



TCE**x**pression

TATA CONSULTING ENGINEERS LIMITED

Volume 50, Issue 3 - August 2013



wake up to
SiD

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A note from the Editor

TCEXpression has grown steadily and gained traction among its stakeholders. As we expand our reach and readership, we decided to move to the next stage of transformation - in form and feature. While we have maintained most of the regular features, the form has gotten more dynamic. This is symbolic of the coming of age of TCEXpression. We have attempted to give the complexities of engineering a softer, humane touch. I hope you enjoy it as much as the team here enjoyed putting it together. A voice for our technology, a voice for our customers and a voice for our people – express yourselves at TCEXpression.

I leave you with this thought. Do speak out at - TCEXpression@tce.co.in

Mallika Sriraman

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for restricted circulation

Reflections

With the close of July 2013, we complete 51 years of operation. Through the past, present and future, Tata Consulting Engineers is committed to value systems that form the core DNA of our organization. The scale and geographic extent of our operations may change, bellwether economic conditions may toss and turn us, yet we stay together bound by our core fundamentals. This is essentially what has given us a strong foothold in the business and I believe it will continue to do so.

Not surprising, that this edition of TCEXpression has Safety as the theme for our cover story. Apart from construction safety, there has to be a special emphasis on safety through design. The stress on SiD – Safety in Design is relevant to us because, through the value chain, everyone has a role to play to ensure safety and safe practices. As engineering consultants we are not just technology experts but also thought leaders in paving the way for SiD such that risks are identified and mitigated right at the conceptual stage of a facility. We sensitize, bring people into the safety loop and champion the cause of all forms of Health, Safety and Environment. This I believe has to be built into ours and our partners' DNA to ensure end-to-end safety.

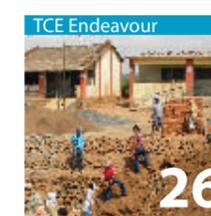
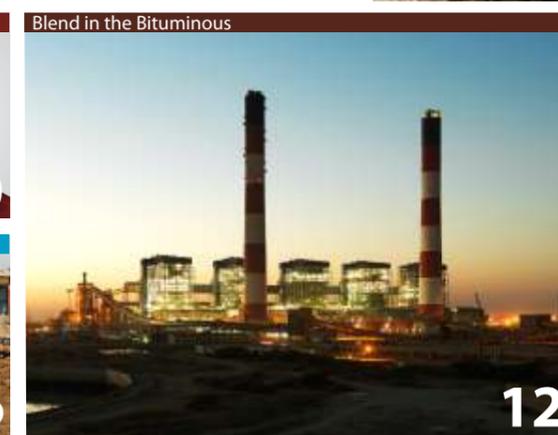
TCEXpression has been streamlined to drive our business focus and showcase ours and our people's achievements. I do hope you find the new look interesting.

With warm wishes,

Sincerely yours,
J P Haran

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Wake up to SiD

Safety in Design

Several unfortunate incidents across the world have given a wake-up call – Wake up to SiD or Safety in Design.

Tazreen Fashion factory, part of the Tuba group, in Bangladesh employed 1,630 workers, who produced T-shirts, polo shirts and jackets. These were supplied to international firms across the world. As part of the ethical sourcing policy and supply chain responsibility commitment, a US company sourcing from Tazreen Fashion found the factory was not complying with safety regulations and due to violations, deemed it a high risk operation. On 24 November 2012, a fire broke out killing at least 117 people and leaving about 200 people injured. The reason for the fire was an electrical short circuit in the ground floor of the nine storey building. Mounds of fabric and yarn helped the fire

spread rapidly. Most deaths happened because workers were trapped due to the narrow exits. All three staircases led to the ground floor, where the fire had originated. The design of the factory was flawed and posed a risk. There were no measures taken even when the risk was identified. The company had not done improvements in electrical and fire safety measures. In the aftermath of the accident, some of the factory's clients took on the moral responsibility of working with suppliers for sensitizing on Environment, Health and Safety. Several such unfortunate incidents across the world have given a wake-up call – Wake up to SiD or Safety in Design.

Safety - whose responsibility is it anyway?

The answer to this question is – everybody's. Everyone across the value chain is responsible. Safety in Design Engineering can be defined as a design process that focuses on eliminating or minimizing hazards during the design stage by implementing risk identification and risk management principles. It is a planned, disciplined, and systematic approach in identifying, analyzing, eliminating, and

controlling hazards by analysis, design, and management procedures throughout a system's life cycle. System safety activities start in the earliest concept development stages of a project and continue through design, production, erection, testing, operation, maintenance, refurbishment and disposal. Aspects of safety during all stages of system life cycle should be considered in design.

The Buzz on SiD

In recent years Safety in Design (engineering) or SiD, has become a focal point of researchers and regulators. SiD is a systematic measure to prevent serious safety lapses right at the master plan and design engineering stage. SiD is continuously evolving with more regulations being enforced to manage risks. Principles of SiD and codes of practice define how design engineers can impact safety outcomes. Engineers and architects incorporate these codes into their Safe Management Systems and adopt SiD procedures in their day-to-day activities.

The Scope of SiD extends through the entire project lifecycle. On the basis of defined SiD principles safety audits and HAZOP studies are conducted at every stage (pre design and design stage) of the project. The TCE SiD manual provides a framework for design

engineers to ensure that designs offered by TCE are of adequate safety standards and does not compromise safety. Safety risks identified during design stages should be studied thoroughly and resolved or mitigated as per the guidelines and documented. The responsibility of safety, both in design and in construction, to ensure safe working environments is mandated through various forms of legislations across the world.

Every stage of engineering construction needs to be covered on all safety norms according to defined specifications. "In India the Indian Standards Code has been enforced which is very close to the British standards. We at TCE have successfully adapted country-specific norms to implement SiD," says Pramod Gunthey, Safety Head at TCE.



Taking responsibility for SiD

Tata Consulting Engineers' assignment in Zambia

ZESCO intended to increase power generation capacity, to install two additional generating units rated at 180MW each at Kariba North Bank (KNB) under the Kariba North Bank Power Station Extension Project in Zambia. Zesco engaged TCE & Electricite du France (EDF) as consultants. TCE conducted the design review and construction supervision based on the American SiD code of practice. As construction supervisors, TCE reviewed the safety assurance plan and updated

the engineering design to currently mandated requirements. The construction stage was taken over by a third party EPC contractor. TCE periodically conducted safety and environment audits through the project cycle. Deficiencies observed were highlighted to the client for undertaking corrective measures. The responsibility will now move to the client for implementing the recommendations from SiD and continues through maintenance and operations of the plant.

