation facilities, maintenance, outage management, renovation and modernisation and performance testing of power facilities are expected to rise

Opportunities in the US region arise on three counts:

- Need to upgrade ageing transmission lines infrastructure, building of smartgrids and upgrades of old power plants to suit renewed environmental regulations.
- The increasing exploration and production of shale gas makes for conversion of coal-fired power plants to natural gas fired power plants, and potential Greenfield natural gas fired power plants.
- Additionally, re-engineering opportunities to facilitate transport of fuel for power generation, transmission and distribution, upgrading and retrofitting projects, are some emerging opportunities.

Overseas business acquisitions are expected to grow especially in the African, the Middle Eastern and the American regions in 2013-14. However, overall trends in the domestic power sector continue to be challenging. The Power business unit's order books grew marginally in the domestic markets. New business acquisitions are expected to pick up as and when stalled projects become active. The industry is impacted due to capital requirements, land acquisition stalemates for coal mining, impact on profitability due to financial stress in power distribution companies triggering a chain reaction in power generation and feedstock supply/pricing issues.

Countering these adverse situations, Tata Consulting Engineers put in place strategic action plans that would counter the dependence on large scale projects and uncertainties associated with competitive bidding for the same. Innovative solutions that the Company provided in the past for super critical thermal plants in optimising feedstock management and working with OEMs to enhance costeffective production processes will help in providing value-engineering services to OEMs. The Company entered into several master service agreements with engineering procurement contractors. This move is expected to ensure greater predictability in business and bring in continuous revenue streams. Additionally, clinching repeat orders from existing relationships, the Company was successful in converting its partner-of-choice status to a dedicated, engineering arm of the parent company. This serves as a win-win tactic as the Company is able to transfer the cost benefits to the customer while

enjoying steady business opportunities that strengthen the bottomline. The Company will continue to scout for such partnerships and collaborations in the year 2012-13.

Financial overview

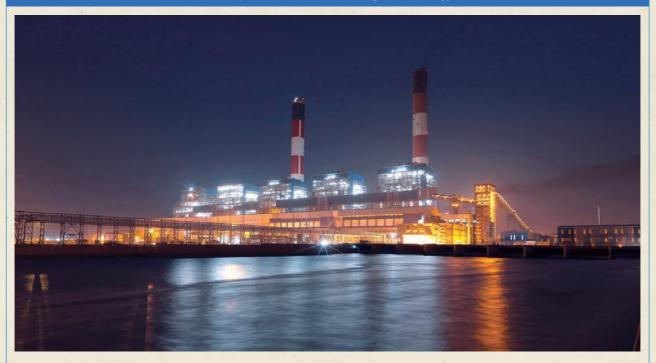
The Power business' share was about 24% of Tata Consulting Engineers' gross revenues in 2012-13. The adverse situation in the power

sector impacted revenues. New business acquisitions (international and domestic combined) grew marginally. Revenue for the sector declined over the previous year and profits were impacted. The power sector was badly hit with several projects stalled. The current trend is expected to continue into the financial year 2013-14. However, sales in the international market for the Power business unit is expected to grow

considerably in the coming year. Plans to establish collaborations, dedicated design engineering services for large clients – are some initiatives that will bear fruit in the coming year. Tata Consulting Engineers will leverage its technological innovations to make greater inroads in the OEM and design engineering space to realise its projected sales pipeline and profitability goals.

A CASE IN POINT

5 X 830 MW super critical thermal power plant made viable through technology innovation



A world-class super critical thermal power plant - India's pride and a technology marvel – was built to last.

The US \$4 billion (₹17,000 crore)
Greenfield, ultra mega power project is among the world's largest Greenfield thermal generation project (4,150 MW: 5 X 830 MW) executed in a single phase.
The plant supplies power to about four

million households in five Indian states of Gujarat, Maharashtra, Punjab, Haryana and Rajasthan. KPMG ranked it as one of the top-100 infrastructure projects in the world. The project was completed well before schedule by a dedicate a team of more than 12,000 people (peak time).

