Volume 50
Issue 1

TATA

TCExpression

House Magazine of TCE

July-September 2012

Site Insights

TATA CONSULTING ENGINEERS LIMITED

Site Insights

Dear TCEites,

Where does a design concept take the shape of a three dimensional entity on ground?

Where do a few lines of a drawing assume an everlasting meaning?

Where can a bunch of calculations and assumptions make men and machines work miracles?

Where do earth, stone, bricks, water and steel seamlessly weave magic?

Welcome to the world of Construction Engineering…

This issue of TCExpression is dedicated to the Construction Business Unit (CNBU) of TCE.

Gain insights into CNBU's consulting strategies and grab glimpses of the challenges & successes of this unique business unit. Read on to discover the onsite and offsite adventures of TCEites…

Insightfully Yours,

Sowmya Raghu Raman

Editor-In-Chief

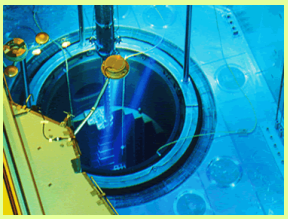
Theme & Contents

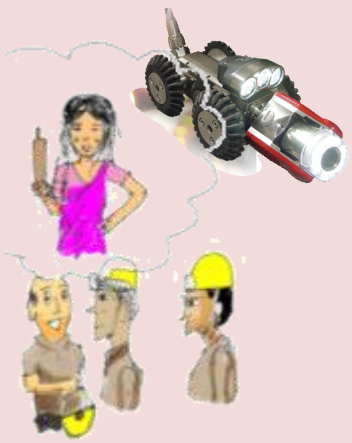
This issue of TCExpression themed ***–Site Insights*** – is dedicated to the Construction Business Unit (CNBU) in TCE.

Juggling the site priorities of schedules, time and quality in a constantly changing work environment , the project stakeholders never lose sight of site safety. The international safety yellow colour runs through the magazine and lends focus to construction safety

The cover page is an artistic impression of the prize winning entry for the ConstructArt contest announced by TCExpression exclusively for the Construction Business Unit.

Built out of a variety of materials available at site, the *'safety man'* is proudly donning all the gear that keeps him safe and paves the way for smooth project execution.





A year ago the TCExpression team had started on a clean canvas. There was an idea. There were people who had enthusiasm. There was a will.

One year later, there is contentment in the idea having been translated into TCExpression. Four successful editions, one each quarter; an inspired editorial team and many more eager to contribute. We have expanding readership and accolades as feedback. We have a surfeit of content as contribution, all of which cannot find space in the final publication. TCExpression has now arrived.

This is an outcome of a self belief, a trait that TCEites are known to have carried through five decades.

There is also a self belief today in the Gen Y and Gen X at TCE that make a fine balance of our work ethos. A self belief that is essential to be able to address newer challenges arising out of continual changes in technology and markets as a priority.

So, TCE, like a living organism, will need to continually adapt and transform to responsively metamorphosise into the desired form to sustain its competitiveness. A form that makes it more and more agile; a form that enables it to continually develop newer capabilities; a form that helps it to maintain its values amidst rapid growth; a form that makes it a suitor to domestic and international customers.

TCExpression has a pivotal role here in providing us with an avenue for self expression - A Voice of TCEites, a Voice in unison, a Voice that heralds a promising future ahead!

I look forward to your continued patronage to TCExpression as we commemorate the TCExpression anniversary.

Rakesh Gupta

Senior Executive Vice President – Corporate Affairs

"To accomplish great things, we must not only act, but also dream, not only plan, but also believe."

Anotole France

The Business of Building

Taking a break from his busy schedule which spans across geographically dispersed construction sites and clientele, **Mr. A S Prabhudesai, Sr. Vice President & Head - CNBU** at TCE, manages to make time for a Video Conference interview with TCExpression.

Deriving strength from the 800+ TCEites who are construction engineers and the Tata Brand image, the Construction Business Unit (CNBU) in TCE is making its mark across 100+ sites in India and abroad.

What makes this Business Unit special in terms of its offerings?

What are its plans for the future?

Can you tell us about the suite of services that the Construction Business Unit at TCE has to offer?

TCE's *concept to commissioning* approach in offering engineering consultancy services ensured that the scope of most medium to large sized projects had construction engineering as a part of its services' value chain. This helped build the credibility of the Construction Business Unit (CNBU) in the construction industry and paved a way for transition towards taking up stand-alone construction related services. TCE's project engineering experiences, covering a wide variety of industries has been an added advantage.

Established as a separate business unit in 2006, today the CNBU in TCE is unique. It not only services customers directly by way of its own business acquisitions, it also serves the construction needs of the customers of other business units. In addition, based on the market demand, it has expanded the suite of services to include two important components of the construction industry namely, Project Management Consulting (PMC) and Safety Services. Also, we offer in-house domain expertise services to the other Business Units in TCE.

What are the prospects for Safety Services in CNBU?

The advancements in the construction industry have enabled execution of projects which are massive in size and daunting in the logistic complexity of on-site activities.

Construction Safety has therefore emerged as a critical and significant component of construction engineering services. The CNBU has qualified safety officers and trained technical personnel who are not only involved in driving safe practices at sites, but also in offering stand-alone safety services which include safety audits and safety training.

Could you please cite some interesting Safety Services projects and achievements?

Recently, we have acquired a safety review job with the Taj Group of hotels, which involves safety auditing of close to 95 existing and upcoming Taj properties, around the world. In addition, we have also provided safety services to TCS for their projects as well as offices / campuses.

Safety training is also being pursued as a business opportunity for the first time in TCE in a bid to leverage on the existing safety competencies. Our scope of services with the Vedanta Group's thermal power project at Jharsuguda in Odisha, included both safety audit as well as safety training for their personnel. Till date, the BU has trained close to 4 lakh contractors 'employees at 100+ active sites across India and abroad.

Standalone construction related services	Engineering & Construction services soliciting in-house domain expertise
Shared services for all TCE business units by managing the construction aspect	Safety services

CNBU – Suite of Services

What efforts is the CNBU taking to strengthen and sustain the safety services business?

Today TCE is arguably the only consulting organisation in India with a large strength of safety officers. The CNBU takes pride in having more than 70 safety officers with dual qualifications in engineering as well as industrial safety aligned to the requirements of the National Safety Council of India.

In addition, our safety-related achievements in offering stand-alone and shared construction engineering services help us build credibility. For example, we are the first consulting organisation to have been recognized by the National Safety Council of India. We have also been recognized by Dupont which is renowned for its safety standards.

Many of the audit services projects bear the potential to be long term associations which cater to the year-on-year safety audit and training requirements of clientele. Safety in itself requires being on a *regular audit – continuous improvement* mode and the CNBU in TCE plans to build credibility and manage client relationships to explore long-term business opportunities.

Could you please throw some light on CNBU's in-house domain expertise services?

The CNBU adds value to the services offered by other business units in TCE by enhancing the constructability and safety aspects of engineering. Contrary to common belief, safety does not begin at site. It begins on the drawing board! The CNBU lends its expertise in ensuring that the design engineering deliverables like layouts, specifications and tender documents imbibe the elements of safety and constructability. Today, the tender documents of TCE focus on the past safety performance of bidders and this facilitates ease & safety of on-site project implementation.

What are the future business plans of CNBU? Do they include international markets?

CNBU has now added Project Management Consulting (PMC) and quality auditing in its portfolio of services. While we have offered these services to select clientele who have availed stand-alone or shared construction engineering services, plans are afoot to strengthen our exclusive PMC & quality auditing services.

Today, with the Indian economy taking big leaps in infrastructure development, the CNBU is a significant revenue-grosser for TCE. We have steadily clocked close to 30% CAGR in revenues since its inception in 2006. In addition, the focus is being shifted to international businesses which yield larger revenues and better margins. A three-fold increase in our revenues from overseas opportunities is envisaged, this year. Our focus geographies are the Middle-East and African countries considering the fast pace of infrastructure development and substantial investments in these countries.

Ramping up our manpower strength to align with our growth targets and building up competencies to create value for our customers, are our top priorities.

"Today, with the Indian economy taking big leaps in infrastructure development, the CNBU is a significant revenue-grosser for TCE."

Being an integral part of CNBU must have demanded your *living out of a suitcase* throughout your career! Could we know how you manage sites and home?

The credit goes to my life partner. The home front was splendidly managed by my wife allowing me to manage the sites!

I am sure this is true for all my colleagues in CNBU. Although it is difficult and challenging, it is very important to maintain a balance between professional and personal life.

Profile Peek

1976: BE- Civil VJTI, Mumbai

1976-78: Siporex India specialized in Pre-cast multi-storied housing

1978 Onwards: TCE

Interests: Cricket, Badminton, Swimming, Reading, Photography

Special Interest: Hobby mechanics of cars, watches and any mechanical devise.

Most interesting site experience: The thrill of handling both design and construction engineering as team leader for Mumbai Sewerage and Madhya Pradesh Municipal projects. "It was a great experience considering the massive coordination that it demanded internally (with design personnel) and externally (with government bodies, contractors & vendors)"

Trials, Trysts & Tips

Meeting with stiff schedules is a way of life at TCE's CNBU sites.

While each site may have its share of unique issues, all of them share a universal challenge. The Regional Managers of CNBU, **B. R. Parthasarathy, K. Ramesh & Sreedharan Sreenivasan** talk to TCExpression about the universal 3-Way challenge of managing Resources, Schedules & Customer Relationships.

Sharing their interesting site experiences, they also have some tips for young and aspiring construction engineers.

BRP: Construction managers are made more accountable for end to end deliverables and coordinate with the customer. Regional coordinators also visit the sites for reviews and meet customers to take their feedback.

Deputing a strong leader, internal training on current and new technologies, ensuring flexibility to move the resources from one site to another as per requirements, regular reviewing with construction managers and meeting customers to align with schedules and expectations help address the challenge.

The 3-Way Challenge

SS: We forayed into the Steel and Metal sector in and chose to begin operations by providing construction supervision services. Though we started out by sourcing TCEites from other sectors, we quickly amalgamated locally available resources with our existing resources to bring in skill sets specific to the sector. Today we boast of organizational resources which align with the nature and progress of each assignment.

The concept of a Key Accountable Person has been introduced in CNBU to enhance customer relationship management.

KR: Once we commit to new clients the release of engineers from the old sites invariably gets delayed due to last lap issues and the postings for the new project get thrown out of gear! We propose to have bench strength to counter this problem .

Quite often we are faced with a situation where we have hired a specially skilled team and the project commencement is delayed. We have to find ways and means to deploy these resources. We counter this problem by taking up some short assignments.

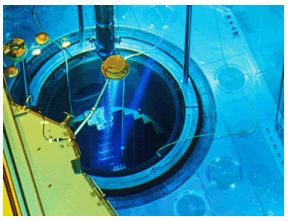
The phenomenal growth of the infrastructure industry has also led to a huge demand in experience and expertise particularly in areas like tunnelling, thermal & hydro power, commissioning assistance, procurement and planning. The supply-demand gap in resources continues to pose challenges. Strategic hiring coupled with adequate training & enhancement of competencies help us combat this challenge and add a cutting edge to our services.

With 104 active project sites , cutting across geographies, by restructuring into zones and decentralizing the operations, each Regional Head addresses the client concerns in the pertinent zones and hence strengthens the customer relationships.

BRP: At the TCS - Trivandrum site tight schedules were a way of life. To ensure slick delivery the client joined hands with TCE and formed a team that went around talking to each and every stakeholder group at site. The intent was to align everyone with the project needs and motivate them to complete the task at hand. At the end of the day, the entire workforce, supervisory teams, client and TCE gathered to take an oath to accomplish the project objectives.

As the Project Management Consultant, we invariably end up at the receiving end, when schedules lag. However, working from the same side of the table, the client, contractors and PMC managed to deliver by simply joining hands and putting the project above all matters.

KR: At the BARC SFSF site at Kalpakkam, Tamilnadu, TCE was involved in the construction supervision of a facility meant to store spent fuel. The storage facility lined with Stainless Steel liners was commissioned by conducting a hydro-test with demineralised water. The Project Director of BARC while describing the event to the Director of BARC said *" This is the first fuel pool in BARC to have passed the hydro- test at the very first instance! ".* He introduced me to the Director of BARC by saying *"I give this credit to TCE".* This gave me immense satisfaction and later this facility went on to earn the **Consulting Engineering Association Prize** for the best structure in 2010.



A Site Story

SS: During one of our recent visits to Kalinganagar site in Odisha, I could not help but notice a *different* team at work and very efficiently too.

