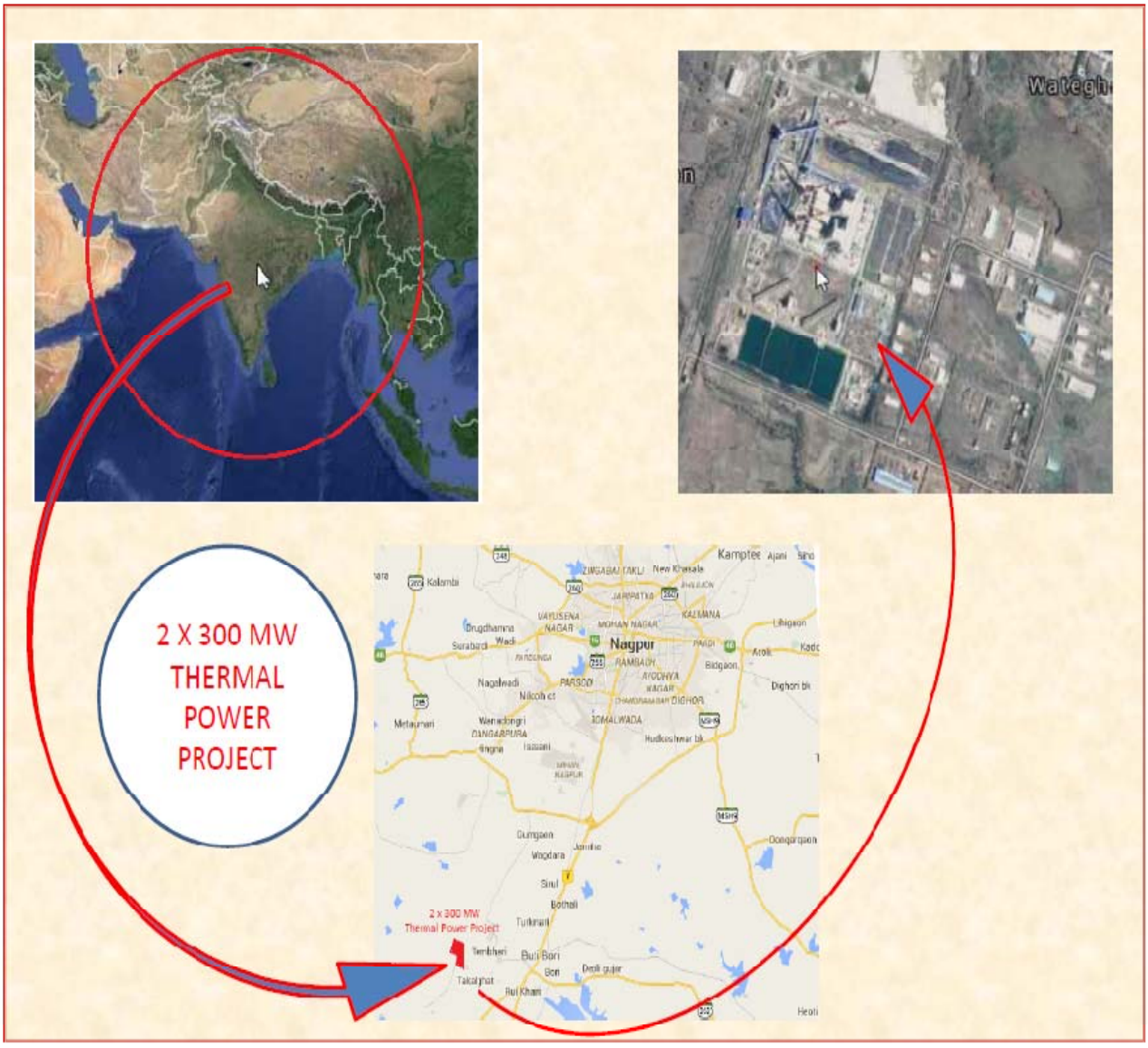
600MW Coal Based Thermal Power Project at Butibori, Nagpur, Maharashtra, India

Butibori Location Details:



(A) About 600 MW Butibori Power Project:

Vidarbha Industries Power Limited (VIPL) subsidiary of Reliance Power Limited has implemented India's most compact coal based power project at MIDC Area of Butibori, Nagpur. The EPC Contract for the Project was placed between VIPL and Reliance Infrastructure Limited. Reliance Infrastructure Limited has appointed DCPL a renowned engineering consultant as main engineering consultant for the Project.

(B) Project details:

Project Capacity : 600MW

Module Configuration : Two Units of 300MW nominal Capacity.