Tata Consulting Engineers was involved in the project as engineering consultants

from pre-project to commissioning. Working on a project of this scale and magnitude, TCE proved its mettle in the power sector. The world-class plant was built and commissioned ahead of schedule. Large utility boilers were designed for a specific type of fuel to perform safely and optimally. The client ensured feedstock input through



backward integration measures that entailed investments in an Indonesian coal mine. High grade coal to suit the boiler was imported from Indonesia and production commenced. Coal pricing constitutes 70 % of power generation cost and securing feedstock supply was the most prudent thing to do.

Unfortunately, in an adverse turn of events, the Indonesian coal pricing policy rendered a blow to the feedstock price for the plant. The price of imported coal shot up by 93%. With 70 % of the generation cost sky-rocketing, the viability of the plant was a concern. A world-class plant generating power to feed industrial growth and address the energy needs of people became an unviable proposition as the high production costs could not be absorbed down the value chain.

The options left were not much. The utility boilers were designed for high grade coal. The coal available in the domestic markets are of low calorific value and supply bottlenecks will be something to contend with. Retrofitting the boilers to suit lower grade coal would involve huge capital expenditure. The only solution was to blend the higher and lower grade coals. The client conducted studies on coal blending. Tata Consulting Engineers worked with the client and OEM (Original Equipment Manufacturer) in conducting the studies. The studies revealed that the equipment is designed to handle a small percentage of low calorific value coal which would still render the production cost untenable.

The team at Tata Consulting Engineers

worked with the client, the OEM and independent agencies to work out a blending solution. Potential adverse impact of using non-design, low grade coal implied lower boiler efficiency, high energy consumption, limitations to achieve peak output potential and equipment failure. Selection of coal blend and performance parameters were subject to various commercial, technical and environmental implications that could not be compromised. A comprehensive and scientific approach was necessary to ensure sustained performance and

Process innovation in the blending of coal helped:

- 28% reduction in power generation cost
- Paved the way for blending higher percentage of low calorific coal under environmentfriendly conditions

equipment life. The team conducted several trials to optimise the equipment to manage a blending ratio of lower calorific value coal and design coal to arrive at an optimal solution. Tata Consulting Engineers' involvement in working out a blending solution conducting trials and research alongside the client bore fruit at the end of a two-year quest.

As engineering consultants, Tata Consulting Engineers worked alongside the client to co-create a technological innovation; the blending ratio was optimised such that a higher volume of cheaper, low calorific value coal could be blended successfully with the design coal with no adverse impact to the equipment and the environment. Overall capital investments of ₹2,500 crore were avoided and 28% reduction in power generation cost was achieved. The successful blending technique throws up a possibility of blending different types of coal optimally without retrofitting the utility boilers. Efforts are still on to ensure production cost optimisation. The technique put the plant back on track. The efforts of a team of 12,000 people, both at TCE and its clients, were upheld with a plant efficiency of nearly 40%.

This blending success throws up a plethora of new opportunities:

- Re-engineering options to fire alternative coal for client's upcoming thermal units.
- Production process can be managed in a flexible and non-invasive way with alternative coal types for cost optimisation.
- The technique to efficiently manage coal blends considerably reduces the risks in securing fuel sources and securing and blending various coal types is now a reality.

Tata Consulting Engineers takes pride not only in the successful commissioning a world-class power plant but also in being part of a key process innovation that can change the way feedstock is managed in the generation of power and the optimisation of equipment.

STEEL METALS AND MINING



What we did in 2012-13

- Merged the Steel and Metals segment and Mining and Minerals segment into one entity – Steel Metals and Mining
- Alliance with Centre for Engineering and Technology (CET), the design, engineering and consultancy unit of a large steel maker to jointly provide end-to-end services for

What we plan to do in 2013-14

- Establish KPOs (Knowledge Process Outsourcing) divisions to provide dedicated services for key clients
- Tap the increasing opportunities related to mineral beneficiation, steel and mining in Africa

engineering steel plant facilities

- Tied up with global EPC firms to deliver joint services for steel and mining industry companies
- Partnered with technology providers for IT-enabled engineering solutions specific to the mining industry
- Use current relationships and core skills to pursue steel facilities engineering services arising in the Middle East
- Establish partnerships with global EPC players for joint representation and delivery of services in the steel, metals and mining industry



The Steel Metals and Mining (SMM) business unit came into being with the merging of two separate divisions, Steel and Metals and Mining and Minerals. Tata Consulting Engineers' SMM business is well established in industry circles, owing to a gradual engagement with large steel manufacturers and power companies, where coal is the basic raw material.

