

Challenges & Responsibilities

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With the growth of India's economy, demand for energy will also grow. Indian power sector needs to plug the gap between demand and supply through renewable and non-renewable sources as well as proper transmission and distribution channels

SANJAY GUPTA

India ranks among the world's most advanced emerging economies and the growth of the country is directly linked to the supply of power. There has been a quantum increase in the installed power production capacity in our country since independence from both non-renewable and renewable sources. In 1947, the country's total installed capacity from both the sources was a meager 1362 MW, but by 2013, the country's total installed power generation capacity from all sources has reached 233.9 GW.

In spite of these additions, more than 400 million Indians do not have access to electricity. Even the nation's capital, New Delhi, cannot boast of 24x7 power supply in the 21st century. This fact sums up the power scenario of the country.



When the power houses generating energy fail to fulfill the demand, industries and households resort to the use of diesel or portable kerosene

generators to generate power for consumption. India is one of the world's largest importers of crude oil, gas and coal. According to the Indian Petroleum & Natural Gas

statistics, released for 2012-13 by the Ministry of Petroleum & Natural Gas, despite considerable variations in international prices of crude oil, imports have followed a

steady growth primarily to meet the domestic demand of a burgeoning economy, apart from re-exports of petroleum products.

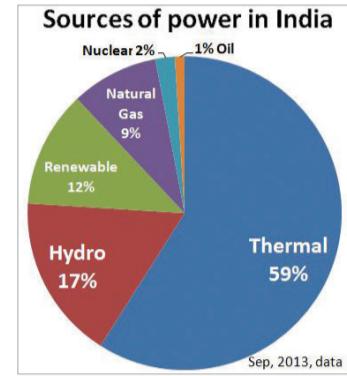
A foolproof road-map for meeting the demand of power sector seems to have eluded the nation. There are states with power surplus due to hydro generation, but nationally, the country is power starved since independence.

We are the 4th largest energy consumer in the world with a per capita consumption around 7.5 KW h/yr. The demand for energy has grown closer to 3.5% per annum over the last three decades. Realising the ardent demand for energy, National Solar Mission aims to generate 20 GW by 2022 from wind, biomass, solar power, etc.

Sanjay Agarwal, Principal Secretary (Power), UP government, says, "The scope for improvement in the power sector is phenomenal. If we are able to plug transmission and distribution (T&D) losses which were 23.65% in 2013 in India, a lot of revenue

can be generated and the same can be ploughed back into generation." Globally, T&D losses are below 15%. Nationally, there are plans to reduce T&D losses to 17.1% by 2017 and 14.1% by 2022.

According to Union Ministry of Power & Energy sources, India needs around \$2 trillion investment in distribution, transmission and generation of power to meet the ever-increasing demand of energy through 2030. The total target of hydro power capacity addition is 13.5 GW in the 12th Five-Year Plan (2012-17). The private sector is



INCREASING CAPACITY GENERATION AND OVERCOMING OF TRANSMISSION AND DISTRIBUTION LOSSES CAN GO A LONG WAY IN MAKING INDIA LEAD ON THE PATH OF ECONOMIC DEVELOPMENT

expected to account for about 3500 MW. However, the country has also made serious efforts to tap renewable sources of energy such as wind and solar energy.

With the United Nations declaring 2014 to 2024 as the decade of sustainable energy, India has a chance to stamp out energy shortages via sustainable sources. Increasing capacity generation and overcoming transmission and distribution losses can go a long way in making India lead on the path of economic development and would also ensure a better life for the citizens of the country.

INTERVIEW ■ YOSHIAKI INAYAMA

One-stop solution providers for power in India

Toshiba is a globally-renowned power generation, transmission and distribution equipment supplier. Yoshiaki Inayama, Managing Director, Toshiba JSW Power Systems Pvt. Ltd. (TJPS), talks about his company's world-class end-to-end solutions in thermal power with Dipti Srivastava

India is expected to see significant growth in power demand. What opportunities does it throw open for your company?

India is one of the most promising economies in the world that is poised to grow at 6-7% for the next few decades. For Toshiba, it opens a world of opportunities to participate in the above growth. We are capable of providing world-class end-to-end solutions in electricity generation and transmission.

TJPS would be offering complete solutions from turnkey supply to renovation and modernization for Indian power sector and also through Engineering, Manufacturing, Procurement, Construction and Service (EMPCS) related activities.