Safety in Construction

Undertaking construction supervision implies, we represent the client and work alongside several parties – the client, contractors, and EPC players. TCE works on behalf of its clients to ensure safety and arrest deviation. Safety supervision during construction is as per the Safety Assurance Plan which spells out the modalities of delivery for every project with regulatory codes built in. "TCE supports and ensures that the Safety Assurance Plan is followed. Additionally, TCE works with contractors to conduct safety training, mock drill,

inspection and audits. As a moral responsibility, TCE together with the contractors ensure the welfare of the workers at the site," says A S Prabhudesai, Head - Construction Business Unit at TCE.

Running make-shift schools for worker's children, providing crèches, planting trees at the site etc are some activities undertaken. Thus safety, is a collective responsibility, of the client, by the service providers, by the contractors and ultimately for the benefit of all.



Contract workers' children from the construction site of Vivanta by Taj, Amritsar were taken on a trip to the Golden Temple. TCE conducted safety audits for the project.

Safety at the Workplace

TCE has documented the recommended safety practices for safety at the workplace through a safety manual. Every office assesses and works out a monthly safety score. TCE's safety principles and practices are based on the Tata Group guidelines specified under Tata Quality Management Services. This is enforced as part of the Business Excellence process and included in the corporate strategy. Personal safety

awareness is driven through emergency response procedure, mock drills, fire drills, awareness programs. Safety audits of all office premises based on guidelines is carried out every six months. Due diligence is conducted for new office premises and a document maintained for every office that we move into. Recently Delhi office moved into an eco-friendly office with ergonomically designed workstations.

Safety drill in progress



What you see is what you get Debunking risk through simulation

TCE has capabilities in high-end engineering design tools to simulate complex plant environment. Risk elements can be identified and mitigated in a virtual environment and SiD decisions are made right at the design engineering stage. A simulated plant and virtual walk-through of the facility helps to ensure high levels of safety. Safety related precautionary steps, structural modifications, etc. can be worked out even before construction. SiD and computer-aided design applications bring about huge cost savings.

3D simulation video to highlight safety



Meet the Safety Officers

the one thing that people should know about safety is....

"The first step during an emergency evacuation is to be calm and not to panic. You can save not only your life but that of others' too by following the golden rules of emergency situation response. Most importantly, are you aware of these rules and prepared to react during an emergency?"

Vijay Kolappa, Chennai

"Do make safety as your first priority" ...
Ashutosh Jha, Noida

"Having safe workplaces enhances your life and an organisation's standing with stakeholders. Designing safety into business practices supports innovation, and it improves quality and efficiency."

Vishal Pawar, Mumbai

"Safety is as simple as ABC- Always Be Careful". It's better to lose one minute in life than to lose your life in a minute. When in doubt check it out. If one is unprepared then hundreds are unsafe."

Kiran Warulkar

"Safety is a way of life...applicable at home, in office, in our neighborhood and environment, in our work and planning and most importantly in our designs and the facilities we help to build for our clients."

Nilanjana Paul, Mumbai

"Proper ventilation, proper lighting, appropriate noise level, proper furniture layout and proper posture these are a few of my safety recommendations."

Shashi Kant Singh, Jamshedpur

"We strive to maintain efficacy in housekeeping systems, safe food and pure drinking water and prompt reporting, analysis and adopting corrective actions of near-miss accidents to alleviate any hazard within the workplace."

Gulam Qadir, Saroj Kumar Patra, Poushparna Pal, Milton Samaddar - Kolkatta



The Corning Case



When US-based specialty glass manufacturer Corning announced plans to set up a Greenfield optical fibre plant in 2011, it meant a foreign direct investment of Rs 588 crore (\$114.7 million) and employment opportunities in the region. Categorized as a 'Mega Project Scheme', this is a large investment in the state of Maharashtra. About 26 acres of land was allocated by the Maharashtra Industries Development Corporation for setting up the unit.*

The Greenfield facility was set up in Chakan, Pune to manufacture optical fibre. The produce is meant for both domestic consumption and export. The Phase I of the plant has currently been commissioned. Tata Consulting Engineers provided design engineering services, project management consultancy, construction supervision and safety supervision during the construction phase. A facility of this scale and magnitude (any scale for that matter) requires a focus on safety, right at the very conception stage. Corning relentlessly drove the focus on safety at every stage. From design engineering to construction, safety was a pivotal element in the structural, civil and mechanical aspects of the facility design. Imbibing SiD (Safety in Design) right at the conception stage ensures a strong

foundation and, in the long run, is definitely a cost effective option.

What difference does SiD make?

- Apparently, a huge difference. Mike Whipple, Manager, Global Manufacturing Projects - COF at Corning Incorporated feels, SiD is the most important time to design safety-whether it is setting up a facility or a process equipment; otherwise it will render any facility, equipment or process sub-optimal. "Incorporating safety in the engineering phase and carrying it through in the construction phase is a proactive approach to safety that makes setting up a facility or process equipment holistic and robust" says Mike. The prime driver for SiD is, of course, the value an organization places on ensuring a safe work environment for people. In terms

of costs and schedules, focusing on safety at every stage is in effect, a long-term investment. It turns out more economical and beneficial simply because retrofitting safety elements is a far more complex and expensive exercise. In Mike's opinion, when it comes to safety, there is no choice. Schedules planned are inclusive of safety. Right from the initial briefings, safety is the top most in the agenda. "We have to be 'safety wise'. Our project at Pune was a great success not only because of the total safety focus, but also in terms of efficiencies in costs and schedules." Safety as an element is to be woven into the overall plan and not viewed upon as an extra frill to be drilled retrospectively. So where does the ownership lie?

It takes two to tango

A large scale optical fibre facility is seen through successful commissioning when there is a convergence of ideas, plans and actions from all quarters. What made things smooth sailing in this case is the coming together of two companies that are totally value-based - Tata Consulting Engineers and Corning Technologies India Private Limited.