The macroeconomic trends in the infrastructure and related steel industry maintained the trend of the last financial year in the domestic markets. Despite a buoyant demand scenario, large capital investments in the sector have been slow in the domestic markets. Tata Consulting Engineers leveraged opportunities within the Group companies and large public sector steel makers to grow in the business. The domestic market provided key opportunities in the OPEX areas. The SMM business unit focused on engineering services, project management and construction management services for steel facilities. Coal being the main feedstock for thermal power plants in India, there are opportunities in coal beneficiation and coal washery as most equipment are designed for clean high grade coal. This, combined with stringent environmental norms being enforced, TCE has successfully leveraged opportunities in coal beneficiation, pelletisation and coal washery.

The African market, flush with mining and capital investments in the

infrastructure sector, provided growth opportunities for the SMM business unit. Rapid industrialisation, demand for infrastructure, increase in mining activities and a business-friendly political environment in the region made it a vibrant destination for foreign investments. The strategy for the SMM business unit is to enter into strategic partnerships with EPC and international investors in the region to strengthen its presence here. In a challenging economic situation worldwide, there is greater protectionism, especially in natural resource management, with governments exercising control through relevant regulations. This makes it strategically imperative to take a consortium-based approach to capture market share for the SMM business unit.

Increased infrastructure-related investments in the Middle East have also added to demand for steel in the Middle Eastern countries and steel production facilities have burgeoned in the region. The SMM business has several opportunities in the pipeline for the engineering of steel facilities.

Outlook

The Steel Metals and Mining business' overall revenues posted marginal increase over the previous year. The year ahead is expected to provide several new opportunities, both in the domestic and international markets for the SMM business unit. Tata Consulting Engineers

will focus on leveraging its technological capabilities in the sector and ensure greater profitability for the business. The way forward will be partnerships and alliances in order to provide end-to-end services to its clientele.

Process engineering solutions offered cost efficiency and execution efficiency; combined with high safety standards and commissioning in record time, a world-class blast furnace was built.



A CASE IN POINT

Steel plant at Rourkela



The Steel Metals and Mining business unit successfully completed engineering consultancy for a blast furnace for a steel plant in Rourkela, India. This was a showcase project for Tata Consulting Engineers, marked by timely completion of project and innovative solutions. Tata Consulting Engineers undertook turnkey execution of the project. The SMM business rendered civil and structural works comprising furnace foundation, 4-poster structure, equipment foundation, roads, railway tracks, drawing and sewerage. Utilities and auxiliaries comprised furnace cooling system, compressed air, nitrogen, steam, oxygen for blast furnace proper, gas cleaning plant, cast house, bell-less top charging system, stove valve cooling, air-conditioning and ventilation systems.

The plant construction and commissioning was done in record time and in line with international standards.

This project had several innovative engineering solutions such as – design and engineering of 4-poster structure, thereby eliminating the need for pouring concrete into hollow structures; and the engineered sequence of installation of the down comer connecting blast furnace and gas cleaning plant.

Blast furnace foundation was designed, critically examined and approvals for construction procured to suit site conditions such that no re-engineering was called for. Design/engineering of systems and sub-systems were critically examined to enable problem-free construction and faster execution. Design inputs from various agencies were compiled and integrated in design for construction in record time. State-of-the-art safety solutions were provided in design. Basic engineering inputs, operational maintenance, extensive fire fighting systems and fire detection

systems were incorporated and gratings were provided to ensure accident-free operations.

The innovation, safety measures and timely delivery provided cost-efficiencies to the client and the quality standards were benchmarked to international standards. The success of this project attributed to the SMM business unit's understanding of the steel manufacturing process, familiarity with international quality norms and, most of all, the capability to work with multiple entities handling complex assignments. Tata Consulting Engineers strengthened its goodwill, establishing a long-term working relationship with the client. On the strength of this success, the SMM business unit is currently involved in the development of India's largest capacity blast furnace to be commissioned next year.



