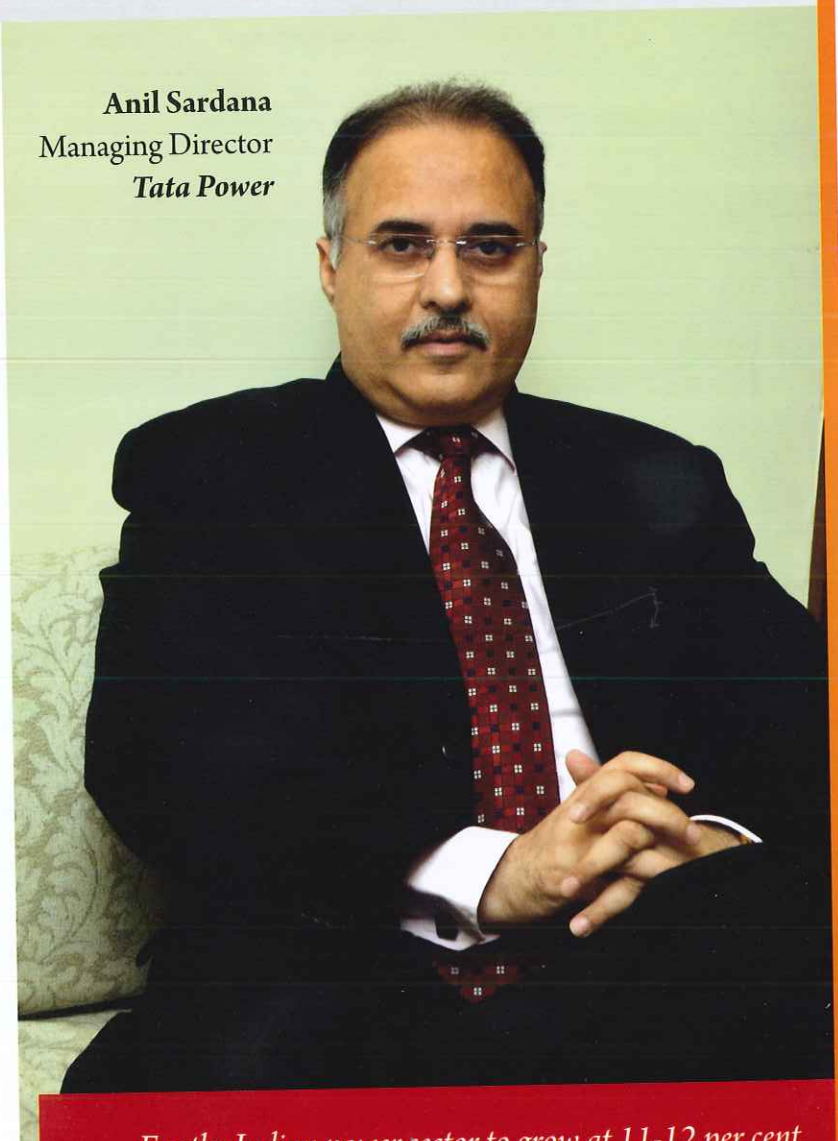
Big Interview

ROAD AHEAD IS DOTTED WITH CHALLENGES



Anil Sardana
Managing Director
Tata Power

*For the Indian power sector to grow at 11-12 per cent per annum, it is imperative that its present installed capacity of around 190 GW is increased to 300 GW by the end of 12th Five Year Plan, says **Anil Sardana,** managing director, Tata Power who helms the affairs since early 2011. Excerpts from an invigorating interview…*

Q What are the virtues that make Tata Power one of the largest power sector generators in India?

A Tata Power, India's largest integrated private power company has an installed generation capacity of 8584 MW, and a presence across the entire power value chain - fuel and logistics, generation (thermal, hydro, solar, and wind), transmission, distribution, and trading. Today, the company has spread its footprint across the country, and abroad. The company aims to generate 18,000 MW by 2022 as well as 4000 MW management of distribution network and securitize. The company intends to have a 20-25 per cent contribution from "clean power sources" which will include a mix of hydro, solar, wind, geothermal and waste gas generation. Tata Power's renewable energy capacity has risen to 1170 MW with 460.6 MW from wind energy, 54 MW through solar generation, 447 MW of hydro and 202.5 MW from waste gas based generation. The company has been working in different areas of renewable power generation, both, grid connected as well as distributed. Tata Power has also developed the country's first operational 4000 MW ultra mega power project (UMPP) at Mundra, Gujarat based on super-critical technology.

Its international presence includes strategic investments in Indonesia through 30 per cent stake in coal mines and a geothermal project; in Singapore through Trust Energy Resources to securitize coal supply and the shipping of coal for its thermal power generation operations; in South Africa through a joint venture called 'Cennergi' to develop projects in South Africa, Botswana and Namibia; in Australia through investments in enhanced geothermal and clean coal technologies; and in Bhutan through a hydro project in partnership with The Royal Government of Bhutan.

Q Now that the Mundra UMPP is up and running to its full potential, what lessons can be learnt by the industry from this landmark project?