A bunch of talented design engineers, two companies with leadership thought process that is well-aligned, clearly spelt out priorities in terms of compliance measures makes for success in execution. It turns out that things were not just as easy as it sounds. For two to tango with a bandwagon of third party entities in tune with safety and stringent compliance measures can be quite a daunting task. Corning's Mike observed, "We liked the way Tata Consulting Engineers made sure everybody on the project understood the safety aspects and the construction management was very well done." The project did go through testing times. Like all projects, the people at the helm from both Corning Technologies India and Tata Consulting Engineers were put to test.

Buy-in to safety right to the grassroots

Safety beyond the SiD stage can be very challenging. First and foremost is an unwavering approach to consistency in compliance. There can be no compromise and there has to be zero tolerance to non-compliance. When this message is driven consistently, when people working on the project experience the rigour with which safety is enforced, there is belief in the concept of safety. Once the concept is sold, practice takes effect. The trust is built and the compliance measures towards safety become a habit. Consistent communication to drive the concept of safety is very critical. Safety aspects

"Roughly 1.24 million safe man hours of construction called for a great deal of diligence from both Corning & TCE".

Michael Whipple,
Manager,
Global Manufacturing Projects -
COF at Corning Incorporated



like safe handling of material and equipment, wearing protective gear, etc were communicated continuously and proactively enforced. Frequent safety reviews, job safety analysis, daily safety meetings etc helped create awareness, identify and arrest violations.

Safety is a collective responsibility - All are invited

A society, a business or an establishment - everywhere, people are the most important of assets. Safety is fashioned on a very simple concept - live safe and work safe. A strong leadership focus to prioritize this simple ideology is all it takes to turn it into a belief. This is precisely what Tata Consulting Engineers and Corning Technologies India achieved in the commissioning of the optical fibre plant in Chakan, Pune. Mike Whipple aptly observes in an optimistic note - "In the times when quality systems were being put in place the resistance chord that rang out was time and cost. Overtime it was proved wrong. The same is with safety. It will soon be a quintessential part of every organisation and its people." Regulation is already in place. Champions of compliance such as Corning ensure collective responsibility at every stage of product and work life cycle. The spirit of teamwork and the lessons learnt from this project were indeed enriching to both Tata Consulting Engineers and Corning Technologies India.

*Source: The Hindu Business Line, 4 March 2013

Blend in the Bituminous

A dream to light up homes and industries in five states was realised with the successful commissioning of the Mundra super critical power plant by Tata Power through its subsidiary, Coastal Gujarat Power Limited. At a capex of USD four billion, a workforce of 12,000 personnel dedicated their lives for about six years in commissioning the plant.

Tata Consulting Engineers were part of this Greenfield project as pre-project, design engineering consultants and construction supervisors. The project was well-planned and the pride of everyone involved with it. Built on impeccable environmental standards, high grade bituminous coal was planned to be used as feedstock. Large utility boilers are designed for specific type of fuel to perform safely and optimally. The Mundra power plant's boilers are designed for high calorific value bituminous coal. A 'made-for-each-other' combination of good quality coal & boiler is necessary to minimize the impact on the environment. Coal, the feedstock for coal-fired thermal plants, makes up for 70 % of power generation cost. The Mundra power plant's backend integration was planned with imported coal from Indonesia. TCE's client, Tata Power invested in two coal mines in Indonesia for securing supply of bituminous coal suited to the boiler.

With backend integration of imported coal, the Mundra plant was among the world's top 100 infrastructure projects. Here was a logical solution to India's infrastructure woes; good quality coal married to designer boilers and a backend integration plan fit in perfectly. Can anything go wrong?

Just about everything, it turns out! A sleight of hand and twist of regulation, the key feedstock which is imported coal become dearer. The odds were completely tilted. The Mundra plant faced 93 % increase in price of imported coal, at agreed power tariffs. Loss to operations of the plant was estimated at Rs 1000 crores. The very viability of a world class power plant was at stake.

A 4000 MW power plant requiring 12 million tonnes of imported coal was brought on track with a process innovation that successfully blended alternative coal with the design coal. This disruptive process innovation which Tata Consulting Engineers were part of, changes the way feedstock is managed in the generation of power and the optimization of equipment such as utility boilers.



The available options:**Option 1.****Replacing the design coal with cheaper coal.**

Cheaper coal had lower calorific value and higher moisture content. This implied lower performance and efficiency levels. Boiler and auxiliaries' performance will be impacted, energy consumption would be higher and there would be loss in power generation. Loss of Availability: Frequent failures in Boiler & Auxiliaries. The impact on the environment would also be higher.

Option 2:**Retrofitting boiler to suit coal type implied huge equipment costs.****Option 3:****Incurring cost on coal drying.**

The team at Tata Consulting Engineers worked with their client to tackle this problem. The answer to every problem lies hidden in the problem itself. The team revisited the problem and looked for answers within the problem.

How do we minimize losses?

How do we optimize production with cheaper coal?



The answer lay in the blending of coal. High grade coal and low grade coal blended efficiently will help minimize production cost. In yet another twist to the tale, studies revealed the blending of low grade coal will be limited to 30 % only to ensure current boiler efficiency. The problem was narrowed down further. Optimisation of the production lay in the blending of coal. Engineers at Tata Consulting Engineers set to work. It was a toil for two years that would soon bear fruit. Through studies, trials and experimentation, a process innovation was born.

70% of low calorific coal was successfully blended with 30 % of high calorific bituminous coal. A lower percentage of high grade design coal blended in with a particular category of low cost coal was now possible. This was indeed a breakthrough process innovation that would change the way coal-fired power plants operate. Tata Consulting Engineers were proud participants in this innovation working with Tata Power and the OEM supplier.

In the final analysis, an overall capex expenditure of Rs 2500 crores for coal drying and boiler retrofitting was avoided. There was a 28 % reduction in fuel cost for every unit of power generated. Further research on the breakthrough solution revealed that 85% of cheaper coal blending was possible with favorable environmental standards. This blending success throws up a plethora of new opportunities -

- Re-engineering options to fire alternate coals for client's upcoming thermal units.

Tata Consulting Engineers and Team Mundra have added a new page to the history of power generation in India and abroad. We are all proud of our association with this project under the able guidance and support which made this feat possible.