CONSTRUCTION



What the Construction business unit did in 2012-13

- Launched standalone Safety Services; completed several third party safety audits
- Mobilised workforce and increased the number of staff posted overseas
- Augmented strength of project managers to meet increasing demand
- Organised systematic training for personnel to manage multi-disciplinary projects
- Re-organised the Construction business unit and positioned the business as a parallel entity to every sector
- Introduced safety process for design/ engineering to manage risk, ensure safety in designs and engineering and save cost and time in construction projects
- Drove safety awareness programmes in offices and at construction sites to enhance safety standards.

What the Construction business unit plans to do in 2013-14

- Drive focus in overseas projects
- Continue with alliances and partnerships to capture opportunities and improve competitive edge
- Double manpower strength deputed to overseas project sites
- Deploy additional manpower to overseas locations
- Invest in people development and skill building
- Ramp up sales and marketing efforts to increase focus on international market and improve top and bottomlines.

A complex facility upgrade retrofitted with no downtime; 88 oven chambers; 11 working partners (some overseas); built to international standards.... Our innovative engineering worked well.

The Construction business unit has had a successful stint in the past five years posting good year-on-year growth in the revenue; a growth of about 26% over the previous year was achieved during the year ended March 2013. Business trends were positive, particularly in the overseas markets owing to key factors:

- Longevity in the business
- Long-term relationships with customers leading to repeat orders
- Brand equity built on integrity and ethical practices
- Large, dedicated workforce on our payroll.
- Experience in handling complex projects
- Scale of operations, spread of business sectors
- Growing overseas presence, in key emerging economies

The market scenario in the domestic sector continued to be tough with profitability and price realisation posing a challenge. However, many opportunities have opened up in the international markets, especially in the power (outage management), infrastructure, mining sectors. The opportunities are primarily in

the African regions of South Africa, Nigeria, Ethiopia, Zambia, Tanzania, Liberia and the GCC countries - Kuwait, Jordan, and Oman.

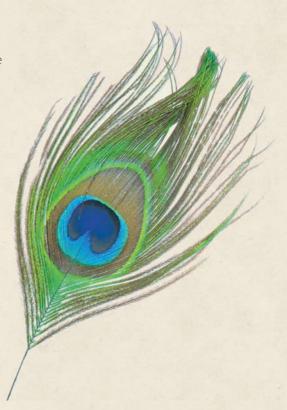
In the financial year 2012-13, the Construction business unit modernised its delivery systems with technological upgradations. IT tools for building integration management, simulation of facilities using 3D modelling, virtual display of the final facility, were some technology inputs introduced, which provided tremendous value to the customers. Such a simulated environment helped in the seamless management of projects in the building sector, improved planning, cost reduction due to avoidance of rework and identification of risks and mitigation measures. Further, to capture market share and drive new sales orders, the Construction business unit positioned it as a seamless, horizontal unit, to provide project and construction management services to all business units. While design engineering and pre-project services rendered by other sectors have been lead prospects for the Construction business unit to be converted into construction management projects, the order books posted consistent bookings for standalone construction management and safety services.

Investments in construction for the Power, Infrastructure, Chemical and Steel Metals and Mining sectors are expected to remain flat in the domestic sector. But with more opportunities in the international markets, the Construction Business Unit will focus on effective cost management and profitability and maintain the bottom line. Keeping with its track record, the Construction Business Unit will continue to focus on third party safety audits and safety management at

the sites. The business unit will continue to work closely with its customers to ensure accident-free project delivery.

Outlook

The Construction business unit's gross revenue increased by 26% in 2012-13 as against the previous year, contributing to 30% of overall revenues. A good component of the Construction business unit's revenues accrued to overseas assignments. During the year ahead, the trend is expected to continue. Key businesses are expected to arise in the African and the Middle Eastern regions and hence the Company intends to re-allocate its manpower resources to these regions. Tata Consulting Engineers anticipates a successful year ahead on the strength of its large in-house workforce.





