### WORLDWIDE INSTALLATIONS























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### Chairman's Message



"People with goals succeed because they know where they are going...it's as simple as that." Earl Nightingale.

Since our inception Macawber Beekay has always believed in keeping pace with evolving technology. The organization has grown from strength to strength by continuously innovating, ideating & collaborating to offer material handling systems solutions to our customers, aided by our state-of-the-art infrastructure and an experienced human capital.

With a clear vision and focus of being the numero uno in our field; our vibrant team continues to create value for our customers by offering quality solutions on a consistent basis. We at Macawber Beekay, have always seen our work as a service to the environment and are consistently driven to create more value, by keeping ourselves abreast with technology and innovate to offer environment friendly solutions.

We use our technical acumen to simplify complex problems faced by our customers and resolve them in the most effective and efficient ways. It is our vision, values and fundamentals that has given us the position of being an undisputed leader in our area of expertise.

We thank our stakeholders for their resolute and endless support in our long journey and we commit to value the faith entrusted in us. We will continue being a reliable partner who never compromises with the quality of excellence and deliver success time and again.

US

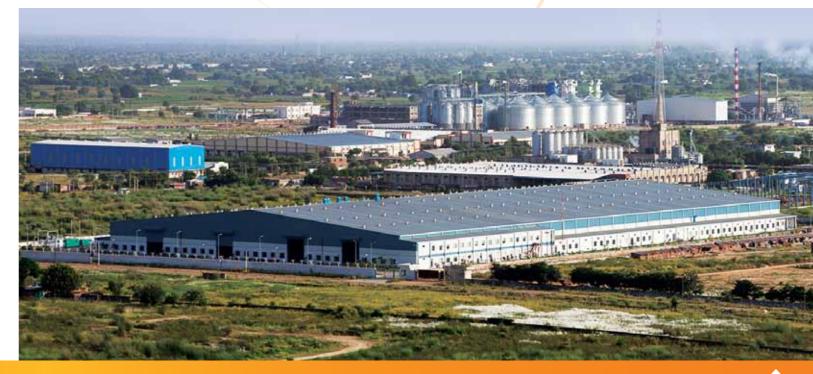
**Ajay Kumar Gupta**Chairman & Managing Director

### **About us**

Macawber Beekay, was established in 1984 as a joint venture company between BSBK Engineers Pvt. Ltd. of India and M/s Clyde Bergemann Material Handling Ltd. of UK (formerly Simon-Macawber Limited) to bring to India the technology of Dense Phase Pneumatic Conveying for transfer of bulk material especially Dry Fly Ash.

With a tremendous growth and various mergers and acquisitions, Macawber Beekay is now a 100% Indian equity. The company executes Bulk Material Handling Projects for handling Coal, Ash etc., throughout the power industry for solid fuel-fired boiler of size upto 1000 MW, fulfilling the need for environmental pollution control with energy conservation. Macawber Beekay's unique systems offer solutions to bulk material handling problems, other specific requirements of the core sectors of the Industry namely, power, cement, alumina, steel, chemicals, sugar, paper and foundry.







### **Our Vision**

- Partnering and guiding the concept to completion chain by aligning industry leads to the development of effective and efficient engineering solutions.
- ➤ To be the trendsetters, that use innovation in development of process solutions and engineering products.
- To consistently re-evaluate our actions for desired vertical growth that enables the group to be seen as a knowledge hub by stakeholders.
- Consciously taking steps in reducing the carbon footprint and adopting environmental friendly practices.

### **Our Mission**

- Become an ethically solid Corporate Citizen.
- Attain global market leadership in Material Handling Systems by a consistent improvisation in design innovation.
- Synergize and align business practices with global environmental needs and set standards.
- Enkindle the spirit of entrepreneurship and team work that consistently builds a productive, knowledgeable process driven organization.

### **Our Core Values**

The core guidelines that directs Macawber Beekay's philosophy is based on the fundamentals of:

- ▶ Customer Delight On time delivery is our pledge.
- Quality Assurance Excellence through quality is inherent in every component of our corporate process and progress.
- People We invest in IQ and EQ development of our human capital, assisting to create a knowledge environment.
- Attain success by directing the business focus towards creating an environment adaptable and friendly engineering solutions.