Sharad Baijal

Head - Operations & Maintenance,
Coastal Gujarat Power Ltd.(Site),
4000 MW UMP Project

- 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 & Tata Power won several awards and recognition at national and global forums for this project. The most recent was the Tata Innovista 2013 recognition for 'Promising Innovation'.

Engineering feats can be quite as interesting as pot boiler thrillers. The world's largest Greenfield thermal power plant doesn't get built in a jiffy. It is a dramatic play of events and technology with Tata Consulting Engineers as key characters.

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TCE Buzz

Wind in the hair experience, everyday

I love cycling and usually ride my BSA Mach-1 to work from Airoli to Vikhroli to keep fit, save time from the horrible Mumbai traffic, beat the mad push at stations, for the freedom you experience while riding it and also because the cycle itself is such a brilliant piece of mechanical engineering – hats off to the inventors! Vinay Krishnan from the Commercial Team of TCE summarizes his passion for the bicycle. The daily 'wind in the hair experience' did not suffice and he extended beyond to ride from Mumbai to Goa just with the power of the pedal and gear. This long haul cyclathon across mountains and plains gave the three member team a great experience. Vinay entered the beautiful Mandovi bridge with fists pumping in air. The scene was straight out of a movie. It was 6:30 pm, the sun was setting beyond the Mandovi river skyline. The sky was all dressed up in orange and the team posed for their finito moment. This long haul trip taught Vinay so many lessons in five days that he probably could not have got in an entire management course. The friendly strangers they met, the generosity of the hotel owners and other little experiences made them proud of our culture. The realization dawned that our motherland is so beautiful and has so much to offer to those willing to venture out. So come-on, start a Cycolution!



In Self Defense - Safety for Women

TCE's women employees at the Raj Plaza office of the Chemical Business Unit learned a trick or two in self defense. Mr. L John Mascarenhas and Mr. Rajendra Nair, from Tata Power Company, were invited to conduct a workshop - Self Defense & Personal Safety for women employees on 26th July 2013. The trainers have till date trained over 35,000 women all over India.

The workshop included personal safety, crime awareness, crime prevention and self-defense. The program aims to build self confidence, enhance self-esteem, make women assertive and learn to fight back. Techniques were simple and based on simulated assault. Personal safety drills were practised to train the subconscious mind so that the participants can defend themselves instinctively. The women employees at Raj Plaza office are indeed an empowered lot. This training will be extended to women at other offices as well.

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Duologue with Tata Leaders

In the 12th edition of the Duologue held in February 2013, Tata employees had the opportunity to interact with Praveen Kadle, MD and CEO, Tata Capital. Tata employees sent questions to Mr Kadle on a variety of topics from which the five best questions were selected. A prize winning question was posted by Neil Parmar, associate engineer, Pune office.

Question: What role can Tata Capital play in the coming years for facilitating and supporting the Tata companies as well as many other Indian companies to setup and grow in the African continent?

Mr Kadle's response: "Tata Capital has presence in Singapore, London and a representative office in Tokyo and Africa. Africa is a new geographical territory for us. Having said that, yes, our initial focus will be on facilitating and supporting the Tata companies and other Indian companies looking at setting up businesses in Africa." The Duologue was conducted online and the winners will spend an evening over dinner with Mr Praveen Kadle.

TATA Environment Month SMART Pledge

Tata Environment Month SMART Pledge Contest 2013 organized by Sustainability Group of Tata Quality Management Services (TQMS) in June 2013 posed a winner for Neil Parmar again. The pledge contest entailed, spreading the sustainability pledge to colleagues and friends from within as well as outside the Tata Group. The winners were those who facilitated maximum pledges across their network. Neil Parmar, was declared the winner across TATA Group for facilitating maximum number of successful pledges by Mr. Zarir N. De Vitre, Sustainability Group, TQMS.



Business Brief

spreading wings

The Thematic TCE Annual Report 2012-13

The theme for Tata Consulting Engineers' annual report for 2012-13 is Spreading Wings. The report brings out TCE's strategic plans and measures taken to prepare for growth and a competitive global environment. The report discusses in detail, the technology capabilities of each industry sector. The theme section "Spreading Wings" discusses the strategy, the company's people focus, technology and process-related initiatives and region-specific game plan to drive business.

The visual design that runs through the report is the peacock feather. The rationale being the peacock feather is a relevant example of nature's engineering design marvel. The tail feather is patterned, positioned and structured in a complex