A CASE IN POINT

Integrating international colours into one successful facility



Consulting and construction supervision for a Brownfield coke oven plant with a by-product plant can be yet another project in the life of a technology consulting firm that has been in the business for five decades. However, when there are 88 oven chambers, 11 major partners (some international), Chinese technology, Indian contractors and a Brownfield project with facilities operational – the assignment gets truly 'colourful.' This project goes down in the annals of the Construction business history as a memento due to some key technology aspects of the project:

- Integration and management of various technology partners, especially interpreting from Chinese technology partners and implementing them in Indian conditions
- Construction of state-of-the-art, architecturally designed and built, main receiving sub-station complete

- with office building comprising six levels with passenger lift – built adopting 'green building' concepts.
- Dismantling top structural arrangements and brick lining five layers of top coming from a height of 145 metres for a chimney from the outer side.
- Erection of coal conveyor gallery between two coal towers at a height of 54 metres.
- Installation of large numbers of stainless steel burner pipes, cleaning nozzle pipes in each block of battery within a close tolerance for their locations.
- Construction and retrofitting of new cooling tower in by-product area and dismantling of an existing cooling tower for clearing a front for scrubbers and compressor house.
- Construction of junction house and coal conveyor gallery with 12

- metres depth alongside existing coal conveyor.
- Construction of cooling tower basin on the roof of a process chiller plant.
- A 68 metre high quenching tower wall construction up to 31 metres along with refractory work.
 Installation of de-dusting nozzles at 58 and 43 metres inside the quenching tower.

There were several other challenges especially on account of retrofitting a large facility upgrade with no downtime. These challenges were addressed with innovative solutions, which have now become benchmark practices for such a facility erection.

The Tata Consulting Engineers'
Construction business unit's proud
moment came when the plant was
commissioned in record time and in
concurrence with international safety
standards.

NUCLEAR AND ALLIED TECHNOLOGIES



What the Nuclear business unit did in 2012-13

business portfolio



- Simulation tools were introduced and engineers trained using integrated design applications
- 2 X 700 MWe PHWR unit projects were undertaken for

balance of turbine island package for a nuclear power plant

- Completed design of cryo pump
- Completed design of cooling water system working with ITER, India.

What the Nuclear business unit plans to do in 2013-14

• Secure continuous revenue streams working with EPC contractors for design engineering



The demand for energy continues to far exceed the supply. However, nuclear energy generation in India is largely managed by the public sector. India's nuclear energy plans have faced opposition due to a public outcry on Greenfield projects. Concerns have heightened post the Fukushima incident and public concerns on the safety of nuclear power plants. Atomic energy projects are closely managed by the government and private sector cannot participate in nuclear energy generation as a majority player. The private sector is relegated to a minority stakeholder in nuclear energy generation programmes. In addition, the Nuclear Liability Bill has not gone well with vendors supplying nuclear equipment both in India and also suppliers from abroad. While reserves of coal are in large quantities, demand for coal with high calorific value needs to be met through imports. Hence, environmental issues are concerns which will drive the potential for nuclear energy. Availability of sufficient quantities of indigenous uranium poses a challenge to nuclear power generation, which needs to be met by imports. The current Five Year Plan envisages eight units of indigenous 700 MW Pressurised Heavy Water Reactors (PHWR) and ten units of 1,000 MW and above Light Water Reactors (LWR) boosted with imported technology. The Government has given an in-principle approval for five new Greenfield sites in the states of Haryana, Madhya Pradesh, Andhra Pradesh, Gujarat and West Bengal. With two units of Fast Breeder Reactors (FBR)s each of 500 MWe in the pipeline and 500 MWe Power Burst Facility Reactor (PBFR) being commissioned, Tata Consulting Engineers is well-placed to play a role in these projects. Historically, the Company has continued to work with various divisions under the Department of Atomic Energy and public sector undertakings. The Nuclear and advanced technologies unit is well placed to acquire these projects on the strength of past relationships as and when the projects are rolled out. Tata Consulting Engineers has partnered with public sector units to deliver contracted projects and continues to enjoy the trust and confidence of the Company. In addition to indigenous projects and those with imported technology, TCE is aggressively pursuing international opportunities in this sector.

The Nuclear business unit has also identified opportunities in technology-driven services such as nuclear safety design, spent fuel processing, waste disposal management solutions, thorium utilisation and design standardisation.

Advanced technology-related services involving complex design and analysis, seismic studies and other core technology-driven services are now incorporated in the service portfolio. Such services have short cycles, are less iterative in nature and are revenue generation assignments. Regular nuclear energy related projects combined with advanced technologies will help infuse greater profitability to the Nuclear business unit.