A The 4000 MW Mundra UMPP is the first of the UMPPs that heralds the entry of 800 MW supercritical boiler technology in India, which is environment friendly and efficient. We are proud and privileged to contribute the "Monument of Technological & Project Management Excellence at Mundra" to the nation. The project completion within

record time of one year from the commissioning of its first unit reinforces Tata Power's commitment to bridge the energy demand supply gap in India and reinforces our group's commitment of "A Promise is a Promise". The project management and operational expertise employed in executing the power project ahead of schedule with predictable, cost, quality and safety are now being implemented in operating the plant in an effective and efficient manner.

Also, Tata Power used in-house ordering and co-ordination to prevent any delay in the Rs 18,000-crore project. Moreover, it moved with a collaborative approach of inducting and training staff to operate the station in sync with the completion of units. The supercritical status of a power plant depends on the temperature and pressure at which the boilers operate. The efficiency level of Mundra power plants is 42 per cent. The steam generators are supplied by Korea's Doosan, while the turbine and generator packages are supplied by Japan's Toshiba. Synchronous types of turbines and generators are designed to operate on supercritical steam parameters to produce 830 MW at 26 kV at 50 Hz. In addition, the reason behind the fast commissioning of the plant located in the Kutch region of Gujarat, was the overall project management and co-ordination done by Coastal Gujarat Power Limited (CGPL) itself.

> "Tata Power will test a 35kW turbine mounted on a blimp that will float 333m above the ground to catch winds that are more intense and sustained at that altitude"

Q What new technologies are being explored by Tata Power for its future applications across all verticals?

A Tata Power has made significant commitments to reduce the carbon impact at all its thermal units. It is in close touch with large global utility companies such as American Electric Power, and Tokyo Electric who are evaluating clean coal technologies such as integrated gasification combined cycle plants, and testing CO_2 Capture and Sequestration (CCS) processes. In addition, it has invested USD10 million for a 5 per cent stake in Exergen, an Australian company that has developed a cost-effective moisture removal process for high moisture brown coal which will emit only 800 Kg of CO2 per MWh as compared to the normal level of 1,500 kg.

The Tata Power Mundra UMPP uses supercritical technology, which along with the choice of unit sizes helps save fuel, provides the nation with competitive generation and cuts down the greenhouse gas emissions significantly as compared to regular coal-fired power stations. In addition, the choice of coal significantly lowers sulphur emissions. It also helps the project achieve higher efficiency. The greenhouse gas emissions per kilowatt hour of energy generated will be about 750 grams of carbon dioxide per kWh, as compared to India's national average of 1,259g CO_2/kWh for coal-based power plants. The world average is 919g CO_2/kWh, while the average for OECD countries is 888g CO_2/kWh. (Figures are for 2005.) The plant will emit 23.4 million tons of CO_2 per year, substantially less than the 27 million tons that a plant of similar installed capacity would emit if using conventional, less efficient energy technology. Compared to any other subcritical power plant in India, this project will avoid burning 1.7 million tonnes of coal per year, thus, averting carbon emissions of 3.6 million tonnes per year.

Across its Mumbai Distribution business, Tata Power has installed High Voltage Distribution System, E House and Underground Feeder Pillar (Link Box) in order to reduce space constraint and ensure timely installation and enhance safety of its distribution network. The High Voltage Distribution System (HVDS) deploys pole mounted transformers with associated Low Voltage (LV) Distribution. The LV coaxial service cables and the LV connector system are provided with plug-in type design, thereby, reducing technical losses and enhanced safety features coupled with higher reliability. These technological introductions for HV/LV distribution system are essentially tool-free, and eliminates the risk of errors in the field. The E House (Electrical House) helps to reduce space and installation time for 33/11 kV Grid Substations. E House is a prefabricated enclosure housing the 33kV/11 kV switchgear with associated auxiliaries installed, tested and ready to be commissioned once delivered to site. The installation of Underground Feeder Pillar (Link Box) along with a new generation compact and fully insulated service pillar into the LV distribution network, will help to enhance safety and cut down the electrical losses, eliminate the menace of power theft and pilferages in congested areas where space is a constraint.

The Mithapur solar power plant uses the modular, proven, and widely deployed Crystalline Silicon Photo-Voltaic Technology to maximize power generation. The project helps in reducing an annual average of 37,696 tonnes of Carbon Dioxide, by producing 39,597 MWh per year (average) equivalent amount of clean energy. A 13.5kW pilot unit in which sunrays are concentrated on PV cells and the assembly floats on Walwhan lake (Maharashtra) in order to cool the cells. If successful, this technology can be scaled up across all the lakes that provide hydro power to Tata plants in west Maharashtra, and thus, generate about 1,000 MW. More than 600,000 telecom towers in India use diesel generator sets to provide power to their antennas. Tata BP Solar is providing solar PV panels that can replace the gensets on 25 such installations. This technology can be upgraded to augment power to local grids. Tata Power will test a 35kW turbine mounted on a blimp that will float 333m above the ground to catch winds that are more intense and sustained at that altitude. The company will test a 2kW wind turbine that can be mounted on roof tops and provide power to homes.

Q According to you what are the factors responsible for nearly 25 per cent of our country's population having no access to electricity? What are the real constraints faced by the power producers today?

A Power sector is facing several challenges today. For a nation with a population of 1.24 billion, the demand for power supply is expected to surge to 335 GW by 2017. However, this appears to be a far cry for being met, due to the demand-supply gap