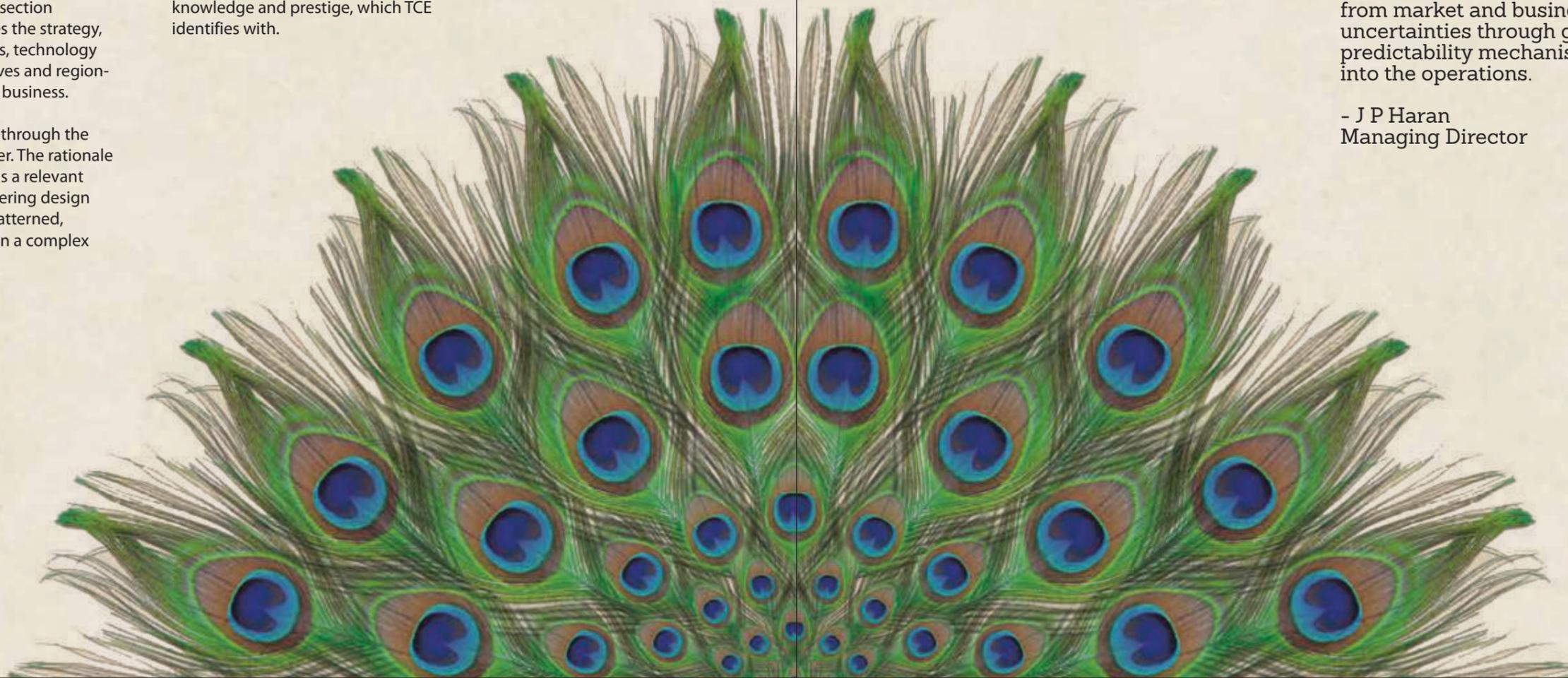
fractal geometric algorithm. The tiny barbules in a feather are so precisely positioned that when white light hits on two layers of the feather an optical illusion is created to provide the bright green and blue colour, through thin-film interference similar to a drop of oil on water. The peacock feather also represents knowledge and prestige, which TCE identifies with.

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.

- Prasad Menon, Chairman

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.

- J P Haran
Managing Director



Townhall @ TCE

Delhi
Mumbai
JSR
Bangalore
Chennai
Pune
Kolkatta



Cascading the Strategy and plan to employees - Townhall @ TCE

The theme of Spreading Wings was cascaded by the senior management through the Town Hall meet across locations. The management sent out a positive message to employees explaining the initiatives taken by the Company for the financial year 2013 and the new initiative planned for the year 2013 - 14. The Town Hall also serves as a forum for employees to interact with the senior management team and voice out their opinion on important company matters.



Mumbai



Kolkatta



Delhi



Chennai



Bangalore



JSR



Pune

Project Patchwork



9.90 MW Hydro Electric Project in Rampur Himachal Pradesh for Rajpur Hydro Power

TCE will provide Lenders' Independent Engineer (LIE) services for 9.90 MW (2x4.95 MW) Run-of-the-River Hydro Electric Project at Rampur in the Shimla District of, Himachal Pradesh being implemented by Rajpur Hydro Power Pvt. Ltd. (RHPPL). Distributed over four modules the scope includes - Detailed Project Due Diligence (Post Sanction before Disbursement), Construction Monitoring (Quarterly), Project Performance Testing, Annual O&M Review. The project is located on the Nogli Khad, a tributary of the Satluj River. Module II is currently in progress.

83,000 tpa Paper CPP Plant at Nepanagar, Madhya Pradesh

NEPA Ltd is planning to revamp their mill in India through the Revival and Mill Development Plan (RMDP) to a 83,000 TPA Paper CPP Plant. TCE is appointed as engineering consultant for the revamp and process packages. The scope includes renovation of paper machines, installation of new De-Inking Plants (DIP), renovation of existing captive power plant #3 and installation of new captive power plant #4 of 8 MW.

Gap analysis study on existing fire fighting system for BPCL terminals

BPCL (Bharat Petroleum Corporation Limited) decided to upgrade the existing terminals to be in line with OISD-STD-117 Ed. 2012 safety norms. TCE will conduct a gap analysis study of the existing terminals and put forth recommendations. The primary objective for BPCL is to upgrade its current fire fighting systems. The recommendations will also serve as a guideline for future installations. TCE will also provide a comprehensive execution plan for expansion and enhancement of fire protection system.

3000 tpd cement plant for Dangote Cement PLC (DCP)

Tata Consulting Engineers (TCE) has been entrusted with design engineering review services for civil, structural, mechanical, electrical, instrumentation and automation system covering entire process and non-process facilities. The 3000 tpd plant is being set up in Congo, Africa.

60 MW Karbi Langpi (Upper Stage) Hydro Electric Project in Assam

Tata Consulting Engineers (TCE) is providing consultancy services for 2x30 MW Karbi Langpi (Upper Stage) Hydro Electric Project in the Karbi Anglong District of Assam undertaken for development by Assam Power Project Development Company Limited (APPDCL) in joint venture with (Infrastructure Leasing & Financial Services) IL&FS Energy Development Company Limited. TCE's scope of services broadly includes preparation of Pre-Feasibility study report and Review and Updation of Detailed Project Report (DPR). The project envisages construction of a 98.7m high concrete gravity dam for creating a reservoir for this storage type scheme, a 4.0 m diameter circular shaped head race tunnel of 3.4 km length, a 71.5m high and 11.5 m diameter surge shaft, and a surface power house. Currently TCE is preparing the Inception Report that would include site appreciation, technical feasibility etc.



24x7 Water Supply System, Integrated Sewerage System & Storm Water Drainage System for 59 towns in Bihar

This is the first large scale water supply and sewerage project awarded to TCE by Bihar Urban Infrastructure Development Corporation (BUIDCo). Work involves preparation of feasibility studies; preparation of requisite Detailed Project Reports (DPR) and Bid Documents for 24x7 Drinking Water Supply, Survey and Investigation, integrated Sewerage System, and Storm Drainage System.

The extent of the project: Package 7 (Patna 2) includes 6 towns namely Ara, Bhabhua, Buxar, Dehri, Dumraon and Sasaram. Package 10 (Munger 2) includes 6 towns namely Barahiya, Jamui, Jamalpur, Lakhisarai, Munger and Sheikhpura towns of Bihar.

