

EVOLUTION AND GROWTH OF BHEL HYDERABAD

Heavy Power Equipment Plant (HPEP) is a major Unit of BHEL is located at Ramachandrapuram, which is around 30 KM from the historic city of Hyderabad. Foundation Stone of the Plant was laid by Shri Kamraj Nadar in 1959 and then Prime Minister Shri Lal Bahadur Shastri inaugurated the facilities on 11th December 1965 with an objective to manufacture and supply small size (12MW to 110 MW) Steam Turbine-Generators. After, the modest beginning, the Unit has been growing steadily in different phases of development and today it caters to diversified customer needs with a product mix of **Gas Turbines, Steam Turbines, Compressors, Generators, Power Plant Auxiliaries (Pumps, Pulverizes and Heat Exchangers) and Oil Field Equipment.**

BHEL, HPEP offers its customers the choice of Stand-alone Products, Packages, and Turnkey Solutions from concept to commissioning on EPC (including civil design, erection, commissioning etc.). HPEP also provides the flexibility of Erection & Commissioning (E&C) by customer with BHEL supervision. In the year 2011-12, a separate Unit Project engineering & Systems Division (PESD) was formed with the mandate of providing end-to-end solutions to Customers in Industry and International Business segments. To effectively address EPC Business, PESD offers Engineering solutions for HPEP in-house products through Engineering and supply of Balance of Plant equipment.

BHEL Hyderabad also its supports customers with post warranty services including supply of spares. Spares & Services orders are directly booked and executed by the unit. The project delivery requirements are monitored by the concerned contract engineers and are reviewed regularly through periodic review meetings by product heads and head of the unit. The Unit also extends commissioning and post commissioning support to the customers as per customer requirements.

Competencies & Facilities

The Unit has Manufacturing facilities that are on par with the best in World with 132 CNC Machining centers, 125 TON Vacuum Balancing Tunnel, Robotic Welding, Plasma Coating etc. The Manufacturing facilities are well supported by established in-house Testing facilities and Labs. The E&I (Electronics & Instrumentation), CGC (Central Gauging Center) and NDT (Non-Destructive Testing) laboratories of HPEP, Hyderabad are having NABL accreditation. HPEP Hyderabad has its own Mechanical & Chemical Laboratory for catering to its internal testing requirements.

HPEP Hyderabad has Product specific certifications for ASME U & U2 stamp for Pressure Vessel and Heat Exchangers, API 4F, 7K & 8C Monogram Product certification for Oil Field Equipment's, which is a testimony for sound and consistent quality of its products. HPEP also has many auxiliary plants like Compressor house, Oxygen gas plants, Boiler house and several service plants to support main production processes. There is a 132 kV Substation, 1.5MWp Solar PV park and 6MW DG set were installed in-house HPEP works for meeting energy requirements

The Unit has a well-experienced and efficient human resource meeting customer requirements and development of new products and services.

Phase I: 1959-74

Establishment of Identity
Indo-Czech agreement, Production of 12 MW ST & First Profit

Technology Acquisition & Absorption
Testing of 60/110 MW TG sets, Centrifugal Compressors, High speed Drive Turbines, 210 MW Pumps and Heaters, Deep drilling Onshore Rigs

Phase II: 1974-84

Phase III: 1984-94

Technology Upgradation, R&D:
U tube Heaters, 500 MW Pumps, 120 MW STG sets, Introduction of CNC machines, Gas Turbines, W.O. & Mobile Rigs, Tube Mills

Technology Upgradation, R&D
Low cost STG sets, Thrust on exports, Special HEs, Advance class GTs, Total Quality Management

Phase IV: 1994-2004

Phase V: 2004-14

Foray into Super Critical/Advanced Class Tech.
Higher Rated Advance Class GTs Frame 9FA, Higher rated Generators (270 MW), Single cylinder 150 MW Reheat Steam Turbines, Absorption of Super critical technology, Introduced AC VFD Rigs, KBE

Resurgence through Diversification & Transformation
AUSC Technology, Defense (Aero and Navy), Spares and Services, 24X7 Engg Diagnostics (Respond), Export of Oil Rigs, Compressors Mills & Pumps for FGD Systems, Air-cooled Condensers, Gear Boxes, Offshore Rigs

Phase VI: 2014-24

Phase I (1959-74) :: Establishment of Identity

During this Phase, the Unit entered into collaboration agreement with M/s. Techno export, Czechoslovakia in 1963, focusing on setting up the plant and training its manpower for absorption of technology. The production commenced in 1965.