We had started off early in the morning from Jamshedpur, by road. During a stopover for a cup of tea and morning breakfast at a small roadside snacks stall in a municipal town (Rairangpur) in Odisha, we noticed the following principles being adopted by the team at the stall to cater to the morning rush of customers:

- The person engaged in puri-making prepared the dough for the next lot on a rotational basis
- The person serving would also provide firewood and blower for combustion air to expedite heating up of the oil
- The person engaged in cash collection served other readymade snacks to the customers
- A loyal & regular local customer lent his voice to inform about add-ons and drinking water to customers like us.
- The person who had just served us moved in to utilize the time gap between two lots of puri-making for making jilabees in the already hot oil.
- Someone at the back of the stall was seen waiting to take away our plates for proper cleaning .
- The person who collected the cash from us took feedback with a smile.

Their service was wonderful in spite of the rush hour. We couldn't help notice how the well-synchronised activities of the team seemed to ring in profits for that tiny road-side enterprise.

The next time we travelled as a larger team to Kalinganagar along with our senior executives, we made it a point to visit the same stall and now highly recommend it to others!

Tips for life@site

Mr. B.R.Parthasarathy, Dy. General Manager, is the Regional Head for the South Zone;
Mr. K. Ramesh, General Manager is the Regional Head for the North and West Zones;
Mr. Sreenivasan Sreedharan, General Manager is the Regional Head for the East Zone of CNBU at TCE.

BRP: TCE is growing rapidly and there are huge opportunities in domestic and international markets. Commitment is the key to success in the initial stages of your career. Sound leadership skills are a must as you rise up the ranks.

- Be willing to take on more responsibility and accountability
- Learn the job; enhance your technical competencies
- Improve your soft skills to manage projects well
- Be firm, transparent and positive while dealing with all the stakeholders of your project

KR: The exodus of core engineers to IT over two decades has led to a dearth of talent in the construction industry. Therefore, for committed and hard working engineers with a willingness to learn, sky is the limit for growth.

SS: Be sincere in your efforts and in your desire to make a valuable, meaningful and positive difference. And know that the rewards will always arrive at your door step.

Contribute to TCExpression, Building Blocks and other internal / external communication channels to help identify the person in you and showcase your potential to others.

Reaping the Harvest

Mr. Sanjay Mehra, Dy. General Manager, Business Development tells us about the challenges of business acquisition in CNBU and the Business Unit has strategised to embrace newer geographies and niche consulting assignments to align with the domestic and international markets.

What are the business growth prospects of CNBU?

In line with TCE's vision of being an internationally respected consultant, the CNBU is also working towards becoming an internationally preferred construction services consultant. As an imperative to realizing this vision, we have been proactively increasing our revenue, both from the domestic and international markets.

Over the last three years, the revenue from CNBU has more than doubled, and, this year, we have targeted to better our last year's accrual by more than a third. We will also continue to actively contribute to TCE's ambitious growth plans for the future.

We believe that a major part of our growth will come from some of our focussed sectors such as Power & Infrastructure – in which we will build upon the strengths gained from our continuous good work in the past. We will also be looking closely at opportunities in the Chemical, Industrial, Metals sectors.

Also globally, there are significant opportunities in many GCC & African countries, which are regions of TCE's focus. We plan to closely track opportunities in South Africa, Oman, Nigeria, Saudi Arabia and Qatar.

While the above sectors & regions will provide the big numbers, we also see good potential for growth in some niche service segments like project management consultancy (PMC), specialized audits, etc.

What are the challenges of business development in the construction sector?

While the prospects are definitely exciting, their conversion into business acquisition and further into accrual, is easier said than done! It involves careful project selection, good understanding of the client requirements, submission of winnable proposals, and convincing the client about TCE's capability in delivering value for money.

The deployment of right personnel is the key to delivery on CNBU assignments. Convincing the clients about TCE's generic & specific competencies for certain assignments where TCE does not have prior experience, often involves interviews of the proposed TCE team at the negotiation stage. We have also found that partnering with local associates, although challenging at times, could prove to be rewarding, in the long run.

Can you share some of the recent business successes in CNBU?

It is sometimes said that when the going gets tough, the tough get going!

Some of the recent projects, belonging to the TATA Group companies are amongst the largest in their respective industries e.g. the Mundra Ultra Mega Power Plant, Kalinganagar & Gopalpur Steel Plants and Noamundi & Joda mines, TCS's Software Development SEZs at Chennai, Pune, Kolkata & Hyderabad, etc.

But this is only a small part of the story. In the Infrastructure sector, beside continuing our good work on the major funded projects like Urban Water Supply and Environmental Improvement Project in Madhya Pradesh (UWSEIMP) & Bangalore Water Supply & Sewerage Board BWSSB) project, we have been privileged to be associated with India's first Aerotropolis in Durgapur, and with the prestigious IIT-Hyderabad project.

Speaking of niche service segments, we are carrying out safety audits and safety Training for all the Taj Group of hotels and their construction sites in India. We were also privileged to provide safety related advisory services at the prestigious JRDQV Nite 2012.

Probably the biggest game changer for us has been our recent successful foray into the international market with the help of the International Marketing Group (IMG) of TCE. With successful entry into Zambia, South Africa and Jordan our engineers have attracted the attention of our discerning clients and helped bag further assignments in Liberia, Ethiopia and Nepal.

Slowly but surely, our efforts to expand TCE's global footprint are bearing fruit and we are now poised to reap the harvest!

Safe and Sound

"No business objective can be deemed more important than the physical safety of all our employees and associates. Each one of us should try and make it our personal mission to translate this belief into reality"

Ratan Tata

Mr. Pramod Gunthey, Chief Manager and Head-Safety for TCE emphasises on how the CNBU imbibes the Tata Group's safety mission and maintains a formidable set of safety performance statistics.

- Safety Administration
- Site Safety Index
- Severity Index
- Frequency Rate

While the construction industry provides for myriad job opportunities, it is also prone to hazards and accidents. According to some studies occupational injuries and illness occur in the construction industry at a rate that is 54% higher than all other Industries put together.

How then does TCE combat this challenge and drive safety practices at site? Let's hear it from Mr. Gunthey…

What is the significance of safety at site?

Safety requires not only close monitoring, but also detailed planning and effective control mechanisms. Failure to control site safety in the construction industry leads to project delays, higher costs and poses a human risk. We ate TCE are concerned about the safety of people. Safety concerns are our prime focus, project delays and higher costs notwithstanding.

For ensuring smooth project execution sans hindrances due to safety issues, a good and effective safety management system needs to be equipped with organizing, planning, implementation and reviewing mechanisms.

What are the mechanisms in CNBU that ensure site safety?

A Construction Workplace Safety Plan is maintained on all projects and constantly reviewed by our full time Site Safety Officers. The Group Safety Manager and/or External Auditors regularly audit projects for compliance.

TCE has zero tolerance to safety breaches. This is stringently enforced and disciplinary action taken if any workplace safety breaches occur. This tough stance is essential to maintain high levels of safety management.

At each site, all workers are required to undergo a site specific safety induction training program. The site workers are instructed about acceptable safety standards and kept informed about the safety rules.

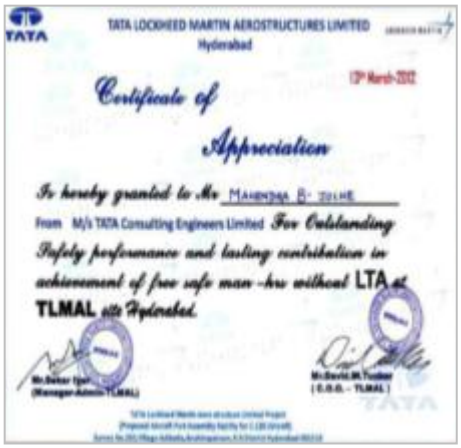
In addition, we have started the practice of ranking the best construction site for safe practices every month as a motivation initiative.

Can you share some recent safety achievements of CNBU?

A host of clients have chosen TCE's safety systems over other options as they have found them on par with international standards.

When Corning India initially started working with TCE they demanded compliance to the DuPont safety system. We provided them with details of TCE's safety systems as a viable option. Upon thorough evaluation, Corning India found TCE safety norms up to the international standards. Our efforts at site to create widespread safety awareness and adherence to stringent safety norms resulted in an accident free completion of the project, earned us another satisfied client.

Client appreciation and satisfaction stand testimony to our commitment to Workplace Health and Safety.


TATA LOCKHEED MARTIN AEROSTRUCTURES LIMITED
Hyderabad

Certificate of Appreciation

This is hereby granted to Mr. MAHENDRA B. ZOLHE
From M/s TATA Consulting Engineers Limited For Outstanding Safety performance and lasting contribution in achievement of free safe man-hrs without LTA at TLMAL site Hyderabad.

Construction Chronicles

The journey from ground breaking to commissioning is filled with adventure. The sheer magnitude of operations, complexity of logistics, stringency of schedules, exactness of quality and concern for safety make for nail-biting finishes that would take your breath away.

Take a peek into the young **CNBU TCEites'** adventures at site as they tell you about their learning opportunities at site and share their experiences and aspirations.

Senior TCEites from CNBU take time off to tell you about challenges, achievements and how they keep pace with advancements in construction technology.

Neelesh Sinha
Sr. Engineer
P&G Site, Bhopal

"Life in TCE has been a Roller Coaster Ride since I joined TCE in 2007 as an Engineer Trainee. Initially it was hectic and frustrating to be posted from site to site, but it is this particular fact that helped me enhance my knowledge base in different areas. During our training period 42 of us shared not just a living space but also the mind space. We learnt how to adjust, and how to see the lighter side of tough situations. This made us hardy and came in handy during our tenures in various sites.

In Oct 2008, when there was a fire incident at the Tata BP Solar project site. The quick response from both of our safety leads, Mr. Rajeev. S and Mr. Anil Kumar resulted in immediate evacuation of all the staff, labour and workers from the place. The safety leads themselves climbed the scaffolds and helped in guiding the team out. This taught me the importance of quick thinking while handling a crisis at site.

I aspire to combine my experience in the construction arena and interests in marketing for TCE's business development.

"At TCE I have learnt the nuances of executing Infrastructural works, retaining structures & complicated network of services - HVAC, Fire Hydrant/sprinkling, Storm water, water supply & HT Line. In addition to this, I extended my knowledge base in Project Planning (MSP/Primavera), Progress Monitoring /Tracking/Reporting, Green construction, statutory compliance, Vendor & Change Management.

Ravindra Shrivatsava
Sr. Engineer
TCS Site, Pune

My most memorable experience at site was when we reached our first milestone in the TCS project. This was a high pressure phase of the project wherein all stakeholders (client , consultants & vendors) were working with a common zeal to achieve the project milestone.

It is really a matter of personal pride and satisfaction to me that I am associated with the Tata Group; working with TCE has provided me with the opportunity & freedom to implement new ideas and procedures in my chosen domain.

Ruchir Saurabh
Engineer
TSL Site, Jamshedpur

"As a part of the CNBU- eastern region, I was predominantly involved in Steel, Metal & Mining sector projects. Some time back I was extremely thrilled when the team was asked to provide inputs to bid for an international mining project. It took us little more than two days to fully understand the scope and provide our inputs to the International Marketing Group. I was a bit apprehensive about our chances of bagging the order and totally delighted when we were informed that we had indeed bagged the order. For me, to be a part of the first international mining project is truly a remarkable experience which I shall cherish for a long time.

As a young professional starting my career in a consulting firm like TCE, I have a vision to add value to my assignments and take new challenges in my stride. To me, the diversity of offerings provided by TCE was a platform to gain hands-on experience in as many technical projects as I could. Coming across new challenges every day, one must always be prepared to have an ***"out of box"*** approach for which one needs to have a telescopic vision, for a holistic approach and a microscopic approach for the implementation of that vision.

Sanjoy Sanyal
Chief Manager
NLC Site, Cuddalore

"One of my most valuable experiences has been with Neyveli Lignite Corporation (NLC) for their 2x250MW TPS-II Expansion Project, which is based on CFBC (Circulating Fluidized Bed Combustor) Technology. In terms of capacity it was a first not only for TCE but also for India.

With three main advantages over the conventional boiler (eco-friendly, energy efficient & low slagging) the CFBC boiler was envisioned to enhance NLC's operations.
The non-stop temperature controlled concreting of 483 cu. M. managed to pass through the "Ultrasonic Pulse Test" without any defects.

The Slip Form & Jump Form methods were adopted for the erection of 220M Bi-Flu Chimney & the 118M Natural Draft Cooling Tower without any major accidents.
High standards of quality control & detailed planning won appreciation from the client.