Water Supply project for Madhupur, Jharkhand

The Office of Madhupur Nagar Parishad (MNP) has engaged Tata Consulting Engineers (TCE) to carry out studies and establish the feasibility of augmentation of water supply of Madhupur town and prepare Detailed Project Report (DPR) along with cost estimates. Madhupur is located between the district of Giridih, Jamtara and Deoghar at a distance of about 30 - 40 km from each of the district centers. The existing distribution network caters to a small portion of the town and is plagued by frequent shutdowns. TCE's scope includes preparation of Pre-feasibility Report, Detailed Project Report along with BOQ for tender documents.

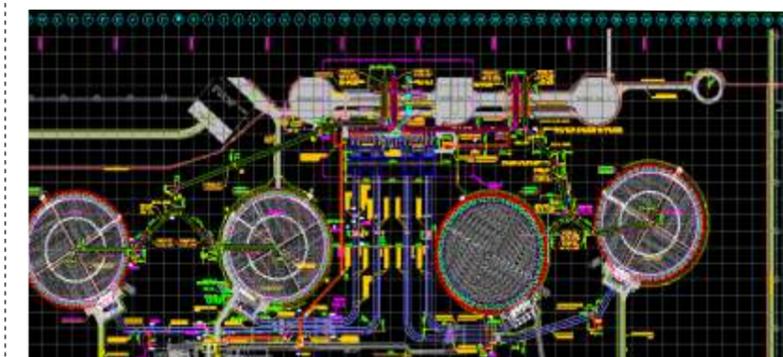
Greenfield IT facility for HCL at Noida

HCL is setting up the Phase III of a Greenfield IT facility in SEZ campus located at Noida, Uttar Pradesh. The project is being developed to accommodate 13,000 seats, with total built up area of 22.44 lakh sq.ft. complete with auditorium to accommodate 1400 seats, one café to accommodate 4000 engineers in one sitting and kitchen catering to 2,2000 persons. The main facility is spread over a total area of approximately 14.86 acres. The rest of the area will accommodate greenbelt zones, power augmentation, chiller and cooling tower, rain water harvesting, road and other infrastructure. TCE is the project management consultant. The scope of work also includes proof checking of structural drawings, detailed infrastructure engineering, review of tender documents and Good for Construction (GFC) Package in addition to erection of 132 KV/ 11 KV substation along with necessary accessories to step down to 33 KV/ 11 KV and then get distributed through the existing main system.

15000 tpa of sodium hydrosulphite, 12000 tpa of SO₂ & 3600 tpa of zinc derivatives Greenfield Projects At Ekalbara

Transpek Silox Industry Ltd (TSIL), an Indo-Belgian joint venture is engaged in manufacturing Inorganic chemicals and has its headquarter at Atladara, Vadodara.

15000 tpa of Sodium Hydrosulphite (Batch Process Plants) and 12000 tpa of SO₂ (continuous plant) are Greenfield facilities. The 2500 tpa of Zinc Derivatives like Zinc Phosphate, Zinc Carbonate etc. (Batch plant) is being expanded to 5000 tpa shifted from our Atladara site to Ekalbara site. Tata Consulting Engineers (TCE) scope includes basic and detail engineering services and project management for the facilities.



Condenser cooling water system & allied works for KAPP-3 & 4

Nuclear Power Corporation of India (NPCL) is setting up two 700 MWe Pressurized Heavy Water Reactor (PHWR) type Nuclear Power Plants (KAPP-3 and KAPP-4) at Kakrapar near Surat, Gujarat, India. TCE has been appointed as design engineering consultant by the EPC contractor L&T who will execute condenser cooling water & allied services for NPCIL. TCE's scope includes civil design methodology & BOQ for Cooling Water Pump House (CWPH), review of surge analysis and sump model study for four vertical turbine pumps of 37500 m³/hr. TCE designed a 5000 flow ID dia Cement Mortar Lined Concrete (CMLC) piping which is a first of a kind in India. This is presently being executed.

Public Private Partnership (PPP) in Dredging

TCE presentation at the India Maritime 2013 Conference



A paper on Public Private Partnership (PPP) in Dredging was presented by Mr. Devdatta Bose, who heads the Ports & Harbours vertical of the Infrastructure Business Unit, TCE, Mumbai.

The presentation was under the aegis of the India Maritime 2013 Conference in Mumbai held on 19 July 2013.

The presentation discussed various economic benefits of Capital Dredging Projects and the indirect benefits due to spin-off effects. Mr Bose discussed in detail the management and execution

of capital dredging projects. Devdatta Bose came out strongly in favour of increasing the draft in the major ports of India like Jawaharlal Nehru Port in order to accommodate larger vessels. Coming out with an innovative business model, he advocated the idea of setting up SPV (Special Purpose Vehicles) with stakeholders comprising of major port and public sector unit, a number of major ports, or major port and financial institution investing in equity. In his presentation Mr. Bose provided insights into several factors which could have a bearing on the future port capacity building.

The general consensus emerged that the need of the hour is to induct sufficient funds by way of grant as the economic benefits of capital dredging projects far outweigh financial benefits to the implementing agency.



Disi to Amman Water Conveyance System

His Majesty King Abdullah of Jordan inaugurated the Disi Water Conveyance Project, which will provide the capital and other governorates with 100 million cubic metres of high quality drinking water every year. Valued at 1.1 billion US Dollars, a 325-kilometre pipeline was constructed to convey water from the ancient Disi aquifer in southern Jordan to Amman in 48 months. TCE engineers were deputed to Gama Power System Engineering (an EPC Contractor) for providing commissioning engineering services. The Disi project will improve standards of living and accelerate Jordan's social and economic progress.

ENR Survey ranks Tata Consulting Engineers among top 225 international design firms



TCE ranked 188 among top international design firms for engineering in a survey conducted by Engineering News Records. The ENR Top 225 International Design Firms generated \$71.77 billion in design revenue in 2012 from projects outside their home countries. The Top 225 also had \$70.38 billion in revenue from domestic projects, for a total design revenue of \$142.15 billion. The data includes firms that are architects, engineers, engineer-contractor, architect-engineer; engineer-architect; environmental; geotechnical engineer; landscape architect; planner; other. The data viewed from a solely engineering category puts TCE in the 62 rank among 71 core engineering companies. Among the three Indian companies listed in the top firms rank TCE is the only company featured in the engineering sector. This takes TCE a few notches closer to its goal of being the most preferred international engineering consultants and ranked among the top best.