We want to provide reliable power stations in India like the Anpara

power station that has very low maintenance for a very long time. Currently we are engaged in serving the Indian power sector by supplying equipment for India's largest and most reputed power company NTPC for their 3 x 800 MW - Kudgi project, 2 x 800 MW - Daripali project and 2 x 660 MW - Meja power project, which is a good start.

What are the challenges and advantages of being a complete solution provider for power generation systems?

Some of the inherent challenges of being a complete solution provider are unavoidable because the very essence of EPC solution by itself is to transfer the risk from the owner to the contractors like us. We think that the major risk and challenges associated in doing EPC business in India are infrastructure bottlenecks and foreign exchange risk. But Toshiba has been providing such complete solutions around the world for a long time and we have enough know-how to handle these challenges. On the other hand, weak rupee is an advantage while exporting.

Single point responsibility gives us better control on the complete project schedule and cost and also enables us to deliver the best of our learnings to Indian customers.

There is always a debate on quality vs. cost factor. What are your views on this?



Toshiba is committed to travel a long way with India.

YOSHIAKI INAYAMA,
MD, Toshiba JSW Power Systems Pvt. Ltd.

We need to look at it from two perspectives: one is short-term and the other is long-term. Cost and quality cannot be judged in short-term. We have to see the total lifecycle cost of the equipment which includes opportunity cost due to outage, maintenance required, efficiency, etc., and not only by its initial capital investment. Plant availability over a period of 25 years is the key when one is considering quality vs. cost factor and that is where we at TJPS have an advantage over our competitors with our cutting-edge technology, innovation

and project execution techniques.

However, we have taken several measures to battle the cost competition without compromising on our quality. We are increasing indigenization and we take responsibility of our local vendor development. Experienced engineers from our Japan team frequently visit India to evaluate vendors' manufacturing and working methodologies and appropriate training is initiated to raise them to Toshiba standards. We also send our employees to Keihin Operations, Toshiba's power

equipment production facility in Yokohama, Japan, for at least six months. They learn Toshiba's manufacturing and quality standards there and lead the work here.

What are the future plans of TJPS? What is your growth strategy?

We are investing a lot of our time and resources in developing a strong vendor base in India for manufacturing super-critical equipment to ensure that our products are the most competitive and reliable in the market. We are planning to ramp up the turbine manufacturing facility from the existing 3000 MW/year to 6000 MW/year in the future. We are also investing in developing human resources for engineering, project management and manufacturing capabilities. We have a vision of becoming the world's no. 1 EMPCS company by optimising the productivity of our equipment and customised services to realise more economical and efficient power generation systems that could support the needs of the Indian society. Toshiba Corporation also looks at India as a strategically ideal location for a global manufacturing base. We have full support from the headquarters and TJPS will soon become a global supplier for power systems. Toshiba intends to contribute in the stable supply of electricity and is committed to travel a long way with India.

Tata Power and Toshiba bond over quality & reliability for 47 years



ASHISH KHANNA,
Chief -
Corporate Contracts,
Tata Power

Girish Srivastava

The relationship of Tata and Toshiba dates back to 1967 when Toshiba supplied transformers to Salsette sub-station in Mumbai, which is running reliably even today. Tata Power has been a pioneer in new technology adoption in the power sector and we always look for leading associates around the world. Since turbines and generators are very critical for a power plant, Toshiba was a logical choice for our Mundra 4000 MW project. They also supplied the LV switch gear to Trombay unit, which is India's first 500 MW Sub Critical unit. Toshiba has supplied several bays of GIS (Gas Insulated Switchgear) to various sub-stations of Tata Power in Mumbai. The relationship blossomed in 2013 as Toshiba supplied five units of India's first 830 MW Super Critical units for our Mundra project, the biggest project at a single location in India. Toshiba truly demonstrated commitment and value in the relationship. The initial agreement was only for supply of turbines and generators, however, during the course of project execution we agreed to extend their services to erect and commission the machines. This support comes out to be crucial for us.

Our experience so far has been phenomenal and Toshiba has developed this trust over the years with their commitment to quality, safety, reliability and timely completion of projects. These are the hallmarks of all their executions and since these factors are highly valued in Tata Power it has helped us to develop a sustainable relationship.