M Satish Rao
Dy. General Manager
TCS Site,Pune

Keeping pace with advancements in technology today is through a combination of hands-on adherence and online reference. Following QA-QC norms & standard construction practices and standards help us keep pace through adherence. Researching and adopting new practices/methods in construction technology across the world helps imbibe new and innovative solutions into our services.

"Completing my E-MBA from SPJIMR is the most recent interesting & challenging experience that comes to mind. The very fact that the TCE-Management thought of giving us a chance to round off our skills and personalities with a management degree from a renowned institute was like a whiff of fresh air in the concrete construction existence of a CNBU engineer!!

Passing the various stages of accelerated program (ACCEL) in order to bag the ticket to the course was no small adventure – but actually stepping into the class, being a 'proper' student all over again after so many years was an indescribable feeling. It was amazing to be copying notes, making presentations working past 3 AM in the hostel and even forming a gang of friends – the ***3 Idiots*** kind! Oh, but that was only for 9 days. every 3 months. The pressure of assignments and submission at the rate of at least 3 per week….week after week, meant no weekends or holidays for 2 whole years. The family pressures were worsened by the Client angle. Any CNBU job heavily leans on the constant and ungrudging presence of our team at site. The magnitude of the TCS Sahyadri Park job and the responsibilities of my PM role were enough to frazzle a lot of client nerves for the unthinkable '9-day-long' absences. Balancing the client sensibilities, reassuring the team and ensuring the work is not hampered while getting in the submissions on time and still *remaining a married man* – was a one superlative real time exercise in *Work-Life* balance.

Yet, the E-MBA was worth every obstacle and I will be every grateful to the company for this truly rare and enriching milestone of my career.

I am a Life Member of several professional bodies such as American Concrete Institute, Indian Concrete Institute, Indian Bridge Engineers and Indian Water Works Association. The magazines that these organizations publish – both online and quarterly hard copy issues - are a very good repository for knowledge enhancement. In addition, working for TCE in challenging projects also throw up many avenues where we need to be abreast of the latest technologies in all disciplines.

"From day 1 in TCE I have gained exposure to the fact that the multi -dimensional reality of engineering at site differs a lot from my curriculum in campus. Hand-on working experiences with advanced techniques if civil engineering like Post tensioning slabs, Advanced shuttering systems, Vacuum dewatering, Membrane waterproofing , Pre-engineered Buildings, etc., have all been eye openers.

Above all, TCE has taught me the professional way of handling project concerns.

Vinoth M
Sr. Engineer
TCS Site, Trivandrum

One of my memorable experiences at site was when we poured 1011 cu.m of concrete within 24 hours, with 2 ready mix batching plants of 30 cu.mph capacity using 11 concrete transit mixers for concrete transportation, 3 compressor pumps with huge pipe lines for concrete discharging and 300 workmen. We achieved this great feat at the TIDEL Park Project at Coimbatore in 2009.

I aspire to be a skilled executor of projects by using optimum Men, Material & Machinery within a minimized budgeted cost in line with intended safety, quality and time parameters.

Rajat Sahu
Asst. Engineer
TSL Site, Jamshedpur

"At Tata Steel (TSL), Jamshedpur, before heating up of the Coke Oven Battery we had 20,167 balance activities identified to be completed in a time span of 90 days. Dividing the task into 22 different packages with team leaders from Tata Steel, TCE and L&T, we are on a war footing. Being mentored by Mr.R.P.Singh *(Advisor to MD, TSL)* and rigorously reviewed by the top management in TCE, I shall always cherish the thrill and challenge of hurtling towards the finish line.

Ever Since I joined TCE, as a Planning Engineer at TATA Steel Limited, Jamshedpur, I learnt & gained a lot. My aspiration is to be recognized as the very best in my field at what I do. I would like to be involved in large-scale technology projects where I can better my project management skills, get insights into the business needs of my clients, and be considered a star performer in CNBU.

Ajoy Prasad
Sr. Engineer
Tata Pigments Site
Jamshedpur

"As a Graduate Engineer Trainee in 2007, I was involved in the "Replacement of a Turbine driven Boiler Feed Pump to a Motor Driven Boiler Feed pump" in a Captive Power Plant. My first encounter with practical engineering comprised of assisting my seniors , studying construction drawings, making daily notes of learning's and sharing knowledge with my colleagues . I was intrigued by the translation of Power Plant engineering theories into real-life applications.
Work spanning various projects in TCE has furnished me with analytical skills and methodical thinking techniques which allow me to transform *good* ideas into *great* real-life applications.

I hope to make my wonderful contributions in making the nation and world a better place to live (and work). I am sure, as a TCEite, working under and alongside the brightest minds in the engineering industry can help turn my aspirations into a reality.

Presently I am involved in the capacity expansion project for Tata Pigments Limited which is motivating me to develop both technical, problem solving and management skills. The two most important life skills that TCE's work environment has bestowed on me are *self confidence* and *self motivation*...

Thank You TCE!

Gopi Maharana
Engineer
TCS Site, Siruseri

"During my tenure as Construction Engineer at the TCS Techno Park Site, I have been assigned the task of handling the complicated structural steel works of 12,000mt & 85,000sqm of Roof sheeting & 9,000sqm of Glass Louvers works. The fabrication & erection of the geometrically complicated 3D structures involved bending of pipes (355mm dia. & 24mm thick), profiling of pipes with Robotic Plasma Cutting Machines and extensive position welding at heights. We used a number of innovative methods for the erection of sub assemblies as mobile crane access was limited due to space constraints. Aligning to the architect's intent was really a challenging task. Continuous tracking & follow up for progress, quality & safety were a must.

Bending machines of Different Capacities, Tower Cranes/Mobile Cranes/Gantry Cranes/Hydra's of Different capacities, Robotic Plasma Cutting machines, close to 300 Welding machines, and more than 1000 workmen at peak time including Fabricators, Fitters, Welders, Foreman, and Riggers worked both shifts to align with the architects perspective. Finally, upon completion, I felt proud to see the Architect's dream turn into a reality.

My most thrilling moment was when the Group Chairman Mr. Ratan Tata visited the TCS campus and extended his appreciated for the TCE team. My joy knew no bounds when the Steel Structure was adjudged as the Best Outstanding Structure by INSDAG Institute of Steel Development & Growth).

Site Saga

Every TCE- CNBU project ushers in change.

The ground breaking ceremony is symbolic of the beginning which is going to change the way the client organization operates from that day onwards. Whether it is an expansion plan or an all-new facility, the organization is all set to transform its strategy towards a better tomorrow.

TCE with its motto “engineering a better tomorrow” walks that change journey with the client in planning and building the future. This exciting journey from ground breaking to commissioning is what every construction project embarks on with a promise to deliver.

This section captures a few projects that CNBU has delivered with pride.

Turn the page and catch a few glimpses of the site saga.

Mundra Ultra Mega Power Project

Project: The Mundra Ultra Mega Power Project of Coastal Gujarat Power Ltd.(CGPL) is spread over an area of 3,224.6 acres covering three villages. TCE had been handling the detailed engineering as well as construction supervision for this landmark project.
Challenges: Being the Largest green Field coal – based power project in Asia and India's first 800MW supercritical project the Mundra plant had its share of challenges. Commissioning Asia's largest stacker for a thermal power plant (6800 TPH), using a massive 1250 MT crane for Boiler erection, using hydraulic pile breakers for pile cap breaking, 2 x 50% motor driven boiler feed pumps (MBFP) for the first time in India, concrete volute pumps of 63000 Cum/hr capacity and erecting the largest isolated phase Bus Duct in the country were all challenging tasks at site.
Achievements: TCE has produced 2030 documents, reviewed 23,000 drawings and handled 25,000 drawings and concept notes. 42 innovative ideas were implemented to reduce the execution time, cost and to achieve higher standards of quality. In addition the CNBU has achieved 10 million safe man hours and managed to complete the schedule 17 months early!

BWSSB Phase II Water Supply & Sewerage Project

Project: The Bangalore Water Supply & Sewerage Board (BWSSB) Phase II project is aimed at augmenting the water supply of Bangalore city by 500 MLD. The project comprises of both water supply, sewage treatment and sewerage components.
Features: The water supply component comprises raw water system, water treatment plant, 3 pumping stations, water transmission system including ground level reservoirs and booster pumping stations. Improvements in the water distribution system, leakage control and development of water supply to slum areas are also envisaged. The sewerage system encompasses 11 sewage treatment plants and rehabilitation of sewers.
Achievements: The water supply system has been partially commissioned and sewerage replacement /rehabilitation works are well underway. 500MLD of treated water is lifted 335m high from the water treatment plant through three main pumping stations. The water supply system also boasts of the biggest pumping station in Bangalore city with a pumping capacity of 4800 CMH.

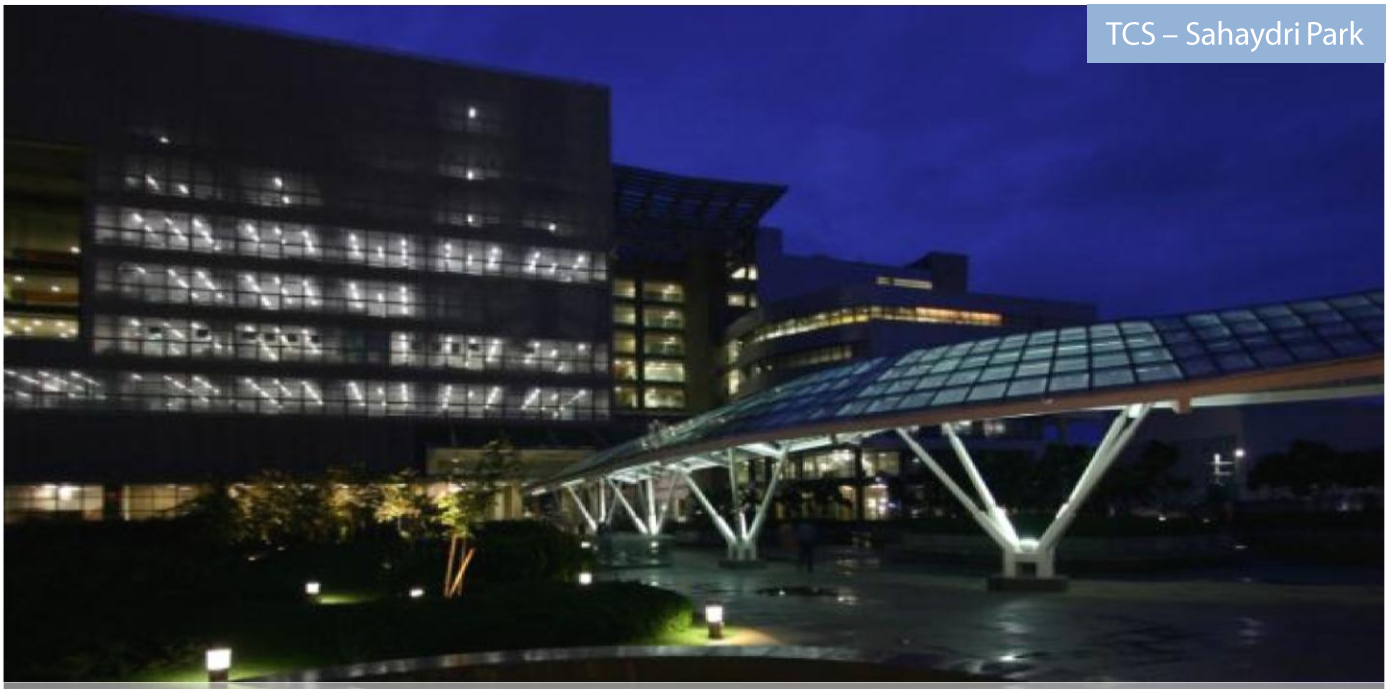
CPCL – Euro IV Project

Project: The prestigious Euro IV project of Chennai Petroleum Corporation Limited (CPCL) aimed to meet the auto-fuel quality specifications of motor speed and high speed diesel. TCE was engaged for providing utility support for commissioning the Diesel Hydrotreater and Naphtha Hydrotreater Isomerisation units.
Challenges: The first phase of the project was the most challenging of the lot as the works had to be executed in a running refinery in a very short time and without sacrificing production or safety. Driving close to 3000 piles, ensuring mobility of cranes to erect pipe rack structures and hot tapping in the flare pipeline at breakneck speed were some of the challenges.
Achievements: The CNBU was able to come up with a comprehensive stores management procedure including software which could be utilised for future jobs. TCE's hot tapping endeavour which saved CPCL a fortune, was published in the IOC in-house magazine.

