

About BHEL

BHEL is embracing the next phase of its growth on the strength of a sturdy foundation of 50 years of its journey of engineering excellence. BHEL is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing companies of its kind in India. The company is engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable Energy, Oil & Gas and Defence with over 180 products offerings to meet the needs of these sectors. BHEL has been the solid bedrock of India's Heavy Electrical Equipment industry since its evolution in 1964.



800 MW IP Turbine under assembly at BHEL works for NTPC Gadawara unit-2

Power Sector

BHEL is one of the few companies in the world having the capability to manufacture the entire range of power plant equipment and has proven turnkey capabilities for executing power projects from concept-to-commissioning. The power generation sector comprises thermal, gas, hydro and nuclear power plants.

BHEL:

- Supplies steam turbines, generators, boilers and its auxiliaries upto 1000 MW. Currently executing projects on EPC basis including supercritical sets of 660/700/800 MW ratings
- Supplies hydro turbines and generators of up to 250MW
- Manufactures 220/235/540/550/700MWe nuclear turbine generator sets
- Has proven expertise in plant performance improvement through renovation, modernization and uprating of a variety of power plant equipment
- Has special knowhow of residual life assessment, health diagnostics and life extension of plants
- Has supplied thermal sets that have consistently exceeded national average efficiency parameters.



400 kV Switchyard commissioned by BHEL at Bellary Super Thermal Power Station, Karnataka



Travelling Column Radial Drilling Machine in operation at HPBP, Tiruchirapalli

BHEL's growth has been synchronous with achieving self-sufficiency in indigenous manufacturing of heavy electrical equipment. In the country, BHEL alone constitutes a mammoth 20000 MW per annum capacity for manufacturing of power generation equipment. A widespread network of 17 manufacturing units, 2 repair units, 4 regional offices, 8 service centres, 1 subsidiary, 6 overseas offices, 6 joint ventures, 15 regional marketing centres and current project execution at more than 150 project sites across India and abroad corroborates the humungous scale and size of its operations. With key focus on project execution, worldwide installed base of power generating equipment supplied by BHEL has exceeded 170 GW. BHEL's 55% share in India's total installed capacity and 58% share in the country's total generation from thermal utility sets (coal based) as of March 31, 2016 stand a testimony to its valuable contribution towards nation building.



Locomotive under testing at Centre for Electric Transportation, Bhopal

Industry Sector

BHEL is a leading manufacturer of a variety of Industrial Systems & Products and meets the growing demand for major industries like oil and gas, metallurgical & mining, fertilizers, sugar, fertilizers, refiners, paper & petro-chemicals etc. Besides this, Industry Sector operations also provide complete solutions for captive power generation, transmission, transportation, renewable energy, water management, defence and other industrial products. Major areas of operation include:

- **Captive Power projects:** Supplies Steam Turbine and Gas Turbine based Captive Power Plants
- **Transmission:** Execution of EHV & UHV substations ranging from 132 kV to 765 kV & HVDC converter stations up to ± 800 kV, power transformers, shunt reactors, vacuum & SF6 switchgear, gas insulated switchgears, ceramic insulators, etc.
- **Transportation:** Manufactures IGBT based propulsion equipment (traction converter/ auxiliary converter/VCU), 25 kV AC locos, EMU coaches and diesel electric locos upto 1400 HP
- **Renewables:** EPC solutions from concept to commissioning for grid connected and standalone PV applications ranging from kW to MW sized plants, space grade solar panels and space grade batteries
- **Water:** Turnkey solutions for water treatment systems including Pre Treatment plants (PT), Seawater Reverse Osmosis (SWRO) plants, Demineralization (DM) plants, RO plants for industrial applications, Waste Water/ Effluent Treatment plants (WWTP)/ (ETP), Sewage Treatment plants (STP) and Zero Liquid Discharge (ZLD) systems
- **Industrial products (Electrical & Mechanical):** Range of industrial products including oil rigs, wellheads & Xmas tree valves, fabricated equipment & boiler feed pumps, compressors & AC machines
- **Defence:** Supplier of strategic equipment to Indian defence forces including Super Rapid Gun Mount & Integrated Platform Management System for naval Ships, Thermo pressed components, Heat exchangers for LCA, Turret castings for T72 tanks, castings for ships and simulators etc.