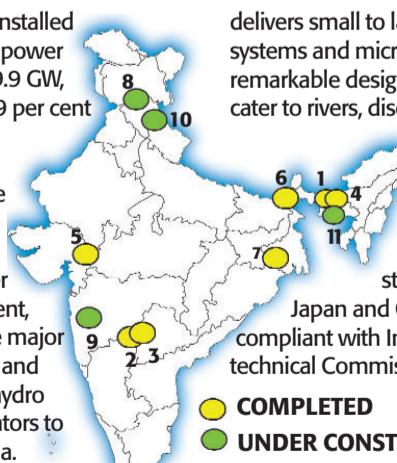
We are happy and proud to be their associate and would like to carry forward this relationship in times to come even for our overseas initiatives.

-As told to Dipti Srivastava

Toshiba leading the way in hydro power generation

With global know-how and plans to extend its services, Toshiba intends to provide efficient power generation systems that could support the needs of the Indian society

In India, the total installed capacity of hydro power plants is about 39.9 GW, which is about 17.39 per cent of the total power generation of the country. Toshiba, the world's leading manufacturer of hydro-electric power generating equipment, has been one of the major suppliers of reliable and high-performance hydro turbines and generators to power plants in India.



"The pictorial representation does not purport to be the political map of India."

delivers small to large hydropower systems and micro hydro equipment of remarkable design and efficiency, which cater to rivers, discharge channels, agricultural and industrial waterways, etc. Its equipment are manufactured at the state-of-the-art plants in Japan and China, which are fully compliant with International Electrotechnical Commission (IEC) and other

HYDRO POWER STATIONS

- 1Umiam I 2Dam 3Hampi 4Umiam II
- 5River Red (Pump) 6Feesta V
- 7Purulia (Pump) 8Koldam 9Kal
- 10Wanger Horne 11Ganol

international quality control standards.

One of the strongest features of Toshiba's hydro plant equipment is their long life cycle and efficient performance. For example, the Umiam I & Umiam II power plants, set up in 1965 and 1967, were renovated and modernised in 2003 and 2011, respectively. A remarkable 38-44 years of life cycle against an industry expectation of



Toshiba's acquisition of T&D business of Vijai Electricals creates avenues for India to establish itself as the core transmission and distribution technology supplier in the world

India's need for uninterrupted power supply is directly proportional to its development graph. India's installed power generation capacity as in December 2013 was 233.9 GW. But nearly one fourth of the total power generated fails to reach the end consumer. It is lost in transit. In order to meet the demand, an efficient transmission and distribution system has to be in place. Every year due to overload many distribution transformers get burnt leading to power failures.

In India, there is an urgent need to develop infrastructure for efficient distribution of power, the absence of which is hampering the country's economic development. Japanese major Toshiba has a rich know-how and a global delivery track record in the area of transmission and distribution – from power plants to factories and households. The company has developed its technology of efficient transmission and distribution systems for over 100 years. The world's largest power transformer for 1450 MVA (self-capacity) and Gas Insulated Transformer at the world's largest Australian trans-grid are some of Toshiba's global highlights.

Since the acquisition of the T&D



Tata Power Transmission & Distribution Systems (India) Pvt. Ltd.

India to gain from world's most advanced T&D technology

business from Vijai Electricals in India in December 2013, Toshiba has formed Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. (TTDI). The company aims to transfer the technical know-how to India and help in developing a system where highly-skilled individuals are trained to produce high quality products in minimum lead time.

In a country of 1.2 billion people, where the majority of people live in rural areas, the efficient power distribution infrastructure is inadequate. Toshiba believes that the company's distribution transformers will play an important role in ensuring stable electric power. The company not only aims to garner more than 20 per cent market share of distribution transformers in rural India, but believes that its transformers will go a long way in ensuring quality life to the Indian people. Efficient transmission and utilisation of power need efficient meter systems in the infrastructure. In July 2011, Toshiba took over Landis+Gyr, the leading Advanced

Metering Infrastructure (AMI) provider all over the world. AMI is the next generation meter system like smart meters that can communicate real time data consumption with the power provider. It can also link load control instructions from Micro Energy Management System (μ EMS) to the operation control of local devices, thereby reducing the consumers' energy consumption. Landis+Gyr has already successfully executed the AMI pilot project in Noida and has bagged the first commercial AMI pilot order from Tata Power Delhi Distribution Ltd. This is the first step in India's AMI journey. The distribution technology of Toshiba can significantly change the power supply and consumption scenario in India by establishing systems to efficiently deliver power to every corner of the country.

Toshiba firmly believes that it is in a position to help India overcome power supply shortages and fluctuations in the years to come which would help take the country to the forefront of economic development.