The first 12 MW ST was manufactured in 1966. In next one year, the Unit had entered into collaboration with ASEA, Sweden for manufacture of Minimum Oil Circuit Breakers (MOCB).

The Unit could register its first profit in 1971-72.



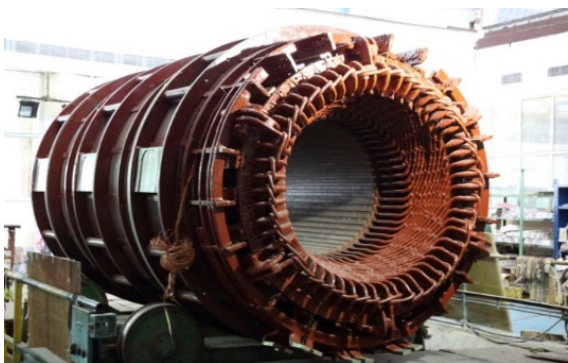
Phase II (1974-84) :: Technology Acquisition & Absorption

The expected market for 60MW and 110 MW did not pick up with the customers opting for 200 MW sets and above. This set Hyderabad Unit into the Phase II of the development through a flurry of strategic diversification into varied products

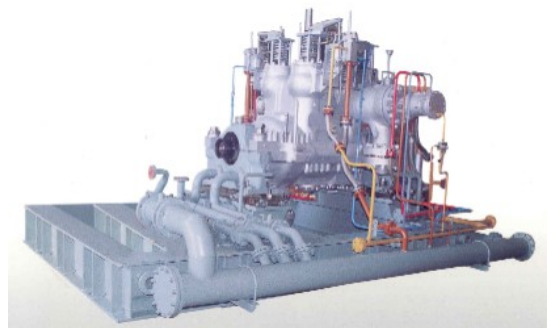
Apart from the existing portfolio, BHEL Hyderabad sought technology upgradation as its next phase to diversify into new products. By this time, customers had become more discerning and were demanding high quality products at competitive prices. The Unit introduced state-of-art CNC facilities and entered into technology tie-up with m/s YUBA, USA for U-Tube HP Heaters, M/s Weir Pumps, UK for Pumps, m/s KWU, Germany for 120MW STG Sets and M/s Branham Industries for Oil Rig Mast and Sub structures. This period saw the Unit crossing Sales Turnover-Rs 100 cr

This period is the beginning of the golden age of Hyderabad Unit due to

- The Unit entered into Collaboration Agreements with-
 - Nuovo Pignone, Italy for Centrifugal Compressors
 - Siemens, Germany for High Speed Drive Turbines
 - Combustion Engg., USA for Bowl type Coal Pulverisers
 - National Oil Wells, USA for deep drilling On-shore Oil Rigs
 - Sigma Lutem, Czechoslovakia for Pumps
- Establishment of Computer Centre and Ancillary Units



Generators



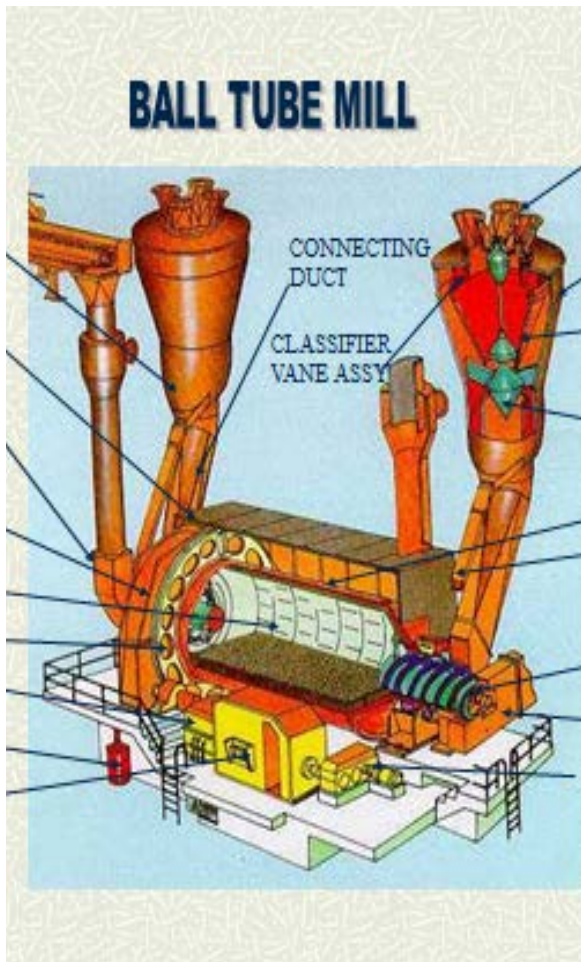
Compressors

Phase III (1984-94) :: Technology upgradation & R&D

Hyderabad Unit continued its journey to introduce new products for meeting customer's needs. The Unit crossed Sales Turnover- Rs 600 cr in this period.