P&G manufacturing & distribution centre

Project: Proctor & Gamble is building regional manufacturing and distribution centre for a wide range of products. TCE has been engaged by P&G for Construction Management Services of the Project at Mehboob Nagar, Andhra Pradesh. With a logo that symbolizes the strength of a Kohinoor diamond, the heritage of Charminar and the modernity of the Cyber Tower, P & G's Kohinoor Dakshin Project is all set to 'Change' the sky-scape of Hyderabad's industrial district.
Challenges: For this greenfield project spread over170 acres and planned in two construction phases, P & G aims to achieve LEED silver rating for environment conservation and so stress has been laid to minimize wastage of construction materials and encourage innovative usage of construction waste within the project site.
Achievements: Strict quality control is instituted through document control registers, drawings clarification transmittals, audits & non-conformance reports (NCRs), material submittals, and notification of inspection (NOI) through a professional document controller. To minimize the impact on environment, the percentage of recycled content and sourcing of regional materials from locally available sources are monitored.

TCS – Sahaydri Park



Project: The Tata Consultancy Services (TCS), Sahyadri Park campus at Pune is spread over an area of 48 acres with a planned capacity of close to 23000 seats. TCE had been handling the project management as well as construction supervision for this project spread over three phases.

Features: The campus design encompasses a wide variety of open spaces designed to promote interaction with nature. By capturing & storing monsoon rains, managing waste water for irrigation, generating biogas from cafeteria waste, reducing solar gain and using native drought tolerant species for landscaping, the campus attempts to be one with nature. All materials, systems & finishes used for the project are selected with due consideration to their lifecycle costs, energy efficiency & carbon footprint. The campus is designed to derive maximum use from daylight to reduce the amount of energy required to operate the building.

Achievements: The CNBU has suggested adoption of advanced construction technologies that have aided in managing the time , cost and efforts associated with the project viz., mechanical coupler (to reduce reinforcement usage), automated stirrup bending machines (to standardise the reinforcement stirrups) , pre-insulated ducts and pipes (for fast track installation), etc.

Tata Steel – Power Distribution System

Project: The Power Distribution System for the Integrated Steel Plant of Tata Steel Limited at Kalinganagar in Odisha.

Features: Reliability & flexibility of power are the most critical requirements for an integrated Steel Plant through Blast Furnace-Basic Oxygen Furnace (BF-BOF) route and therefore lot of analysis was done to arrive at the Power Distribution Plan to various process units for taking care of the dynamic requirement of the Integrated Steel Plant. To provide required capacity, stability & reliability, the Odisha state grid connectivity to the Steel Plant was planned at 220 KV with future upgradation plan to 400 KV.

Achievements: The CNBU has clocked 2.5 million safe hours of construction till date which include close to 42000 sq.m of total floor area construction, 6000 sq.m. of roof casting, 2,20,000 cu.m. of excavation, 38,000 cu.m of concreting and 1.6 km of cable tunneling.

The Stuff of Dreams

The TCS Siruseri Campus is a project that stands as an iconic development in the cyber corridor of India. Distinct in style, grandeur and aesthetics the campus has won many accolades and laurels in national and international forums. The man behind this landmark project **Mr. B V M Sarma, Vice President, Tata Consultancy Services** talks to TCExpression about the journey from dream to reality.

The TCS Siruseri campus was envisaged as a landmark project not only within the Tata group, but also the entire IT infrastructure industry. Can you share with us your experiences as a leader who has converted this dream into a reality?

It was a well orchestrated effort and the credit goes to all the project stake holders who took ownership of the project and were one with the cause. During peak time we had more than 5,500 workers at site and it was like a mini-India. The safety events and awareness programs helped us clock 60 million safe hours, which is today an industry benchmark. The complexity of the project, financial implications of decisions, capex issues and schedule were all managed in a timely manner as we received continuous support from the management of TCS. The group chairman Mr. Ratan Tata along with other board members have also visited the project and appreciated our efforts.

Today the campus is spread over 70 acres with a floor area of about 5.2 million sq. ft. comprising of engineering blocks, support services and parking facilities planned to cater to 24,000 occupants. TCE has lent commendable support in project management. Touted as the largest project in Asia, the TCS Siruseri project received the Global Architectural award, green building certification (gold and platinum) and several other awards.

Right from the principal architect (Carlos Ott Architects, Uruguay) who conceptualized this dream project to all the contractors and vendors who translated the dream into reality, our motto has been one team – one goal – one direction.

To put it simply, the project journey has been a classic case of multiple dreams towards a single reality!

Could you throw some light on TCS's strategy to plan and implement similar infrastructural projects in India?

Today, 70% of TCS's office spaces are leased and the balance 30% are owned. In the next 5 years we plan to reverse this ratio. Years 2012 to 2017 will therefore be a defining period for the TCS Project Division. Siruseri was only a beginning. We are now planning to have campuses in 14 different locations in India to provide for 1, 50,000 seats spread over 30 million sq. ft. of space. The total capex projection is to the tune of Rs. 12,000 Crores. Pune, Kochi, Trivandrum, Bhubaneswar, Gandhinagar, Kolkata, Bangalore & Hyderabad are some of the cities earmarked for our infrastructural projects.

The construction industry in India is currently grappling with challenges in terms of resource availability as well as schedule management. As a domain expert, how do you think the twin challenges of people and time can be addressed?

The Siruseri project has created a knowledge base that has helped us institutionalize a TCS way of working for resource optimization and process improvement.

Technology and automation have aided us in keeping pace with our schedules. Usage of Project Management tools like BIM (Building Information Modeling) and developing a separate in-house platform (COLLESIUM), which addresses the entire project management cycle have helped us save time.

Also, advanced involvement of the project stakeholders right from the pre-construction stage have reduced the time taken for vendor selection and procurement during the actual construction stage.

Whatever be the extent of automation, every project is a tradeoff between technology and people. With its aggressive target of adding 5 million sq. ft. per year, the next five years will see the likes of one Siruseri project, developed every year. TCS needs about 20,000 skilled workers and 10,000 unskilled workers to implement its strategy for infrastructure development. We have had train loads of workers arrive from remote villages to work on the Siruseri project. The key challenge was in retaining the workforce to ensure continuity and hence prevent lags in the schedule. We have addressed this issue by ensuring that the workers' needs in terms of skill development, compensation, work environment, job security, shelter, primary education (for worker's children) healthcare and recreation are adequately taken care. Our efforts have been towards instilling a sense of dignity & pride while working for a TCS project.

It is not just getting people, it is about creating assets.

"Our motto has *been one team – one goal – one direction.* To put it simply, the project journey has been a classic case of multiple dreams towards a single reality!"

Could you please elaborate on how the Siruseri project is environment friendly?

With 14 large campuses in the anvil and increasing power costs energy efficiency is our biggest need. TCS has standardized the equipment and designs so as to achieve economies to scale. The HVAC and electrical distribution systems have been standardized to ensure energy efficiency and hence cost optimization. Special building features aid in harvesting natural resources (rain water and sunlight) and usage of renewable energy (solar and wind). Also we source wood from only certified forests.

What are your experiences so far in associating with TCE for TCS's infrastructure projects?

My experience with TCE dates back to 1997 when I was associated with the TIDEL park project in Chennai. TCE's project centric approach, competent resources and complete partnership with the client have always proved to be delighters.

TCE has now geared up its operations by providing us a single window approach through a key account manager while handling the project management requirements for 10 of our upcoming campuses. While the geographical spread of operations would demand delivery from all offices of TCE, we are sure the single window approach will ensure homogeneity as well as efficiency.

What is your message to those who choose to build a career in the construction industry?

India's focus in next 10 to 15 years is going to be on infrastructure development. With roads, power, ports and airports continuously emerging and expanding to serve a massive population of 1.3 billion, the opportunities are enormous in the construction industry.

New technologies, new systems and newer processes are in continuous need of fresh minds.

It is a nation building opportunity, *come embrace it.*

Hawk-Eyed Challenges




The upcoming coke oven and pellet plants of **ARCL** (Amba River Coke Ltd., a wholly-owned subsidiary of JSW Steel) are a part of a strategy to make JSW Ispat's Dolvi unit (in Maharashtra's Raigad district) cost effective. **TCE** is proudly associated with ARCL in offering Quality Management services for the construction of these facilities. **Mr.Ajit Karande, Head-Projects, ARCL** discusses the challenges of quality management at the project site.

Could you please elaborate on how the expansion of ARCL's coke oven and pellet plant is envisaged to play a significant role in stepping up the turnaround of JSW Ispat?

The turnaround of JSW Ispat is being planned by executing backward integration projects. At present two key components namely Coke (used in Blast Furnace) and Pellet (used in Sponge Iron Plant) are being purchased at market prices. This is reducing the operating margins of JSW Ispat. With in-house manufacture of these key ingredients of iron making, there are bound to be improvements in operating margins as well as key operating parameters of iron making.

Could you throw some light on the various elements of the project and current activities at site?

Presently JSW Ispat is executing five projects. A 1 MTPA Coke Oven, 4 MTPA Pellet Plant, 55 MW Power Plant, 600 TPD Lime Unit and a railway siding project are under execution.

To expedite the execution and contain the project costs, JSW has adopted the strategy of using multiple small agencies to execute the civil and structural works for all these projects. Additionally, we have effectively phased the work in order to optimise on the number of contractors.

The deployment of small contractors poses a number of challenges in the quality front and requires expertise and hence we have associated with TCE for Quality Management.

What are the critical features of the project related to Quality Management?

Small agencies are typically lagging in quality consciousness and need to be monitored rigorously for Quality Management. Also, the engineering by local OEM's (Original Equipment Manufacturers) fall short of expectations in terms of their adherence to Indian Standards. These issues pose a lot of quality related challenges in projects.

Secondly, procurement of aggregates from unorganized sectors also poses challenges which demand a *hawk-eyed* approach.

What are your experiences so far in associating with TCE as the provider of quality management services?

We are quite satisfied with the competence of personnel deployed by TCE for providing Quality Management services for JSW projects. They bring with them rich and varied experience of project execution.

What is your message to those who choose to build a career in Quality Management?

Quality Management in projects is a demanding field and many companies have realized its importance during project execution. Surely building a career in this field will be a rewarding experience for personnel who chose this profession.

Clearly Nuclear

The Nuclear Energy Programme in India has been visualized to grow in three phases. Phase I consisting of Pressurized Heavy Water Reactors (PHWR) utilizing proven reserves of natural uranium in the country. Phases II & III with Fast Breeder Reactors (FBR) for enhanced power generation sustained for a period of 500 years.

The PFBR (Prototype FBR) is the forerunner of the second stage of India's nuclear programme and represents the commencement of the commercial phase of India's nuclear power programme. **TCE** is currently associated with the construction and operation of a 500MWe PFBR with which India will be demonstrating its techno-commercial viability.

N.Selvaraj, Construction Manager, CNBU-TCE grabs some time from **Dr. Prabhath Kumar, CMD, Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI),** to solicit his views on the present and future of the Nuclear Power Industry in India.

What is the present scenario in the Nuclear Power Industry in India?

The nuclear power industry is all set to shape the future of a power hungry India. With unit energy costs vying to attain parity with conventional energy sources, it won't be long before nuclear energy assumes a larger role in closing the demand supply gap. The two public sector organizations NPCIL (Nuclear Power Corporation of India ltd.) & BHAVINI can approach the Government of India for flagging off new projects where the unit energy cost will be at par with the conventional sources of energy.

Technology wise, the present scenario is quiet conducive for indigenous nuclear reactors. There are no hurdles or hiccups in the installation of indigenous reactors as the entire design, manufacturing, construction, quality assurance, commissioning, operation and maintenance capabilities are harnessed within the country. Imported reactors also have a great possibility owing to the large gap between the demand and supply of electricity in the country.

What is the plan of future fast breeder reactors (FBRs)? What will be the capacity addition from these reactors in the next 15 years?

Six fast reactors of 500 MWe capacity each are planned to be built after the completion of the prototype fast breeder reactor.

From the year 2027 metallic fuel fast breeder reactor will be introduced in the grid. These reactors will be of 1000MWe Capacity. Thus the country will add a total capacity of 4500MWe, in the next 15 years.

TCE has been a long time partner in the Indian Nuclear Programme. TCE has also played a vital role in design and construction management for PFBR. Our association can surely continue with TCE maintaining its competitive edge in the technological and commercial areas.

How was your experience with TCE on this project?