BHEL's first 700 MW supercritical thermal set commissioned at KPCL Bellary

BHEL also has a widespread overseas footprint in 78 countries including Malaysia, Oman, Iraq, the UAE, Bhutan, Egypt and New Zealand, with cumulative overseas installed capacity of BHEL manufactured power plants nearing 10,000 MW.

The high level of quality & reliability of BHEL products is a testimony to its adherence to international standards by acquiring and adapting some of the best technologies from leading companies in the world including General Electric Company, Siemens AG and Mitsubishi Heavy Industries Ltd. etc., together with technologies developed in its own R&D centres. Most of the company's manufacturing units and other entities have been accredited to Quality Management Systems (ISO 9001:2008), Environmental Management Systems (ISO 14001:2004) and Occupational Health & Safety Management Systems (OHSAS 18001:2007).

BHEL has been adept at transforming itself in line with the market requirements throughout its illustrious journey. Right from its incorporation in a protected market to facing the pressures of a liberalized economy and the current slowdown in the economic environment, BHEL has evolved by transforming its strategies from product manufacturing to market orientation, business excellence through portfolio restructuring and the current focus on sustaining growth through diversification.



Super Rapid Gun Mount (SRGM) for Indian Naval Ships under construction at HEEP, Haridwar



Shri Anant Geete, Hon'ble Union Minister for HI&PE at BHEL Stall during his visit to Make In India Week, Mumbai

Diversification in transportation, transmission, defence, water & renewables is the strategy adopted to maintain a balanced portfolio of offerings. This strategy of diversifying and capitalizing new business opportunities stems from the commitment to innovation led growth which is an indispensable part of BHEL's business model. R&D focus of the organization is quite diverse ranging from advance ultra supercritical thermal power plants to grid connected renewable energy systems.

BHEL's greatest strength is its highly skilled and committed workforce of about 42,000 employees who have been the cornerstones of BHEL's journey of excellence.



Further, the concept of sustainable development is inculcated in the DNA of BHEL which is evident from its mission statement- "providing sustainable business solutions in the fields of energy, industry and infrastructure". BHEL is also engaging with the society with its social initiatives aimed at Community Development, Health & Hygiene, Education, Environment Protection, Disaster Management, and Talent up gradation/ Skill development.

The future is filled with both exciting opportunities & gruelling challenges. Creating new sources of growth, responsible utilization of infrastructure, building new capabilities and transforming in line with the market realities will be the key to future growth and stakeholders' wealth enhancement. ●

Efficient transmission all the way!



BHEL is executing the world's largest $\pm 800\text{kV}$, 6000 MW UHVDC Multi Terminal North East-Agra transmission link on a turnkey basis together with ABB, including design, system engineering, supply, installation and commissioning for Power Grid Corporation of India Ltd.

This dual Bi-Pole project consisting of Bi-Pole 1 and Bi-Pole 2 will enable the transmission of 6000MW power over the distance of 1728 Km from Biswanath Chariali in Assam and Alipurduar in West Bengal to Agra in Uttar Pradesh. The link has a 33% overload capability, making it the world's largest multi-terminal $\pm 800\text{kV}$ UHVDC project. This huge infrastructure will help in connecting the bulk remote generation in north east and eastern part of the country to the load centres in north of India. In addition to it, the link is also capable of bi-directional power flow. Pole 1 of the first phase of the Bi-pole 1 is running successfully under commercial operation since 1st November 2015.

Vision

A global engineering enterprise providing solutions for a better tomorrow



Mission

Providing sustainable business solutions in the fields of Energy, Industry & Infrastructure



Sustainable Performance

Zero debt company

Consistent dividend paying company since 1976-77

First listed its equity shares on stock exchanges in 1992



A National Champion

An Indian Maharatna CPSE

One of the largest engineering & manufacturing companies in India serving core sectors of economy viz.

- Power
- Industry

Transmission/Transportation/ Renewables / Defence/ Water/ Oil & Gas/ Industrial Products- Elec. & Mech.

17 Manufacturing Units, 1 Subsidiary, 6 Joint Ventures, 8 service centres & Infrastructure to deal with 150+ project sites

Built India's capability in heavy electrical equipment manufacturing

World of BHEL

Global Footprints

References in 78 countries

Offices in 6 countries

Contracted power plant equipment around 17,000 MW

First overseas turnkey project commissioned by an Indian company - executed by BHEL at Tripoli, Libya in 1980

Sudan's largest 500 MW Kosti TPS and two 220 kV substations in Afghanistan successfully commissioned in 2015-16

Did you know?