### Our USP

- We want to guide and partner our customers with success through world class solutions and add value to our customer's business.
- ▶ We want to set the benchmarks in the market for products, services and solutions.
- As a global organisation we want to maintain a sustained growth which benefits our customers, employees and shareholders.



### Quality Policy - ISO 9001:2008

#### We are committed to work for sustainable development and continual improvement through:

- ▶ Meeting specific requirements of the customers to achieve customer satisfaction.
- Making concerted efforts to obtain technical expertise and human excellence.
- Maximizing gross margin to be shared amongst
- stakeholders by adopting total quality management in all spheres of the organization's activities.
- Achieving excellent performance by effective implementation of Quality Management System ISO 9001: 2008.

### **Environmental Policy: 180 14001:2004**

#### We are committed to sustainable development and continual improvement through:

- Prevention of pollution, optimum utilization and conservation of natural resources.
- ► Compliance with all legal and other requirements related to environmental management.
- ▶ Improving environmental performance through effective implementation of Environmental Management System according to the requirements of ISO 14001: 2004.

### Health And Safety Policy - BS OHSAS 18001:2007

# We are committed to sustainable development and continual improvement of all employees' health and safety through:

- Proper implementation of emergency control procedures.
- Provision of adequate training related to health & safety of all employees.
- ▶ Improving OH&S performance by providing adequate resources, proper maintenance of the equipment & machinery and usage of materials
- ▶ Compliance with all legal and other requirements
- of health & safety related OH&S management i.e., at all our offices, works and site located at different places.
- Provision of adequate control methods for prevention of ill health & occupational health related issues through effective implementation of occupational health and safety management system BS OHSAS 18001:2007.

### **ASME "U" Stamp And R Stamp**

We are an ASME U stamp & R Stamp certified company for Manufacturing and Repairing pressure vessels, storage tanks, Air receivers in shop and site location as well. We are well versed with ASME Sec VIII Div.1 and other reference standards.

Our In-house quality control department has good documented system and we have welders qualified as per ASME Sec VIII Div.- 1 and ASME Sec IX.

We are familiar in fabrication of Carbon Steel, Alloy Steel equipment's.

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# Ash Handling System (For Pulverised Coal Fired Boilers)

**Bottom Ash Handling - Jet Pumping System** (For Pulverised Coal Fired Boilers)

MBPL's product profile includes Jet Pumping System for intermittent removal of ash collected at the bottom of the furnace. The system comprises of water impounded refractory lined up by Bottom Ash Hopper (BAH), inclined hydro-pneumatically operated feed gate, clinker crusher and jet pump for intermittent de-ashing through high pressurized water to pump the bottom ash slurry to dewatering bins/slurry slump. MBPL's Jet Pumping Systems are installed upto a capacity of 135TPH and for power plants upto 1000 MW.

#### **Bottom Ash Handling - Submerged Scraper Chain Conveyor System**

MBPL's product profile includes Submerged Scraper Chain Conveyor (SSCC) System for continuous removal of bottom ash collected at furnace bottom. System comprises of dry type refractory lined bottom ash hopper (BAH), horizontal hydro-pneumatically operated discharge gates, SSCC with high quality chains, sprockets and bars. After the dewatering at the sloping portion, moist ash is discharged to a clinker crusher for onward disposal through hydraulic sluice ways or belt conveyors. For higher capacity SSCC, Hydraulic drive units, hydraulic chain tensioning units and motorized traverse drives for taking it to maintenance are provided. Storage capacity of BAH permits sufficient maintenance time for the SSCC as well as reduces the extraction load on the SSCC. MBPL's SSCC systems are installed up to capacity of 70TPH and for power plants up to 1000MW.



#### **Bottom Ash Handling - De-watering Bin System**

Certain applications call for periodical disposal of bottom ash, available in slurry form collected in the bin either through trucks or can be fed to high concentration slurry disposal system for disposal in paste form along with the fly ash. De-watering bins with the decanting system remove water from the bottom ash and this water can be recycled through a set of settling tanks, surge tanks, transfer pumps, etc. MBPL's De-watering Bin Systems are installed with a capacity of upto 1022MT/1500M3 and for power plants upto 4x600MW.