TCE has provided valuable contribution in PFBR. Every interaction with TCE professionals has been enriching.

Do you have any specific suggestions for TCE?

It is important to remain technologically advanced and TCE must continue to expose their professionals to the latest technical innovations and advanced & newer materials. TCE should also continue to make strides in the field of economical design.

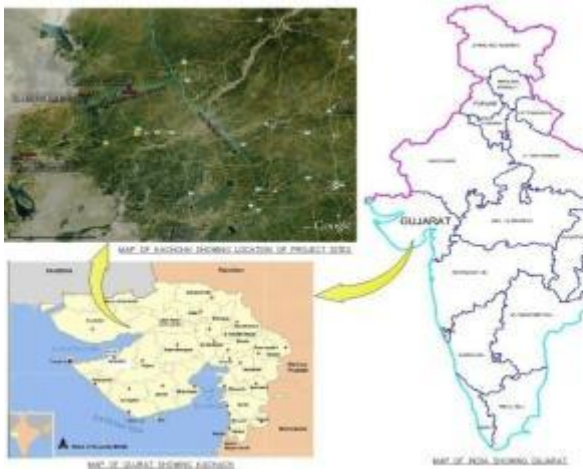
Your message for the readers of TCExpression?

Tata is a name which has earned great respect in the corporate world. Tata group companies are recognized for their ethical and value based businesses. TCE's contribution to the Indian Nuclear Industry has been significant over the past decades. I am sure it is a matter of pride for members of the Tata family to be a part of such an esteemed fraternity.

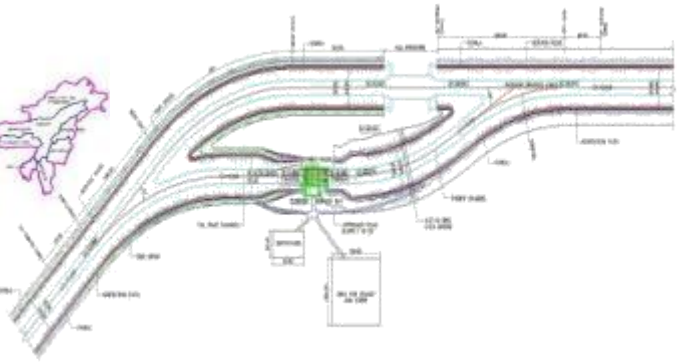
Delhi

Consultancy services for two canal based hydro projects of Sardar Sarovar Narmada Nigam Limited (SSNNL), Gujarat

TCE Delhi signed an agreement with SSNNL on 28-08-2012 at Vadodara for providing PPP model based Engineering Consultancy Services for planning, designing, formulation of Bid documents, Bid evaluation and providing owner's engineering services during detailed engineering for Canal based small/mini/micro Hydro power projects on "Kachchh Branch Canal" and "Saurashtra Branch Canal". The project envisages construction of three small hydro power projects on Kachchh Branch canal (KBC) with an installed capacity; one of 9.99 MW and two of 6.66 MW and three small hydro power projects on Saurashtra Branch Canal (SBC) with installed capacity of 15 MW each.



Location map of project



Layout plan of Power house on Kachchh Branch Canal

Rahi Chu Hydro electric project (HEP), Sikkim

M/s Sikkim Engineering Private Limited (SEPL) awarded TCE, the work of Consultancy services for preparation of Detailed Project Report (DPR) of Rahi Chu HEP (25MW) in Sikkim. The project is located in North Sikkim District of the state of Sikkim. TCE's scope involves, review of pre-feasibility report, preparation of feasibility study report (FSR), preparation of specifications for survey & investigation and preparation of detailed project report (DPR). The diversion weir is proposed on River Rahi Chu, a tributary of River Tolung Chu.

Wikimapia snapshot indicating locations of project components of Rahi Chu HEP

Side View of 132KV Switchyard

Bharat Oman Refineries Limited (BORL) 6 MMTPA Grass Root Refinery at Bina, Madhya Pradesh

BORL, company promoted by Bharat Petroleum Corporation Limited (BPCL) is setting up a 6 MMTPA grass root refinery at Bina, MP. The industry is tapping power at 132kV level through two numbers of 132/33kV 25MVA step-down transformers and captive power plant of total 100MW capacity. To solve the power failures & supply stability problems the industry is facing, BORL has engaged TCE for augmentation of 132kV substation which includes addition of 25MVA, 132/33kV step down Transformer, carry out relay coordination study and implementation of load shedding scheme during islanding mode. In addition TCE is preparing a feasibility report for BORL for exploring renewable energy from solar power.

Engineering consultancy services for the Seat manufacturing facility at Manesar, Gurgaon, Haryana.

BHARAT SEATS LIMITED (BSL) entrusted TCE with a job of detailed engineering along with construction supervision services to set up a seat manufacturing facility at IMT Manesar Haryana. This facility is envisaged for catering mainly to Maruti Suzuki India Limited. The project has covered area of approx 2 acres (75m x 105m) which comprises of a basement with G+ 1 floor.
Civil Design of the building and related auxiliary has been completed within the stipulated time frame. Construction of Entire building along with PEB structure is completed and currently electrical work is under progress.

PEB Work Completed above First Floor

Side Cladding Work Completed

Architectural consultancy service for construction of township for MBPMPL at Anuppur, Madhya Pradesh

Moser Baer Power & Infrastructures Ltd. (MBPMPL) proposed to establish a Township for its TPP (coal fired thermal power plant) in Anuppur district, Madhya Pradesh. The Township site (50 acres) is located to the South of Main Power Plant. The buildings of Township have a built-up area for 4.3 lakh sq.ft comprising of Residential, Commercial and Public buildings.

TCE provided Architectural planning for the Master plan of the Township, Architectural Concept planning and designing for various Township buildings & detailed engineering services along with preparation of tender specifications, BOQ, cost estimates, tender documents, bid analysis, purchase recommendation and vendor drawing review for electrical substation and campus electrification has been successfully completed to the full satisfaction of MBPMPL.
Some of the Highlights are:

- Natural Nala flowing through the site is Landscaped and beautified to enhance the ambience of the Township apart from being used for Rain Water harvesting.
- Ample provision for future expansion of residential development and school to cater for increased future population has been provided.

Kolkata

Engineering Consultancy Services for Hindalco Industries Limited, Hirakud, Orissa

TCE is providing high end services provided in the following areas:

- Power System Study (Load Flow, Short Circuit, Transient Stability Study and Relay Coordination) for the CPP and Smelter Complex
- Study for Implementation of Intelligent Load Management System (ILMS) to ensure stable and reliable operation during Islanding from grid
- Development of Fast Bus transfer scheme for house load operation of CPP units
- Engineering and Installation of Hybrid Switchgear including modification of the existing protection system to improve the flexibility of power system operation
- Study of transient over voltages during earth fault on 11kV buses and provide solution for PT and LA failure
- Study and implementation of over voltages protection for the CPP and the Plant Switchyards from Direct Lightning Stroke
- Insulation Coordination Study for the entire Hirakud complex

WBPCB- Sector Study of Sponge Iron Industry in West Bengal

TCE has been awarded a World Bank funded assignment by WBPCB on Sector Study of Sponge Iron Industry in West Bengal. This assignment involves assessment of Environmental pollution status of SI units in WB vis-à-vis India and suggesting probable clean technology options. The Study Report would aim at facilitating capacity build up of WBPCB in achieving environmental compliance and directing the policy decision makers and industry stakeholders for a re-positioning of this industry sector throughout India in the years ahead.

Jamshedpur

Heating up of the Battery 10 as major milestone of coke oven project

Under the expansion plan for a capacity addition of 3MTPA, by Tata Steel Limited, Coke Oven Battery # 10 & 11 along with its By Product Plant are being built at Jamshedpur Plant.

Heating up of the Battery no 10 as major millstone of coke oven project, started on 27-August'2012.

TCE's scope of work includes design, project management and construction management services for a 6 MTPA steel plant of Tata Steel at Jamshedpur.

Heating up of Battery 10

Quenching Tower

Mumbai

EPCM services for 150000 TPA Oral Care Facility at Sanand, Ahmedabad

TCE has been involved in state of the art, fully automated 150000 TPA Oral Care facility, being designed to achieve an IGBC Silver Rating. The facility shall consist of RCC & Pre Engineered Buildings, namely: Main Plant Building, RM and FG stores, Packing Lines, Admin Block and Workers amenities. A Utility Block, Substations, Water tanks, Gate House and security block etc.

Highlights of the projects are:

- Fully automated facility with various controllers integrated to the Central Control Center.
- Integrated Building Management Systems are being used, so that various systems can be operated & monitored from a single platform.
- Global standards are being followed with respect to fire protection, arc flash protection, property loss control and health & human safety.
- Zero Discharge Facility.
- Biggest Oral Care Facility in the world.

EPCM services for 16000 TPA chocolate plant (Phase-II) at Induri, Pune

Cadbury India Limited (CIL) iconic brand of Kraft Foods is setting up separate chocolate plant and moulding line (Phase-II) located in the same premises of existing plant at induri, Pune. TCE will provide, basic engineering and detailed engineering consultancy services. TCE will also support CIL in carrying out inspection & expediting and construction supervision services during execution of the project at site.

Highlights of the project are:

- Fully automated facility with various controllers integrated to the Central Control Center.
- Hygiene standards as per Kraft Foods requirements.
- Facility of global standards with respect to fire protection, health & human safety and food industry hygiene.

Electrical system study of Mumbai refinery

HPCL Mumbai refinery is a crude processing refinery and products like petrol, diesel and kerosene are obtained by fractionation and distillation. The electrical system consists of own captive generation and power purchased from Tata Power Corporation (TPC) at 22kV and 110kV level. The electrical system has gone through many changes from 2001, when system study of entire plant was earlier carried out by TCE. In 2009, 110kV GIS were installed to purchase power from TPC and four new projects were commissioned.
The comprehensive system study report was generated that analyzed complete system and identified deficiencies in the system. Suggestions for improving overall reliability of electrical distribution system were proposed.

Tunnels for Water Supply in Bombay City

In order to meet growing demand of water, & solve the problems in the existing water distribution system, Municipal Corporation of Brihan Mumbai (MCBM) has proposed several projects for augmentation of water sources, rehabilitation and upgradation of the conveyance/ distribution system. As a part of this, several trunk distribution mains are being replaced by constructing tunnels as a long term solution.

TCE's scope of work included Geotechnical & Topographical Survey, excavation by controlled blasting or chiseling as per the site constraints & construction of Tunnel shafts by either drill & blast method or by use of tunnel boring machine (TBM), along with lined with reinforced concrete between the shafts .



Hindustan Dorr Oliver(HDO) –Uranium Oxide Facility (UOF) at Kalpakkam, Tamil Nadu

The HDO-UOF project has been conceptualized for setting up a facility for the conversion of Uranyl Nitrate solution at Kalpakkam for HEAVY WATER BOARD (A govt. of India body engaged in the production of heavy water for civilian nuclear reactors). The conversion of the solution is primarily done to facilitate the production of uranium oxide powder.
TCE's scope in this project primarily encompasses the provision of detailed engineering services for the facility, 3D modeling services and procurement services.
The facility is being designed as per IAEA and IS guidelines and has been categorized as a class-3 hazard facility. The facility consists of two trains of identical capacity. Owing to the toxic nature of the solution, all the piping & equipment related to it are made up of stainless steel. Further, the area which houses the storage tanks is lined with stainless steel. Vessel off gas system is being provided in the facility to maintain a negative pressure inside it for preventing the egress of flue gases.

Construction

Construction Supervision & Commissioning Services 2x 250MW TPS-II Expansion Project of NLC, Neyveli.

Construction Business Unit has been entrusted with the Construction Supervision services for 2x 250MW TPS-II Expansion Project of NLC and is responsible for:

- Co-ordination with design office & client for interface engineering with various package contractors during implementation of project.
- Entire construction supervision including civil, structural, mechanical, electrical, I&C, other relevant works.
- Quality assurance and quality control at site.
- Site Safety coordination.
- Project planning review, monitoring, updating, reporting & control.
- Commissioning assistance.

Pune

Construction Management Services for 3x 660MW SC TPP, at Banawala, Mansa Punjab

TCE Construction Business Unit has been entrusted with the Construction Management services and is responsible for

- The entire construction management including civil, structural, mechanical, electrical, I&C, insulation, painting works etc
- Quality assurance and quality control at site
- Site HSE coordination
- Project planning review, monitoring/tracking, updating, reporting & control &
- Commissioning assistance

TCE-Team at Site

Chimney

Chennai

Design Engineering services for MMD Heavy Machinery (India) Private Limited's manufacturing facility at Sri City in Andhra Pradesh

TCE has been awarded a green field Industrial project from MMD Heavy Machinery (India) Private Limited (MMD). MMD designs and manufactures rock sizing and crushing machinery. MMD has planned to construct a manufacturing facility at Sri City in Andhra Pradesh. TCEs scope of work involves design engineering for the utility systems, civil & architectural design of complete plant & PMC support services.