Major Equipment Suppliers & Contractors:

- Steam Turbines, Generators and Auxiliaries - M/s Shanghai Electric Corporation, China.
- Boiler, ESP and auxiliaries - M/s Shanghai Electric Corporation, China.
- Condenser and Auxiliaries- M/s SEC,China
- Induced Draft Cooling Towers.- M/s Pahargpur Cooling Towers Ltd
- GIS - M/s Xian Electric, China
- Generator Transformers- M/s Alstom T&D India Ltd
- Major Civil Contractors - M/s JMC projects, M/s KT, M/s KM,M/s Mall and M/s D P Jain.
- Major Mechanical Contractors-M/s Sunil Hitech Ltd for TG & TG Auxiliaries, ESP and Structure Erection, M/s IOTEP for Boiler, M/s Thermax for Water System
- Major Electrical & instrumentation Contractor-M/s TICB and M/s Honeywell Automation.
- Major CHP Contractor -Supply and Erection by M/s NHI, China.

Power Evacuation : Power Evacuation at 220KV Level through 2x220 kV DC Transmission line from Butibori 220 KV switchyard to MSETCL 220 KV substation 1 and 3 at Butibori, Nagpur.

Water Conveyance : Raw Water intake from Wadgaon Dam on Venna river Approximately 18 km from site.

Fuel Supply : Domestic Coal supply is from WCL coal mines near Chandrapur/wardha and imported coal from Indonesia.

(C) Project Highlights:

- Boiler Light UP- Boiler Light up of Unit #1 & 2 achieved in 18.5 Months & in 21 months from the start of structure Erection respectively.

- Unit Synchronization- First Unit was synchronized in record time of 21.5 Months from start of structure Erection i.e. on 25th June, 2012. Second unit was synchronized on 2nd January, 2013.

- Commercial Operation Declaration- COD of Unit#1 and Unit# 2 were declared on 4th April ,2013 and 28th March,2014 respectively.

(D) Project Innovation and Uniqueness:

- One of the innovative method implemented for Butibori Project was to design and construct a Ash Dyke in a area of 39 Acres in a concrete type construction using available rock within the plant as against the conventional method of earthen embankment requiring huge land.

- Civil Construction work of 17 KM Railway Siding for Coal transportation with take off point from Sindhi Railway Station on Nagpur- Wardha main line to Butibori Power Station was the biggest challenge faced and unique for Butibori TPP. The elevation difference of 45 mtrs between the take off point at Sindhi railway station and power plant. The scale / volume of the works involved in construction of entire Railway Siding includes, 44 Lac Cum of earth for embankment of height 13-15 mtrs.. 50 nos. of Minor Bridges and 3 nos of Major bridges for crossing River, Nallah and State Highway.

- Dumper Mounted On Rail Wheels-The coal for operation of 2x300 MW Butibori Power Plant is coming via rail wagons. The rail connectivity is arranged from Sindi station of Central Railway (situated between Nagpur and Wardha stations). The entire Railway Siding from Sindi Station to Power Plant is of 17 km route length. The topography of siding is such that, (i) there is a elevation difference of 45 m between Sindi station & Power station (ii) it crosses various natural streams, Roads, Highway, Transmission Line and hence, 3 nos. of Major Bridges & 50 nos. of Minor Bridges are constructed and (iii) Earthen embankment height varies from 1m to 15 m. The huge height of embankment resulted in to restriction of transportation of Railway Material (Rails, Sleepers and Ballast) from Ground Level to top of embankment. This problem was resolved by an innovative idea of transporting the ballast through a “Dumper mounted on Rail Wheels”. The rubber Tyres of Dumpers were removed and Rail wheels were fitted. This diesel driven arrangement can move horizontally from one place to another and can carry about 6 cum of Ballast at one time. The ballast is loaded in this dumper, at the place, where embankment is generally matching with ground level. This innovative mechanized arrangement has not only saved huge Manpower, but also Time & Cost in Hauling of Ballast.

(E) Plant Optimization:

- Ash Dyke is constructed in Plum Concrete by using free rock of 40000 Cum, which became available from excavation from other facilities of the project. This has resulted in to maximizing the storage capacity in given land area and cost savings to the tune of Rs.14 Crores.
- Maximized Utilization of Fly ash in RMC production. Fly ash is used as partial replacement of cement to the tune of 30% in all structures including TG foundation (except Chimney), which saved Rs 4.5 Crs on cement purchase.
- Selection of Chimney with Brick Flue instead of Steel Flue resulting in to cost savings of Rs.3.42 Crores
- Selection of Generator Circuit Breaker scheme instead of conventional design of provision of two Station Transformers resulted in saving of around Rs 3.0 Crs.
- Accurate estimation in our projection of TMT, Structural Steel and cement in the initial stage of project: 100% utilization of TMT & structural steel (Total wastage less than standard defined wastage norms).
- The Butibori Thermal power plant is most compact-sized thermal plants in the country with its 600 MW capacity requiring not more than 280 acres of plant land. The per Megawatt land use at Butibori TPP is one of the lowest when compared to similar plants in India and abroad.

(F) Butibori Views:

Overall Plant View: