



# GE THERMAL PRODUCTS FOR INDIA

## Keeping Power Flowing to India's Growing Economy

India's economy is growing fast. That means more business, more industry, and more infrastructure. It also means more Indians entering the middle class, and increasing demand for food, clean water and consumer goods.

Whether it's building airplanes, treating municipal sewage, or a student learning at night by the glow of a bulb, the engine moving India forward is electricity. And the country is investing in its future, building a more stable grid and adding generating capacity in the marathon to keep up with strong, sustained GDP growth that is projected by the International Monetary Fund to stay above 5 percent through the medium term.

As of 2012, India's installed capacity topped 207 gigawatts, of which 67 percent is being created by coal, natural gas, and petroleum power plants—collectively referred to as thermal generation. The installed capacity of thermal plants has averaged annual growth of more than seven percent since 1970, according to India's Central Statistics Office (CSO). The installed capacity of thermal plants has averaged annual growth of more than 7 percent since 1970, the CSO reports.



*GE's new FlexEfficiency 50 Combined Cycle Power Plant is an innovative total plant design that defines a new standard for high efficiency and operational flexibility.*

Coal accounts for 86 percent of all electricity generation and is now the predominant fuel used for power in the country.

India needs a proven partner with long experience and trustworthiness in power generation to keep the lights on in businesses and homes across the country. That's where advanced steam, gas, and combined-cycle turbines from GE can come in to help India meet the promise of a prosperous 21st century.

## Contending with Rising Demand

These numbers will only increase as every sector pushes India's wealth further upward. The rise in electricity demand, which is forecast to grow more than three percent per year through 2035, will likely outstrip increases in capacity. As a result, installed capacity will have to reach at least 234 GW by then, according to the U.S. Energy Department's Energy Information Administration.

Industry accounted for the largest share (39 percent) of total electricity sales in 2010-2011, the CSO reported. Domestic users made up 24 percent of sales, while agriculture (20 percent) and the commercial sector (10 percent) made up the rest. The CSO reported that domestic and agricultural electricity consumption has increased at a much faster pace than other sectors, while per capita consumption has risen from a 1970-1971 average of 1,204 kilowatt-hours to 4,816 kWh in 2010-2011.

Just keeping up with the booming economy has stretched the country's power infrastructure and load. Increasing fuel prices for power plants and the government's tightening restrictions on emissions mean that utilities and steel producers have no choice but to invest in "supercritical" and "ultrasupercritical" power plants. These advanced systems, operating under higher temperatures and pressures, achieve efficiencies unattainable by lower temperature and pressure "subcritical" units.

But the road to instituting next-generation technologies is long and has not always been easy. Indian authorities are launching comprehensive plans to bolster production, transmission, and distribution systems, in order to avoid blackouts similar to those in 2010 in 2012.

## A Proven Partner

According to India's Planning Commission, the country needs to add 169 GW of capacity in the next 10 years, and expects 75 percent of that to come from thermal plants. In addition, beginning in 2017, it is expected that the entire coal-based capacity will be based on supercritical technology.

More than 130 years ago, GE began the electricity generation business by creating the world's first central power station in New York City. Today, it can help keep the electricity flowing through India's industrial, commercial, municipal, and agricultural sectors, as well as to homes from Gujarat to Kolkata.