Bangalore

Detailed Engineering services for 1x76MW CDQ Power plant at JSW Steel Ltd., Toranagallu, Bellary

JSW steel is installing four Nos. Coke Dry quenching plants to meet their coking requirements. Steam generated in these CDQ plants using the waste heat is being used to Generate Power by installing a 76MW Steam Turbine Generator.

The salient feature of this project is a Main steam pipe line from four Nos. CDQ plants up to the proposed TG building. The total length of this MS piping is about 1.6KM. It was a big challenge to lay this pipe line through the existing steel plant clearing various obstacles such as Conveyors, Buildings, existing pipe lines, cable racks and roads. The complete piping layout, Stress analysis, Pipe rack and foundation design have been successfully completed and in the final stages of execution at site.

Chemical

TCE Vikhroli has secured a detailed engineering assignment from **DSM Sinochem Pharmaceutical India Pvt Ltd.**, TCE will provide conceptual design and basic engineering services, safety study phase-1, safety study phase-2, environmental impact assessment and detail engineering services for TARRANG project at Toansa site

Effort Group (Dejena) has engaged **TCE Vikhroli** for Project management and consultancy services for the design supply erection installation and commissioning of PVC Resin Manufacturing plant in Mekelle Ethopia

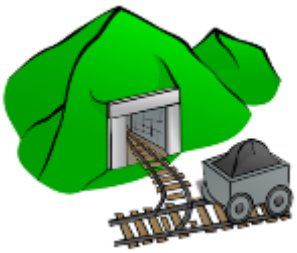
TCE Vikhroli will be providing detailed engineering consultancy for the 45 MTPD nylon-6 chips project at Fertilizernagar for **Gujarat State Fertilizers & Chemicals Limited**

Infrastructure

TCE Pune is lending its services in Safety audits, updating safety documents and safety training for various operating hotels and ongoing construction sites for **Indian Hotels Company Limited**

Mining & Minerals

TCE Kolkata is providing EPCM consultancy for the LIBERIA Iron ore project for **Vedanta Group.**



Power

TCE 247 Park has secured a detailed engineering assignment from **TATA Power** for 400kV Switching Station at Ghatkopar (East) and 440/220/110/33kV Receiving Station at Vikhroli.

PFC Consulting Limited has engaged **TCE Bangalore** for specialized studies for site feasibility, conducting tech studies and MOEF SPCB clearance for 4000 MW UMPP, Jharkhand

TCE Bangalore will be lending it's services to **ZUMA Energy Nigeria Limited** for the preparation of bankable feasibility report and pre contract award engineering services for 400 MW gas fired combined cycle power plant at Egbema, Nigeria.

TCE Bangalore will be offering it's services to **TATA Africa Holdings Limited** by delegating personnel to Eskom for outage resources .

TCE Bangalore will be providing erection services to **Samsung C&T Corporation** for the Qurayyah independent power project.

Duvha Aerial View

Duvha cooling tower - View

Duvha Coal Related Plant Optimization

ESKOM's Duvha Power Station was built between 1978 and 1984 with a generating capacity of 3450 MW (6 x 600 MW) near Witbank, Mpumalanga province. The station was designed considering 21.33 MJ/kg coal with 7% total moisture. However, from March 2006, deteriorating coal quality has affected the performance of the power station, in particular milling and draught system. ESKOM has commissioned Tata Consulting Engineers Limited (TCE), India to assists them in identifying various options available to eliminate the coal related problems. TCE has studied the plant data, which was made available during the site visit, tested the milling and draught system and made observations and recommendations.

TCE with its expertise & with the assistance of Sampling Systems conducted the milling system and draught system capability test in the month of May 2012. The recommendations made based on the result, were highly appreciated by ESKOM management.

115kv outdoor GIB

380/115/13.8kV Manifa BSP substation and 380/115kV Abu-hadriyah BSP at Kingdom of Saudi Arabia.

TCE has been involved in design engineering services for Saudi Electricity Company (SEC) for its two BSP substations. TCE's scope include Finalizing of design basis model, detail engineering for civil, structural, mechanical, architectural, electrical, and protection, along with testing & commissioning assistance. The Project highlights are:

- Visit of TCE Civil engineer to site during plinth start work and civil building design.
- Site co-ordination helped to resolve the civil design query.
- Visit of TCE electrical engineer during electrical equipment (GIS, Transformer, power cable etc) installation.
- The work also involved testing & commissioning supervision at site by TCE engineer. This also includes planning of commissioning activities.

K. J Sahai (extreme left) conferred the Engineering Achievement award.

The Institution of Engineers (India), Jamshedpur honored Mr. K. J Sahai, the project manager of TCE with the Engineering Achievement Award on 15-09-2012 on the occasion of The Engineers' Day. His outstanding contribution in executing the First Energy Efficient LEED NC IGBC to be certified Platinum Rated Green Building at Jamshedpur and possibly in the state of Jharkhand with zero accident involving human life in a record time.

The award was conferred by DC, East Singhbhum, Dr Mrs. Himani Pandey, IAS.

Institute of Engineers India-Qatar Chapter published a Souvenir on the occasion of Engineers Day (15 Sept 2012). ***TCE QSTP-LLC*** has contributed an Article on "Nanotechnology" and also gave a presentation on " Nanotechnology and its Industrial Applications" which is published in their Souvenir.

Mr. R Raghavan has presented a paper on "Design aspects of Circulating Fluidized Bed Combustion Boilers" at the National Seminar on Refractories for CFBC Boilers held on August 30-31, 2012 Organized by Indian Ceramic Society, Bangalore Chapter in association with Bharat Heavy Electricals Limited in Bangalore.

Mr. R Raghavan, presented a paper titled "Challenges in Renovation and Modernization of Power Plants" at National Conference on Renovation and Modernization of Power Plants organized by Infraline Energy on 20th July 2012 in New Delhi. This conference was attended by senior officials of Ministry of Power, Planning Commission, State and Central Utilities and leading equipment suppliers. Presentation was well received.

Cultural Orientation and Sensitization

As we dive deep into the growing business globally there is an increasing need to deploy larger number of employees at various countries for long term assignments. It is also important to explore how clients see their own culture in relation to the host culture. Cross-cultural counseling, is about creating the space unique cultural aspects of client nations can be verbalized, validated, respected and accepted. This quarter saw the launch of an ongoing cultural orientation program.

Participants' Profile:

Business Development, Client Relationship Management, Project Planning and Scheduling, Design and Detailed Engineering, Procurement, Inspection, Construction Management & Safety

Challenges Addressed:

Cultural Orientation -
Etiquette -
Travel & accommodation -
Emergency contacts, local laws & entitlements -
Family guidance -
(schooling, socializing and domestic help)

Target Locations:

Zambia , South Africa , Nigeria , Oman , Qatar & USA

Takeaways:

- Information Booklets
- Presentation on business etiquette
- Audio visual on host country
- Web link for Self assessment, knowledge articles, queries and challenges
- Flag stand bearing Indian flag and host country flag

Leadership Acceleration Process (LAP), a customized program designed by TMTC exclusively for TCE, is a structured leadership development initiative, launched in Oct'11, aligned to our goal to continue to offer useful, relevant, and timely learning for all TCEites.

The LAP program has a 4 tier structure with different programs for people at different levels. Phase IV of the Leadership Acceleration Process (LAP), was conducted from Aug 10th to Aug 18 2012 at TMTC Pune, for the senior level employees in the E7 & E8 grades. 23 participants from all offices of TCE participated in the program and gave an overall rating of 5.9 on a scale of 1 to 6.

The Topics covered under the LAP program were Strategic Vision, Innovation & Creativity, Effective Leadership, Leadership & Change Management, Business Acumen, Key Account Management/ Customer Relationships, High Performing Teams, and Dynamic Communication

Library & Information Science

TCE - Bangalore hosted the 4th edition of "LibCampBangalore" unconference on 29th Sep'12 for Corporate Library & Information Professionals to share and learn in an open environment. Information professionals from 25 different companies attended and shared /discussed their experiences on the Theme: *"Self-sustaining approaches to library & information Centre."*

Sporting Updates

Winners Sanjoy Dutta, Abhishek Mishra, Shiraz Ahmad, V A Amberkar, Tanmoy Chatterjee, & Tridib Mandal.

TCE Sports committee, Jamshedpur organized an Intra TCE Table Tennis Tournament from 11-07-2012 to 13-07-2012. Close to 65 employees participated in the singles and doubles matches.

Tribid Mandal (captain) at JRD Complex

TCE participated in the Inter Corporate Badminton Tournament on 25th & 26th September'12 at the JRD Tata Sports Complex organized by the Tata Steel Sports Committee. The participants were Tridib Mandal (Captain), Tanmoy Chatterjee, Rakshith Thammaiah, and Vadiraja Tantry. TCE reached the semi finals by beating TRF Limited.

Celebrations

TCEite Mr. S. K De's son Sidharth De, achieved First Place in the Formula one car making and racing competition conducted by the Society for Automotive Engineers, India and Maruti Suzuki in Buddha International Circuit in Greater Noida, Delhi. Close to 100 engineering colleges participated, and SRM University of Chennai was announced as the winner. The winning car was built by a team of 25 students of the university and was driven by Sidharth De.

Over the past 5 years, celebrating birthdays as a group event has evolved as a tradition at TCE - Bangalore. Members of each business vertical meet every month to celebrate the birthdays falling in that month. Member contribute towards small gifts for the b'day babies while the cake and snacks are on the house. The celebrations are replete with song & dance, gags, jokes, stories, games and more. These monthly get togethers are eagerly awaited events which get the TCEites bonding and socialising in a relaxed atmosphere.

CONSTRUCTART

An exclusive contest for CNBU TCEites

Soil, bricks or cement bags
Reinforcement bars or wood shavings
Construction drawings or insulation wires
Tools, nails, hinges and more
Were the medium of expression
For TCExpression...

TCExpression announced a contest for all CNBU TCEites. The contest invited participants to form teams and create artwork from materials available at site &/or site office aligning to one or more the following concepts:

Safety at Site
Building & Bonding
Building the Future

The team from the **TCE-SEZ site at Trivandrum** emerged as the winner. The winning team members **P. Sathesh Kumar Sivaramakrishna Maruppaka & Ishahuddin Shaikh** used Scrap Concrete cubes and site safety gear to lay stress on safety at site.

R S Badrinath
Swapnil Bhat
Aniruddha Chowdhury
Vijay Mathur
S K Vimalanandh
from **MVML Chankan Pune,** pose nest to the wind car which symbolises the future applications of renewable energy.

Nilesh Mhatre
Nitin Darekar
Kiran Nichant
Balamurugan M
& Ritesh Patil
from **MVML Chankan Pune,** stay afloat ontheir potable boat made by used / scrap construction material to be used for the supervision and checking of ongoing construction of concrete dam

Seven site teams put together awe inspiring entries from myriad site locations (Trivandrum, Tuticurin, Pune, Bhubaneswar & Mahul).

The selection panel consisted of **Mr. J P Haran, MD** and **Mr. Rakesh Gupta, Sr. EVP.**

Avinash R Soundankar
Gulam G Khan
Nitin Borse
Krunal G Dabhelwala &
Venkateswara Rao Kolusu
from **Bharat Petroleum Mumbai Refinery, Mahul** display office stationery made from waste construction material in an attempt to recycle & reuse to build a eco-friendly future.

Selva Kumara Lingam V, Sivasankar T V and Yuvaraja A from **TCS Trivandrum Site** display a brick arrangement depicting the future of TCE.

Deb Kalyan Das, Sudipta Ghosal & A Murali Krishnan from **TCS Bhubaneswar Site** display a globe rotating with the support of TCE.

M Ravisankar, M Vinoth, V Mayilavan & N Thyagarajan from **CEPL Tuticurin Site** watch as a crane lifts the artwork depicting TCE.

Whenever I sense nothing can happen to me
An Injury hurt me on the top
I wonder,
A head covering could have prevented it.

Whenever I consider nothing can occur
Spines pierce my foot
I ponder,
A shield sole could have averted it.

Whenever I believe nothing can hurt my insides
Diarrhea loved to stay with me
I meditate,
Clean water could have healed it.