Technical Paper presented on World Water Day



Technical Paper on "Reclaimed Water Recycle and Reuse Potential in Bangalore" was presented by Dr. Srinivas Rao, and S.M. Karthikaeswaran at the World Water Day celebrations on 22 March 2013 organised by Rural and Water Resource Department, Government of Karnataka and Dayananda Sagar College. The presenting is part of Bangalore Water Supply & Sewerage Board (BWSSB) Project. This was an extensive project that TCE helped commission and the technical knowledge built up was reflected in the paper presented.

TATA CONSULTING ENGINEERS LIMITED



Safety

No **short cuts** here.

It runs all the way up and down.

Construction Business Unit

Tata Consulting Engineers offers safety management services that include safety audits, design safety analysis, HAZOP studies, safety in construction management, safety training & accident investigation services.

TCETriumphs

Third Dadasaheb Phalke Award Film Festival Best Script award goes to... Manas Bhatt!

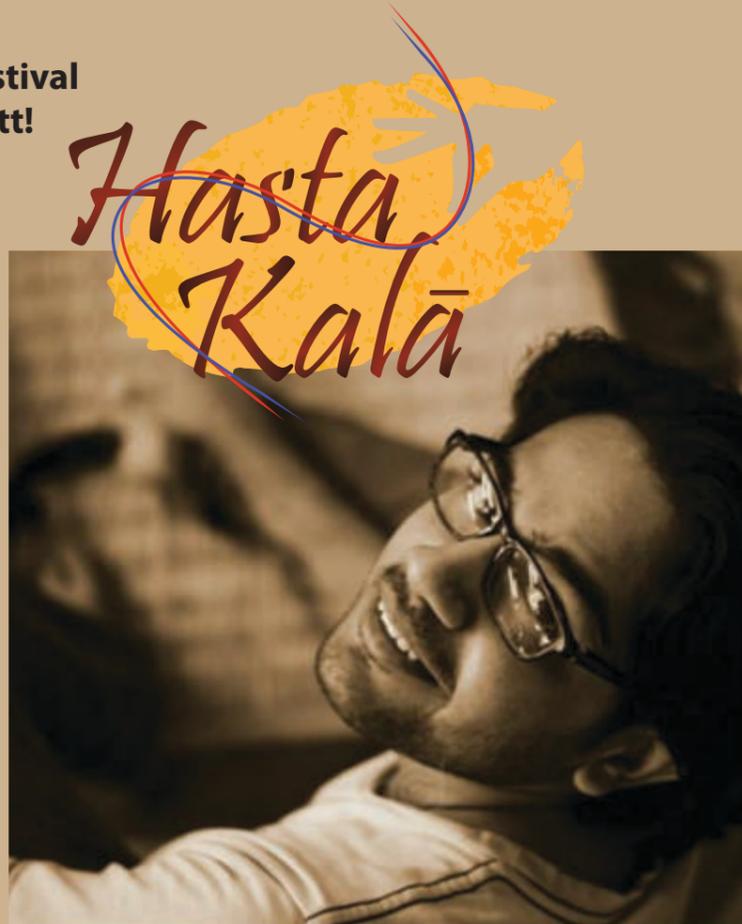
Manas Bhat, from Chemical Business Unit, was awarded the 'Dadasaheb Phalke Award' for Best Script for the short film, 'Hastakala – An Art of Hand' at the Third Dada Saheb Phalke Film Festival, in May 2013, held at Noida. This film is also short-listed for Lake City International Film Festival and Second Imphal International Short Film Festival. The film premiered at Ahmedabad and will be screened in other cities too.

The protagonist away from home and is yearning for his mother's home-cooked meal. This craving drives him to do a lot of things he did not know was possible.

Young Bhatt said, "I read a story about an old woman who had power in her fingers and whatever she planted, grew. So, I wrote a story around this over a span of a year about what hands can do and what power they possess. The theme relates to me in some way, as I live away from home and I do yearn for my mother's food."

Manas is a Chemical Engineer by profession but his passion and love for the cinema drove him to script a beautiful film.

Congratulations, Manas we are proud of you.



Design engineer turns Super Mom Dancer

Darshana Khamkar, from Chemical Business Unit and a mother of two, transformed herself by participating in the Television competition Dance India Dance - Super Moms Show on the channel ZEE TV aired on 1st June 2013. The show was judged by Bollywood choreographer Farah Khan & Master Marzi. Darshana made it to two rounds of the competition. Her passion for dance and support from her husband and family motivated her to take part in the show and showcase her talent. Her two rounds of fame meant a lot to her and she did TCE and her family proud. Keep it going, Darshana, try again!

Darshana in "POWER PANKH" after winning the 2nd round of "DID SUPERMOM"



Tata Innovista 2013 – Core Process Innovation Award

Tata Innovista 2013 – Core Process Innovation Award was jointly received by Tata Consulting Engineers & Tata Power Limited. The award recognized innovation in the coal blending process that brought about great cost reduction in the generation of power. A commendation certificate was presented to S Vidyanand of Tata Consulting Engineers who was a key player in the Mundra team at Coastal Gujarat Power Corporation Limited.



Safety Certification Program

Kiran Warulkar from the Nuclear and Advanced Technology BU, Mumbai attended 'Tata Certification program on Office Safety & Indian EHS Legislation' which was organized by Tata Quality Management Services. The training covered aspects of workplace safety and information on Indian EHS legislation. The certificate was awarded to participants who completed a live project and qualified in a written examination. This certification qualifies the person to conduct internal, external, office or site safety audits.



The Medupi Achiever's Award for Sai Mohan in South Africa

Medupi is a greenfield coal fired power plant project situated in Lephalale, South Africa, comprising of 6 X 800MW each capacity plants, resulting in a total capacity of 4800 MW.

The power station will be the fourth largest coal plant in the world, and will be the biggest dry-cooled power station in the world. The boiler and turbine contracts for Medupi are the largest contracts that Eskom has ever signed in its 90-year history.

The turbine, boiler and civil contracts, which are the major components of the multi-package contract strategy have been placed. The planned operational life of the station is 50 years.