Outlook

The financial year 2012-13 was a challenging one with several projects stalled and in various stages of completion. The Nuclear business unit acquired some new sales orders, which will yield revenues in the next financial year. The business will continue to look for opportunities in the advanced technologies stream in the overseas markets and continue with current nuclear power programmes.





Business excellence

Tata Consulting Engineers' quest in Business Excellence continues and the year 2012-13 marked several initiatives in this direction:

- Communications to employees in order to align them to the overall Company strategy were initiated through recurring mailers (Words on Wings), Townhall meetings and other interactions.
- Internal customer satisfaction surveys for Business Excellence, Legal and Finance functions were conducted to assess the levels of engagement and satisfaction
- Innovation contests were conducted and about 74 applications were processed
- Strategic planning workshop and an IPR session were conducted
- Several process initiatives such as customer contact plan, strategy map, Balanced Score Card, Customer Relationship Management systems, business unit-specific Balanced Score Card and risk management processes were introduced
- Process automation for Legal and
 Compliance, quality measurement and analysis and ISO 9000 audit management were implemented.



Corporate sustainability

Safety – It is our commitment

Safety to us is all encompassing. It covers workplace safety, safety at site where we are directly involved, partner sites where we work with our associates and their contractors. Safety programmes were jointly and independently driven across sites and offices. Our sites reached new landmarks in uninterrupted safe working hours.

 General awareness and emergency response programmes - mock drills and formal training – were other initiatives continued during the year.

- A design guide has been developed to incorporate safety in design engineering at each stage of the project life cycle.
- An initiative measuring the monthly safety score of design offices was launched
- Periodic safety audits, ranking the best

sites for safe working practices every month and offering safety training to contractors' employees at close to 115 sites in India and overseas, are maintained to enhance safe working at construction sites.

Efforts are on to enhance standards of safety in every operation by bench marking with the best international safety systems and standards.

Social responsibility-TCEndeavour

Our corporate sustainability programmes are driven under TCEndeavour – Care, Share, Restore. We have identified four focus areas – Engineering, Education, Environment and Community. All our activities are designed to come under these aspects. The year 2012-13 saw several new initiatives launched and progressing well.



Our core expertise for the benefit of the community

The tribals in Korchipada, the hamlet of Jawhar district, are a small community of about 50 homes. The monsoon rains lash across the region, yet tribals here face acute water shortage once the rain stops. The terrain is hilly and there are no catchment facilities to harvest rainwater. Tata Consulting Engineers has plans to provide design engineering and construction services for restoration of a check dam, building a well, recharging trenches and constructing a closed brick masonry tank with filtering process to provide potable water to this hamlet. Phase I comprising the construction of a

closed brick masonry tank with a filtering process to provide potable water to this hamlet, has commenced.

Tata Consulting Engineers employees volunteered to the cause by setting aside a day to work with villagers to help in the construction.

This initiative will make a difference in the lives of most people living in this hamlet. Young children will return to school and many women will be relieved from the daily pursuit of water, which now is the main purpose of their lives.



Affirmative Action

TCEndeavour's Affirmative Action programme to provide education and employability is designed to impart practical knowledge using the Company's core expertise. This programme will help increase employability of SC/ST students with requisite qualifications. The plan is to provide training in drafting applications for 2nd year students in the ITI draughtsman trade. The programme comprises three levels of training – basic, advanced and

specialist with a certification at the end. The pilot programme commenced in Bangalore and Chennai as a series of weekend courses. The TCEndeavour Champs will be volunteers in this programme and will train students in IT applications for drafting.

Tata Consulting Engineers believes these programmes are just the beginning and there is a commitment to take this to higher levels in due course.