Whenever I think nothing can get through to me
An unpleasant fall cracked my body
I explore,
A firm blockade could have averted it.

Whenever I feel nothing can stop my sight
A scary tiny burning ball contacted my eye
I realise
A reflector could have spurned it.

Whenever I assume nothing can go wrong
Whenever I imagine nothing can affect me
Whenever I reflect nothing can crop up
Wherever there is a chance to be bunged up

I now adopt the **3 'R' s**
I **r**edirect my rivals, I **r**ealise & **r**ationalize
Safety is a tradition
and a path for growth
For someone like me ...To reach his goals...

Malay Mahakul, APIL Site, Pune

Vagrancies of Medal Winning

Now that the Olympics are over, a little bit of analysis about India's Performance and it's future prospects is certainly needed before we abruptly turn all our focus towards cricket. For three years and eleven and half months We Talk, Discuss and Chant only about cricket and suddenly it strikes our mind that a Nation of a billion people can produce only a few medals at the Olympics! We lash out at the Sports Federation as 'our' country's pride is at stake in the international arena. It is with awe that I look at how we tune in and out so easily.

Anyway, hoping that the Olympic fever hasn't yet subsided, I am writing this article. India finished 55th in the medal tally with 6 medals, USA, as usual topped with 104 and China stood Second with 87 medals. This tabulation, even though it gives a comprehensive outlook, incites you to make a false comparison. It is erroneous to say that Americans are the best in sports just because they won the most number of medals than the hard working and dedicated Chinese. On careful analysis you will come to know that USA won 60 % of its medals in Swimming and athletics. These are the two major sporting events where most number of medals is awarded during Olympics.

Take swimming for instance, just a simple permutation and combination of the type of stroke and how long the swimmer performs the action makes you arrive at 34 events giving out 102 medals! China made their presence felt with 10 medals, while USA won 30 medals. Now if there was same number of events in badminton or Table tennis, China would have required a special aircraft carrier to carry their medals back home!

So comparing nations sport-wise does more justice than by comparing their overall count. Jamaica won 12 medals, 4 of each hue. All of those came from athletics thanks to the greatness of Usain Bolt and Yohan Blake. Isn't it fallacious to compare them with India, who won six medals in diversified sports such as Badminton, Shooting, and Boxing & Wrestling? Each nation is good at their kind of sport. Just because the maximum number of medals is given to swimmers, in which USA is extremely good, every time it sits comfortably at the top.

With that being said, two major inferences can be made. One, even 15 years from now, India will not be among the Top 10 medal winners, as India does not have any scheme for improvement of its track and field athletes or swimmers. The Making of another Usain Bolt or Michael Phelps in India seems bleak in the near future. On a more positive side, India can look to strengthen its base in Archery, Boxing, Badminton, Wrestling and Shooting where it has all the necessary potential and the backing of previous medals we have won. These events will not fetch huge number of medals but we can surely be the best. Instead of haphazardly chasing medals, a detailed plan of the real possibilities should be laid out. So, to put in simple words, "Don't expect a GOLD medal in Hockey in the next Olympics."

Expecting India to pull a rabbit out of the hat is what we Indians are so good at doing. How many of us watch the Indonesian Super Series in Badminton or the Asian Championship in Boxing? Very few! So, why do we have high expectations from our athletes who go into the Olympics? One has the right to feel proud when they win or the right to criticize when they lose only when one is with them all the time. It's that simple.

So when is the T20 starting huh?

K Ramanathan, TCE Chennai

Insight to the Universe

Stephen Hawking, a famous British Scientist, wrote in one of his books that humans are a curious species. But it is not just curiosity, rather, unlimited curiosity and that makes the human race different from other living beings. This unlimited curiosity created a quest for knowledge in man's mind which led him to know and understand the Universe to its micro level on one side and to the farthest level on the other side.

The basic questions which came into man's mind are; how did the universe come into existence? how and why it behaves s" what the matter is ultimately made of, whether the life exists in other part of Universe, etc. In order to find the answers to these questions and to understand the nature around him, man's journey of curiosity went through different phases of scientific development in the past few centuries. In a journey towards micro level, first he discovered element, then atom, then subatomic particles, so on and so forth. Finally he discovered a mysterious particle popularly known as "Higgs Boson" or "God particle". It was very recently i.e. on 6th June'12 when scientists declared, "We have reached a milestone in understanding aof Nature".

The Higgs Boson:

The whole Universe is made of 12 fundamental particles and 4 fundamental forces. But one more particle "Boson" named after an Indian Scientist, (Late) Mr. Satyendra Nath Bose, is a particle responsible to give mass (an important property) to the matter. Or it can be said that all particles would have been mass less without Boson. Had this particle not been there, the Universe would have not come into existence at all.

Mr. Bose who worked with Albert Einstein in 1920s predicted the existence of a subatomic particle responsible for providing mass to the matter. Later on another scientist, Mr. Peter Higgs did further work in this field and the particle was renamed as "Higgs Boson". This particle is also named as "God Particle", but should not be confused with God. In fact Nobel prize winner physicist Leon Lederman wanted to title his book as "Goddamn Particle" but the editor of the book changed it to "God particle", that's how the name "God particle" came into existence.

The vast Universe:

We now discuss about man's journey of scientific research towards vast Universe. It was earlier thought that our galaxy, the Milky Way, containing our solar system and other stars is the complete Universe. Later on it was discovered that our galaxy is one of billions of galaxies that exist in this vast Universe. It is now estimated that there are 100 billion such galaxies. Each galaxy contains millions and millions of stars. Our galaxy is about one lakh light year across (one light year would be around 9.5x1012 kilometers) and has a diameter of 6000 billion miles. There are nearly 200 billion stars in our galaxy. Scientists estimate that the numbers of stars are almost same as the number of sand grains in a sea beach.

Origin of Universe:

Scientists say that there was nothing in the beginning (neither space nor matter) and the Universe came into existence about 13.7 billion years ago due to an event known as Big Bang. The Universe is expanding since its inception. Scientists believe that the dark energy, still a mystery to mankind, is pushing the Universe to expand. This expansion is by between 5-10 % every billion year. However the Universe can't continue to expand for indefinite time and probably a moment may come when it would start shrinking back to zero. The scientists call it a "big crunch".

The time machine and wormhole:

First it should be very clearly understood that time is not an absolute value but changes with place to place. In fact time is affected by gravity. Scientists have found that at the bottom of sea , time is slower than at earth's surface. Apart from it, time also gets corrected due to velocity. This is due to general relativity. Scientists have found the velocity of light is fixed and anybody, travelling at a certain speed, will get correction in time since distance he travels can't change. Third important property of time is that it is not a continuously variable quantity but changes in discrete.

The question now arises that being so vast, is it possible to travel through the entire Universe in a life time of man? To answer this question let us see what maximum speed the man has achieved, so far. Very recently i.e. on 7th of August'12, space shuttle "Curiosity" sent by NASA in search of life, has reached Mars. Mars is nearly 566 million kilometres away from Earth. It took about 8 months for the shuttle to reach Mars. Normally the highest speed these shuttles can achieve is of the order of 15-25 thousand miles an hour. The fastest shuttle so far, which travelled at a speed of 25000 miles an hour was Apollo-10. The Voyager, a satellite, travelling towards Jupiter is now going with a velocity of 39000 miles per hour.

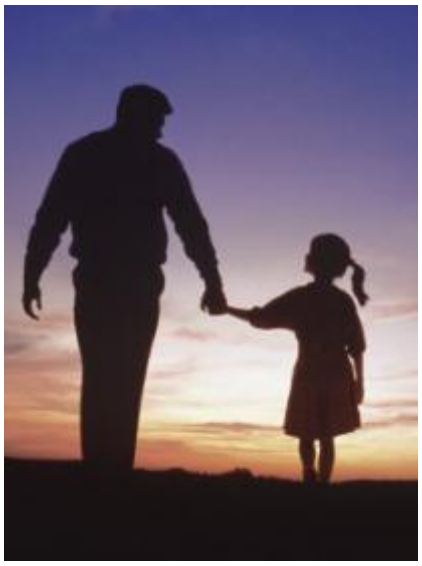
It may therefore be seen that howsoever fast machine we make, it will take millions of years to even reach the extreme point of our own galaxy. Scientists are, therefore, in search of any other means by which the travel time could be decreased substantially. And there is an answer to it. Man can travel through wormholes!

In fact like matter, time also has tiny voids. For our understanding let us take example of watch where the "second' needle moves at an interval of one second discretely. So between travelling from one second to next second, there could be a time void. This void is a wormhole. It can be said that in space-time surface, a short cut can be created much like a tunnel with two ends each in separate points in space-time. The notion of wormhole is still at very theoretical level.

In future it may be possible that man finds some means of using natural laws to explore the Universe and get answer to all his questions creating unrest in him.

K C Keshre, TCE Delhi

When someone you love becomes a memory, the memory becomes a treasure. This poem is the treasure that Aditi Bhat chose to share with us in the memory of her father Mr. V V Bhat, Dy. GM, who was with TCE-Bangalore. Mr. Bhat, an electrical engineer par excellence was with TCE for 24 years and passed away suddenly on 18tth Sep'12 .



Letting Go...

You carried me in your arms,
From the time I was born,
The happiness I sought from that warmth,
Made me feel contended and safe , dusk and dawn,

When a little toddler I used to be,
I curled up close to your chest,
What pleasure the sound of your heartbeat gave me!
I felt so safe and protected, and was sure I could calmly rest.

When I grew up a bit,
And asked you for dolls and play sets,
Of course I got what I wanted, every single play kit,
None of those dolls I will ever forget.

I'll never forget those happy times we spent together,
The places we travelled far and wide,
Those precious moments are in my mind tethered,
Those are memories, never to be kept aside.

And of course, my joy knew no bounds,
When I was gifted that wonderful telescope,
It was as if the greatest treasure in the world I had found,
In the field of space science, to achieve success, rose my hopes.

Those few minutes everyday at night,
We stood out there with my telescope, locating a star,
Which were to me, some of the most wonderful sights,
As you showed my each one, twinkling from afar,

To watch craters on the moon,
I always pulled you away from watching T.V.,
And gladly you came real soon,
To see a smile on my face, to make me happy.

But now they are nothing but precious memories,
Of my moments with you,
And these I'll take with me, throughout my life, merrily,
Now there won't be anymore, as I have to say,
Goodbye, I've always loved you.

Aditi Bhat V

II Jai Mata Di II

We went on a tour to Jammu & Kashmir and also fulfilled a lifelong ambition to visit the Mata Vaishno Devi Shrine to seek the blessings of the Goddess. On being warned about the safety and security issues considering the unsafe environment in the region, we decided to travel with a travel company.

We joined the group at Jammu from where we left for Katra, a base camp for Vaishno Devi Yatra. Out of the three options to visit the shrine – by helicopter, horse/pony ride or a trek of 14 Km – we chose the thrilling helicopter ride, followed by a 4 km trek to the cave shrine and took the blessings of Goddess Mata Vaishno Devi.

The next day, we began our journey to Srinagar which is about 300 km from Jammu. It was a tough & tiring journey of 12 hours through mountains by narrow roads with a steep mountain cliff on one side and a deep gorge on the other side! The breathtaking views of the snow clad mountains, rivers-formed mainly due to melting glaciers flowing along the road and the picturesque landscape made the journey memorable.

Srinagar was our base station for the next 4 days from where we stared our next leg of the trip, i.e. journey through Kashmir Valley, a Heaven on Earth. Shikara ride on Dal Lake and a stay in the House Boats are the two main attractions in Srinagar. The beautifully planned and maintained Mughal Gardens – Chashmeshahi Garden, Nishat Bag, and Shalimar garden - which were the most popular outdoor locales for movie shooting during 1960s-1980s are the other attractions. We also visited other famous and popular places like Gulmarg, Sonmarg and Pahelgam. On the way to Gulmarg, our first stop was at the temple of `Kheer Bhavani', a Goddess whom Kashmiri Pandits worshiped before they were driven out of valley. The temple is now managed by the Indian Army. The journey to Sonmarg & Pahelgam was also a memorable experience. We got an opportunity to go to the glaciers and experience the feel of soft melting snow.

During the entire trip, we met friendly, hardworking and honest Kashmiri people. We were moved by their hospitality and helping nature. We also noticed the presence of CRPF & Army men at every tourist place reminding us that all is not well in the region. Life in Jammu and Kashmir is very tough and everyday brings in new challenges. One really feels proud of them and every Indian should salute their courage.