During this phase of market orientation, the following products were introduced:

- Gas Turbines (tie-up with M/s.General Electric, USA)
- Tube Mills with M/s.Stein Industries, France
- Work over and Mobile Rigs with M/s.Ingersoll Rand, USA
- Establishment of Project Engineering Division for Gas Turbine based projects



Oil Rigs

Phase IV (1994-2004) :: Globalization & Business Excellence

This was by far the most turbulent phase in the history of the Unit. In 1991, the country embarked the path of liberalization and series of financial reforms were introduced. Original equipment manufacturers (OEMs) were reluctant to transfer the technology through the royalty payment route, but, were themselves competing in the Indian market both directly and through strategic business alliances with Indian participation. As most of the customers have resorted for International competitive bidding, the preferential ordering towards PSUs tapered down and the competition became intense.

BHEL Hyderabad faced the new challenges through various strategies like –

- Development of Cost effective Steam Turbo-Generators to target Sugar and Cement markets
- Thrust on exports
- Introduction of fully impregnated Generators
- Special Heat Exchangers
- Design optimization of 3-casing 120MW Steam Turbine into 2-casing leading to cost and delivery time reduction
- Introduction of large and advanced class Gas Turbines (Frame-9E/6FA)
- Thrust on refurbishment and up-rating of ageing Power Plants
- Total Quality Management

Despite the adverse environment, this phase saw the Unit crossing Rs.1500 Crore mark and establishing its presence in the International market.



Heat Exchangers



Gas Turbines

Phase V (2004-2014) :: Foray into Super Critical/ Advanced Class Technology

The Power Sector has witnessed a steep growth during this period. Many Power Plants were planned for commissioning by the end of eleventh five year plan (2007-12) and the Government wanted to increase the installed capacity to 300 GW by 2016-17. This required BHEL to complete its prestigious 20,000 MW capacity addition plan' so as to meet the higher order inflow as well as to meet stringent contractual requirements. BHEL Hyderabad invested around Rs.400 Crores during this period.

During this phase some of the major initiatives taken up include

- Higher rating Super-Critical technology (Pumps, Heaters & Mills for 660 MW – 800 MW)
- Introduced AC VFD Rigs
- Knowledge Based Engineering
- Advanced Class GTs Frame 9FA
- Higher rated Generators (270 MW)
- Single cylinder 150 MW Reheat Steam Turbines



Mills



Boiler Feed Pump

Phase VI (2014-2024) :: Resurgence through Diversification & Transformation Initiatives

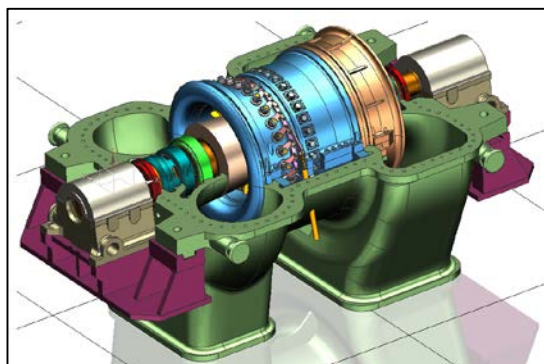
The global Recession of 2008 has started to influence the other emerging markets, also the Indian Capital market by 2012-13. With Coal allocations & New environmental norms, have effectively put the future of coal based thermal power plants in jeopardy. The Governments push for Renewable energy has shifted the marketing dynamics away from our Stronghold. Diversification into Non-coal business is the need of the hour.

Various short, medium and long-term strategies were formulated to Survive, Revive and Thrive.

- Emphasis on Spares & Services
- Entry into Emission Control equipment
- Products for Defence & Aerospace
- Equipment for Steel Industry
- Resurgence to Foundry
- Cost Optimisation



Oxidation Blowers



Top Pressure Recovery Turbine