Overview

Engineering

- Study and improvement of electrical distribution system in a township
- Engineering services for Samarthanam hostel building
- Building renovation of School of Hope
- Services for Ramanashram and a spiritual entity of Ramakrishna Seva Pratisthan

Community

- Blood donation camps
- Health camps at construction sites
- Reflective stickers provided to barricades in Pune to drive safety

Environment

- World Environment Day celebrated –About 500 trees planted across locations
- 'Go Green Campaign' during Ganesh festival. Beach cleaning undertaken following the festival.
- Waste paper recycled across locations

Education

- School kits for 222 children from marginalised sections
- Affirmative Action programme launched in Bangalore and Chennai for training in IT applications for drafting
- Students of St Patrick's School were provided tuitions to cope with class X exams

Weaving sustainability into the business

Consciousness of responsibility towards corporate sustainability is at the core for Tata Consulting Engineers. The Company has constantly endeavoured to adopt sustainable business practices. Driving this intent further, TCE has leveraged its expertise to help customers reduce their carbon footprint and work towards sustainable development.

Pollution management solutions

Tata Consulting Engineers was appointed consultants to a steel-making giant for pollution control and reducing emissions – particularly particulate matter from different stacks. The objective was to meet stringent environmental norms recommended to manage the overall ambient air quality. TCE's technology solutions helped in selecting the appropriate air pollution control equipments to reduce stack

emissions. The design also takes care of workplace air quality to maintain OHSAS norms. The project was carried out in a Brownfield site with operational challenges of shutdown requirement, space crunch and safety requirements.

Earlier, TCE had also helped commission a CEMS (Continuous Emission Management System) for the same customer which has ensured greater transparency and commitment by the client, in pollution management.

Tata Consulting Engineers has recommended solutions for

continuous improvement and the system is among the largest in the country.

Resource conservation in the infrastructure planning of an Aerotropolis

An assignment to provide consultancy services for township planning, development and design of infrastructure works for a first of its kind, an Aerotropolis (airport township) was a challenging assignment. The site comprised 1,700 acres to be planned adjacent to the airport. The scope of work included design and project management of integrated infrastructure for the township covering water, sewerage, drainage, solid waste management, fire, disaster management, electrical distribution, telecommunication, safety and security aspects. Solutions provided resulted in an extensive exercise in resource conservation, among other things. The solution proposed included rainwater harvesting and water management

Township planning retaining 11 hectares of water bodies to harvest rainwater; waste recycling and reuse to reduce fresh water intake by 50% – these were some sustainability solutions provided.

designed to retain 22 ponds covering over 11 hectares of area. These ponds are being preserved and over 300 ml of rainwater will be harvested.

The drainage system has been planned to route the surface water runoff through these ponds. The annual mass balance for the ponds reveals that at least minimum water level will be maintained through summer.

Based on a zero discharge concept, sewage generated from the township is proposed to be treated by Sequential Batch Reactor (SBR) process at the sewage treatment plant. It is proposed to provide tertiary treatment. Post-tertiary treatment, the treated sewage water will be used for flushing and irrigation. The prescribed solution will result in a 50% reduction of fresh water intake – a reduction from 38 MLD to 18 MLD.



CORPORATE INFORMATION

Offices and addresses



REGISTERED OFFICE

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CORPORATE OFFICE

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BRANCH OFFICE

Raj Plaza, LBS Marg Vikhroli (West) Mumbai - 400 083

BRANCHES - 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 - 411021

Delhi (NCR)

Green Boulevard Ground Floor, Tower B & C Plot No B9 A, Sector 62 Noida - 201301

Jamshedpur

Pipeline Road Sakchi

Jamshedpur - 831 001

Chennai

6th Floor, SKCL Central

Square

C-35, Cipet Road Guindy Industrial Estate, Guindy, Chennai - 600 032

Kolkata

Technopolis 5th Floor, A Wing BP-4, Sector V, Salt Lake City Kolkata-700 091

SUBSIDIARIES

Qatar

TCE QSTP-LLC, P O Box No.5825

Qatar Science & Technology Park,

Doha, Qatar Mumbai

ECOFIRST SERVICES PVT LTD

247 Park

Tower 'A', LBS Marg Vikhroli (West) Mumbai - 400 083

OVERSEAS OFFICES

US-New York

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US-New Jersey

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e-mail: msom@gsi-corp.com

BANKERS

HDFC Bank ICICI Bank Limited Bank Of Baroda State Bank Of India Yes Bank

AUDITORS

Deloitte Haskins & Sells Chartered Accountants

TATA CONSULTING ENGINEERS LIMITED

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