Rupali Patki & Chaya P, TCE-Bangalore

Geared to Give

A contest last quarter evolved a name and tagline for **Corporate Sustainability** in TCE. TCEndeavour with its tagline *care-share-restore* next sought a visual identity. This quarter saw the making of a logo that symbolizes the **four thrust areas**. While the gear wheels & the blue colour denote **engineering**, the colours maroon, purple and green signify **community, education** and **environment**. The hands are symbolic of the efforts that reach out to the society at large.

The logo was launched by the MD, Mr. J P Haran and the CS teams across offices witnessed it over a video conference mode proudly donning customised caps and badges. The revised CS policy was also formally released on this occasion by the Sr. EVP, Mr. Rakesh Gupta. The TCEndeavour teams comprise of **Advocates** in each location coordinating the local activities and are supported by a team of **Champs.** A total of 100+ TCEites have joined hands in driving this endeavour which also receives guidance from **Counsellors** who act as domain experts for the four thrust Areas.

The logo launch was followed by events spread over four days in order to create visibility for TCEndeavour as a vehicle to drive & implement TCE's CS Vision, inform TCEites about the purpose(s) of the endeavour as well as encourage TCEites to positively contribute to the initiative.

Each day was earmarked for a particular thrust area and screen savers, poster campaigns, audience & e-quizzes and JAM (just a minute) contests were organised by the CS teams across all offices. A short film on environment and green technology was specially developed in-house and screened at all offices. The construction sites also pitched in with colourful poster displays. The e-quiz which demanded quick responses even saw participation from TCEites posted abroad despite time zone constraints.

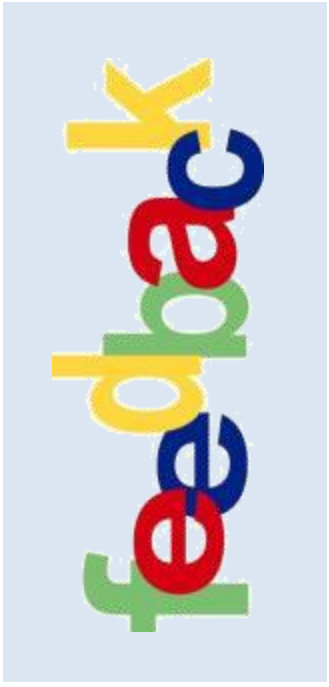
The heartening responses and registration enquiries pouring into the TCEndeavour mailbox are definitely indicative of the fact that TCEites are all geared up to give back to the society.

TCEndeavour Logo Launch by the MD, Mr. J P Haran

TCEndeavour Logo Launch - Events Galore
Launch, Engineering, Education, Community & Environment

Thank you very much for giving me an opportunity to express my feelings on our company's new magazine. It is an honour to let you know that TCExpression is a very good initiative taken by our top management. Please find my small recommendations / suggestions which may take our magazine to the next level.
We can make some space in our magazine to throw some light on the life of our national heroes. It will be good if we can arrange some interviews with our retired colleagues. It will be our privilege to know their experience in TCE.

Subhabrata Roy, Raj Plaza



I like TCE Expression because I love the cartoons that come over there and also 'beyond the work' Column.

Raghavendra H M, Bangalore

The April-June 2012 issue of TCExpression is very impressive. It gives a comprehensive overview of the wide range of project activities undertaken by TCE in the domestic and international markets, as well as other matters of interest and personal snippets. It will therefore appeal to clients, colleagues and families.
The editorial team should be encouraged to maintain this balance.
I was particularly happy to read the views of TCE officers as it shows that they take an overall view of the project and not a narrow technical one, and also reflect their job satisfaction and self confidence to operate in varying cultures and environments.
Since an engineering consultant's work is fundamentally technology based, occasionally there should be a mention of new technology that TCE has acquired or applied for the first time.

V N Manohar
Former Director-in-Charge & CEO, TCE

TCExpression is a very nice newsletter which provides a good platform to express views of employees & the project scopes of TCE. I wish the team for upcoming newsletters.

Sudharshan A ,
247 Raj Plaza

A rattling experience of an expression. Its been a pleasure reading the magazine.

Pavan Kasibhotla, Bangalore

Thank you for this wonderful & informative magazine. Project Patchwork & Truly Global are my favorites. I now get to know everything happening in TCE right in my desk! All the Best !!

Dheeraj K S Raj Plaza

It provides me an insight to the happenings in the TCE. The last edition gave me an overview of TCE's presence in the global arena. I also liked global glimpse and creative clique.

Divya Shree, Bangalore

In all senses TCExpression is a real expression of creativity and innate talent lying in every one of us under the auspices of our able management.
It has a space for every thought, for every creation and for every achievement of ours and gives a inside-out glimpse of our world within TCE.
No doubt, in a very short span of time it has become a very vital link between everyone of us irrespective of our geographical differences and emerged as a very reliable and trustworthy source of TCE's news and events.
I believe this initiative will go a along way to orient the readers in line with TCE's long term vision and mission and help TCE to build up its brand.

Sachin Singh, Jamsedpur

TCExpression brings all the TCEites on a common platform and gets us updated with the happening. I enjoy reading it.

Mahesh Nemagoudar, Bangalore

To me, this magazine is a necessity in a well-spread organization like TCE. For a company spread in so many cities in different parts of the world and having such diverse work-fields, a magazine giving insights and updates on different projects being carried out by different offices in the worldr is information well required by all the employees on TCE.
Different achievements by TCE in different fields make us aware and proud of the work being done at TCE.
Just a suggestion to make it an even better read is to accommodate a section giving a glance on recent developments in the industrial scenario in India and the Indian economy.
Hope there will be many more such initiatives in TCE.

Manas Bhatt, Raj plaza

No man has the right to dictate what other men should perceive, create or produce, but all should be encouraged to reveal themselves, their perceptions and emotions, and to build confidence in the creative spirit." — *Ansel Adams*
Man has been endowed upon with a beautiful gift of expressing himself. and TCExpression is yet another platform where we can believe that we are being heard. TCExpression can be perceived as an instrument to shape our thought processes into a vibrant constructive force capable of elevating the whole aspect of life into a new realm of knowledge and enlightenment.

Yugandhara Lad (247 park)

Business Brief and Creative Clique are the sections i usually go through. I also like Technovation.

Sanjeevgouda K. T Bangalore.

I enjoy reading Business Brief and Global Glimpses. Business Brief keeps me updated with the project acquisitions made by TCE in various divisions and Global glimpses updates me about the happenings in global platform. In the previous edition I liked the article on Lifestyle of TCEites in Nigeria and also Linguistic Worlds.

Jalaluddin S Khan Bangalore/

TCE Expression is a very good platform where we can share the developments, new techniques & various activities going in the organization. It is covering all the milestones achieved in the different projects all across the TCE & emerging with flying colors out of the expectation of the client. Kudos to the TCE expression team for their painstaking effort in gathering all the information.

Smitha Dash, Raj Plaza

First of all TCExpression is a very creative, one of its kind magazine. I go through it often; this inspires me to do something new, something exciting, something very creative which I can proudly share with the rest of my TCE family. Such a small magazine would contain so much information and about so many diverse fields, it's simply amazing.

Sreeraj Menon, 247 Park

I like TCExpression because the various activities and events occurring in various offices of TCE across India are presented in a very reader friendly way and it is very essential that TCE has its own magazine to promote its brand value and thus gain recognition both in India and overseas.

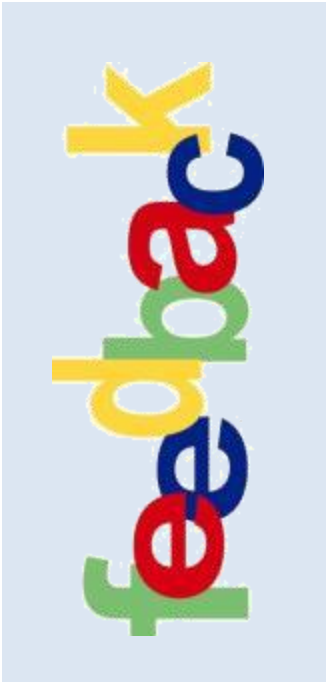
Karthik M Bangalore

As a morale builder, TCExpression not only gives pleasure to me as an individual, but it also lifts the spirit when I see both the accomplishments by, and the appreciation of a fellow worker. In addition, TCExpression has been helpful in conveying various aspects of TCE. It has served as an excellent tool to keep me informed about what is going on in the company. Articles and pictures about aspects of employee's life away from work has been interesting and helped me to identify the diversity of TCE staff .

Mohammad Omair, 247 park

Thank you very much for a copy of the 4 th issue of your in-house newsletter ' TCExpression'. Very interesting.

Anil G Verma , Executive Directior (P&A) Godrej & Boyce Mfg Co Ltd.



Being a TCEite I feel this is a move which allows all of us to know each other in a much better way. 'TCE Expression' does help us to know our management in much more detail and even allows us to share our views about our organization. It is a platform which strives to capture laurels across TCE and keep every TCEite updated about the same. TCExpression also keeps us updated about all of what is happening in new and ongoing projects of TCE.

Yogesh Ji , Jamshedpur

Am a person who has interest in gaining more of technical knowledge. Initially I had thought of this magazine as just a way of expressing ones experience and adventures and tackled matters either at an individual level or at a group level. It was good to know that there are a lot of people who took challenges outside the office, at their personal level, to enhance their physical limits. I was also very happy to see, as I went through the articles that TCExpression, not only gives information on the upcoming technologies, but also gives proof of how TCE utilizes these advancements in its day-to-day projects. The articles help everyone, not necessarily limiting oneself to his/her discipline but provide a bundle of knowledge in a single package.

Vishvesh Shenoy, 247 park

Construction in a Click

Since the early years of the twentieth century automation has grown and prevailed in almost all production domains other than construction of civil structures. Implementation of automation in the construction domain has been slow due to:

- non- availability of automated fabrication technologies suitable for large scale projects
- conventional design approaches that are not suitable for automation
- significantly smaller ratio of production quantity/type of final products as compared with other industries
- limitations in the materials that could be employed by an automated system
- economic unattractiveness of expensive automated equipment, and
- managerial issues

On the other hand, the following are reported to be serious problems that the construction industry is facing today:

- Labor efficiency is alarmingly low,
- Accident rate at construction sites is high,
- Work quality is low, and
- Control of the construction site is insufficient and difficult and skilled workforce is vanishing.

Success from the project management viewpoint is achieved when the project is completed with the lowest possible cost, the highest quality and no accidents. In other words, success means bringing each of the project performance indicators (PPI) viz., cost, schedule, quality, safety, labor productivity and materials consumption or waste to an optimum value. Applying automation and robotics in construction is today a a growing field aimed at raising building projects performance to serve the client and the environment in the best possible way.

Concrete Horizontal Distributor

Robot used for maintenance of mine shafts

In mining, tunneling, earthworks, road construction etc. we have reached a high degree of mechanization with partial automation. In the production of construction materials such as cement, steel, aluminum, glass and wood etc, the degree of automation is very high - almost up to 100%. Automation and robotics in constructions and building components prefabrication is high in precast concrete element production where there has been a movement from mass production to mass customization. This development was enabled by flexible production systems using robotic cells which could execute various tasks such as setting molds, placing reinforcement bars or mat and distributing concrete for various products such as floor, roof, wall, beam& column elements.

Increasing labor cost, demand for defect free products and the intense market competition are some of the factors which contributed to the rise of automation and robotics in the construction industry. Also challenging site conditions have led to a need for special robotic technologies.

Research is on, to make special robots like *robot mules* to carry loads in hilly terrain and *under water robotics* which can lay optic cables and can also work on oil rings.

Robot Mule

Robotics and automation systems in construction industry can achieve the following advantages:

•Higher safety & Uniform quality
•Improved work environment
•Elimination of complains, and
•Increased productivity.

So then, will it be too long before we build a structure by a simple click of a button?

Sources:
www.engg.uaeu.ac.ae
www.intechopen.com

Karthik, Santosh and Varsha have done it again!

Their pencil and brush strokes deftly bring out the lighter side of life at site.

Karthik B

NOTHING ILLEGAL SIR . IT ACTUALLY MEANS LIFE PROTECTION GEAR !

Feedback / Suggestions – Welcome to ***TCExpression@tce.co.in***

TCExpression

In House Magazine

TCExpression Magazine is a quarterly communication channel and an in-house newsletter for Tata Consulting Engineers Ltd., that strives to capture the happenings across TCE and keep every TCEite (& the world beyond) informed, inspired and involved.

TATA

TATA CONSULTING ENGINEERS LIMITED

Concept and Management: TCE Corporate Communications