Mr. P Sai Mohan was selected as a Group Turbine Team winner of the Medupi Power Station Project Manager's Awards in the category - The Medupi Way for the year 2013 and was presented with a certificate and shield at the Medupi Achiever's Award celebrations held on 31st July 2013.





Affirmative Action



Draftsman trade IT-Application training for ITI students

Tata Consulting Engineers launched an IT application training program in computer-aided drafting for SC/ST students. A pilot program was launched for students enrolled in the 2nd year of the ITI's Draftsman trade course in Bangalore and Chennai. The students get hands on training and experience in engineering drafting. The students felt this course was useful to them as it would enhance their employment prospects once they complete their ITI program. The students will be given a certificate upon completion of the course at TCE. Students had the opportunity to experience in a simulated environment, the rigours of actual IT-enabled drafting.



"Facilities provided for the training were very good with dedicated computers for each tainee. Hospitality is good too. This program also helps us to groom ourselves to the industry's expectations."

Naveen Kumar, ITI student, Chennai

"Dedicated trainers from TCE taught and guided us. The training was very much useful. It gave a new insight into further studies and career opportunities which is very essential in this phase of our education."

Gopalaswamy, ITI student, Chennai

JUITI Training Program

Tata Consulting Engineers sponsored two youths from the marginalized sections for skill development program - Abhimanu Kalandi as a welder and Ganesh Munda as a fitter. This program is a joint effort with JUITI (Jusco Utilities & Industrial Training Institute). JUITI is providing training to enhance the employability of economically and socially marginalized youth especially from SC/ST community who are unable to continue higher education but are seeking to enter the job market. These short duration courses of 2-3 months are designed to enhance the capabilities of candidates in employable trades such as fitting, carpentry, masonry, welding and electrical.



Jawhar Shramdhaan

In the district of Jawhar, on the outskirts of Mumbai lies a small hamlet, Korchipada. This hilly terrain, despite the heavy monsoon has no means of potable water once the monsoon season ends. As a CSR initiative, TCE has launched a program to provide drinking water to the people in this hamlet. Phase I of the plan entails construction of a closed brick masonry tank with filtering process to provide potable water. This summer, work began in the design engineering and contracting. The construction of the tank is in progress. TCE employees volunteered for Shramdhaan, to work alongside the labourers in the digging and concreting work. For TCE employees who braved the sun and toil, it was a whole new experience. They made the connect to design engineering and actual hands on construction. The living conditions of the people in 50-odd homes in this little hamlet and the daily quest for water was a stark awakening to reality.



"I got an opportunity to actually execute the work along with the villagers. I consider this a perfect experience for a civil engineer."

Rohit Naik

"We realised the scarcity and importance of water. It felt good to do something for the society."

Ketaki Nanoty

"Got a real taste of execution of work on site. Great Experience!"

Vidhyashree

Helping to cope with exams

Driving the thrust on Education, TCE Bangalore initiated a program to prepare students in St Patricks Community College for their qualifying examinations. The students who hailed from the marginalized communities were greatly benefitted with the assistance of TCE volunteers - P Shanmugam, G K Madhusudan, P Chaya, Divya S Minz, Amrutha Sikha, Syed Shahameer & Shiva Prakash. Post the intervention 13 under-performers have passed the exams and a total of 28 students cleared the April and June Exams.

Swaminathan, Principal, of St Patrick said, "28 students have passed both in April and June Exams, which is a record in our Community College. I appreciate the effort of TATA TCE and other teachers who have given their precious time to teach our students. I make an appeal for the continuation of your support in the future years."



Wealth from Waste – Saving at least 48 trees



As the entire world is on an environment protection drive to save the nature, ITC-PSPD Ltd & Ramky Reclamation and Recycling Ltd – RRRL has initiated National Recycling Project Wealth out of Waste - "WOW" with an objective to contribute for the protection of the environment and reduce global warming by recovering valuable recyclables and recycling them. The effort is to create awareness among citizens, institutions, business establishments and corporate offices on the need for waste avoidance, source segregation, maximum recycling, minimizing landfill, to help improve the environment and work towards a clean and green society.

TCE-Chennai contributed by donating 1543 kgs of waste paper in 2011 - 12 & 628 kgs in 2012-13 which has saved 48 trees. In return for the contribution, ITC provided TCE with 36 school kits comprising of stationary item such as (Note Books / Pens / Pencils / Sharpener / Eraser). These kits were distributed to needy children in orphanages and rural schools.



Environment Day

World Environment Day was marked by a company-wide campaign to sensitize employees on the responsibility towards the environment. The focus for the campaign was the responsibility of engineers in helping sustain the environment by taking positive steps.

The week-long campaign began with a slogan contest with the theme: **"Environmentally Responsible Consulting Practice"**. The short-listed entries were displayed as screen savers through the week. The winning entry came from **Rajesh N Birje, Construction Business Unit**.

"It costs \$ 38 trillion to create oxygen for 6 months for all human beings on earth. Trees do it for free. Respect them & save them"

The call for **"No Print Day"** had all offices refraining from printing out as much as they could. Our Chennai Office went to the extent of switching off the printers and kept a strict vigil. A day was earmarked as 'Car Pool Day'. Despite the heavy rains in Mumbai, there was a good response. A short film on 'Plant Productivity and the impact due to global warming' was screened followed by an **Environment Quiz**.

The program concluded with a message from the MD, Mr J P Haran. In his message, he drew attention to the responsibility of engineers and what they can do to sustain the environment. "When it comes to the environment, we as engineering consultants carry a huge responsibility, for we are the influencers, the change agents. Tata Consulting Engineers has always used its core engineering domain to advise its clients and help them reduce their carbon footprint. We have provided engineering solutions to our clients to incorporate sustainability practices in their development process. I request you to be conscious of this responsibility as engineers." J P Haran to TCE employees.

TATA CONSULTING ENGINEERS LIMITED



When the Ganga needs
purification,
TCE makes it happen...

Infrastructure Business Unit

Being there where it matters most.

TCE's Infrastructure Business Unit is on call for any assignment of national importance, providing solutions from concept to commissioning, across geographies and across sectors-

Water & Waste Water, Urban Development & Planning, Buildings, Environment & Ecology, Ports & Harbours, Transportation, Manufacturing Facilities

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