3 out of 5 houses in India are supplied power generated from BHEL sets

BHEL commissioned/synchronized an all-time high of 15,059 MW power projects in a single year in 2015-16

All Indian satellites launched by ISRO are equipped with BHEL supplied solar panels since 2002 & batteries since 2005

BHEL is energizing India's north-east with commissioning of 1st unit of highest rating (3x250 MW) coal based power plant in Bongaigaon, Assam

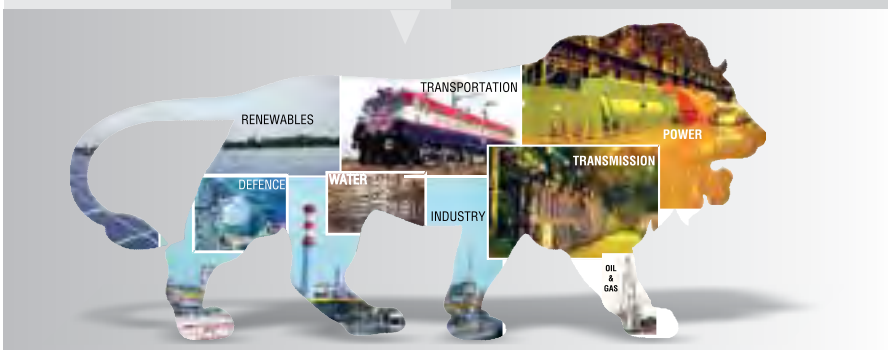
Indian Navy's INS Kochi, Kolkata class missile destroyer ship is equipped with BHEL's Super Rapid Gun Mount and Auxiliary Control systems

World's largest ± 800 kV, 6000 MW multi-terminal HVDC NE-Agra transmission project under execution by BHEL

95% of hydroelectric generating capacity in Bhutan installed by BHEL

BHEL's first power generating set was the 30 MW thermal power station installed at Basin bridge in Tamil Nadu, way back in 1969

All the 29 states of the country have power generating equipment installed by BHEL.





Innovation

R&D Expenditure >2.5% of Turnover-highest in Indian engineering field

Five research institutes

14 Centres of Excellence

More than 1 patent/copyright filed per day

Total intellectual capital: 3441

In-house R&D Centres of 12 Manufacturing units/Divisions recognized by DSIR

Heralding the change towards climate

Supercritical technology resulting in ~11% reduction in CO₂ emissions, less fuel consumption & lower cost to customers

Highest number of eco-friendly supercritical sets commissioned in the country till date

Developing Advanced Ultra Supercritical (AUSC) technology for coal based power plants with NTPC and IGCAR

Developed more efficient EHV Transmission systems and products (765 kV AC, 800 kV DC & 1200 kV AC)

Generated 8.08 MU energy & carbon footprint avoidance of 7800 MT CO₂-e during 2015-16 through in-house solar power installations

Low lifecycle cost of equipment facilitating affordable and environmentally sustainable energy systems



Valuing people

Participative management culture through JCM, Plant Council, Shop Council since 1973

~77% engineers amongst executives

2,300+ female employees

Less than 1% attrition rate

4+ days of training per employee per year



Social Onus

Committed to Principles of UN Global Compact

Signatory to Integrity Pact of Transparency International

Undertaken 60 projects on "Swachh Bharat"

Bio diversity

- In-house green coverage of 4.7 million Square meters

- Plantation of more than 3 million trees

BHEL's mobile science vans benefitting school children in vicinity of three units of BHEL viz. Haridwar, Jhansi and Trichy

Supporting 11 mobile medical units for benefits to the needy patients



Energizing India

Major integrated power plant equipment manufacturer in the world with 20,000 MW pa manufacturing capacity

170+ GW power generating equipment installed till date

55% of India's nuclear power generating capacity (conventional island) installed by BHEL

Commissioned country's first 660 MW indigenously manufactured supercritical set at NTPC Barh-5, in 2013

Commissioned country's first indigenously manufactured 800 MW boiler at APPDCL Krishnapatnam-2, in 2014



Unparalleled experience

530,000+ MVA transmission equipment supplied

30,000+ AC machines- supplied, largest Indian manufacturer

15,000+ MW Captive Power Plant installed

190+ MW- cumulative shipments of PV cells, modules, and systems

360 electric locos supplied to Indian Railways & other industries

380+ compressors & 90 oil drilling rigs- supplied

42+ oil rigs- refurbishment & upgradation completed

34 SRGMs supplied