#### **Dry Bottom Ash Handling - Pressure Pneumatic Conveying System**

Dry bottom ash collected in hopper/silo through sometimes needs to be transported beyond the plant boundary for utility purpose. For such applications, MBPL's Pressure Pneumatic Conveying System takes precedence. MBPL's Pressure Pneumatic Conveying Systems operates on batch/continuous operating concept and can provide the much coarser particles of bottom ash. MBPL's Pressure Pneumatic Conveying Systems are installed upto a capacity of 88TPH for distances upto 800m and for power plants upto 600MW.

#### Fly Ash Handling - Vacuum Extraction System

MBPL's product profile includes Vacuum Extraction System for extraction of fly ash collected at Air Pre Heater / Electrostatic Precipitator hoppers of PF type boilers. Vacuum Extraction System is generally adopted when the extraction distance is less, when the number of hoppers are more and when the project layout demands for two stage conveying. MBPL's Dome Valve has proved to be one of the best valves for the vacuum applications. MBPL's Vacuum Extraction Systems are installed upto a capacity of 74TPH and for power plants upto 800MW.



#### Fly Ash Handling - Pressure Pneumatic Conveying System

MBPL offers Pressure Pneumatic Conveying System for conveying coarse ash/fly ash collected at Economiser/ Air Pre Heater/ Electrostatic Precipitator Hoppers. Pressure Pneumatic Conveying System is generally adopted due to many of its advantages like positive pressure system, low velocity, lesser erosion rates, conveying of fine and coarse ash separately collected (thus increasing its utility), capability to convey longer distances in a single stretch (upto 1km directly from ESP and upto 3km from intermediate silo to remote silo), etc. The system operates on a batch concept for the first stage conveying system and on a continuous mode for second stage transportation system. MBPL's Dome Valve has been the best proven valve for pneumatic material handling application. MBPL's Pressure Pneumatic Conveying Systems are installed upto a capacity of 150TPH for distances upto 2.3km and for power plants upto 1000MW.

#### Fly Ash Handling - Hydro-sluicing System

For projects requiring Hydro-sluicing System for transfer of coarse ash/fly ash collected at Economiser/ Air Pre Heater/ Electrostatic Precipitator hoppers or along the vacuum system or at buffer hoppers/silo's of PF type boilers; MBPL provides various modules like flushing apparatus system, wetting head cum slurrifier system, feeder ejector/hydro ejector system etc. depending upon the requirement of application. MBPLs Hydro-sluicing Systems are installed upto a capacity of 120TPH and for power plants upto 800MW.

### **Coal Mill Rejects Handling System**

MBPL has pioneered in employing Dense Phase Pneumatic Conveying System for handling difficult rejects (sizes up to 40mm) from coal pulverizing mills to bunkers in power plants. MBPL's pneumatic mill rejects handling system with distinct merits such as negligible maintenance and recurring costs, requirement of very less space for installation (conveying pipes travels overhead) leaves plant movement unrestricted. MBPL's Pneumatic Mill Rejects Handling Systems are installed for power plants with a capacity up to 800MW.









### **Ash Handling Systems**

(For AFBC/CFBC/WHRB type of Boilers firing Coal/Lignite/Bagasse/Rice husk)

#### Ash Handling - Mechanical System

Certain applications which specially require Mechanical System, like in case of CFBC type boilers for transportation of bed ash collected at furnace bed, MBPL provides a drag chain conveyor system followed by pressure pneumatic conveying system as per the application requirement. MBPL's Mechanical Systems are installed for a wide range of capacities in power plants.

#### Ash Handling - Pressure Pneumatic Conveying System

MBPL offers Pressure Pneumatic Conveying System for conveying bed ash/ coarse ash/ fly ash collected at Furnace Bed/ Economiser/ Air Pre Heater/ Electrostatic Precipitator hoppers of AFBC/CFBC/WHRB etc. type boilers firing various fuels like coal/lignite/bagasse/rice husk etc. MBPL with its Dome Valve and Dense Phase Pneumatic Conveying technology has always kept a brand name for these applications by giving practical solutions to various requirements arising from time to time, irrespective of the batch type/continuous conveying, shorter/longer distances, lower/higher capacities, temperature ranges etc. MBPL's Pressure Pneumatic Conveying System's installation capacity range is undoubtedly remarkable.



### Ash Slurry Disposal Systems

#### Ash Slurry Disposal – Lean Slurry Disposal System & Ash Water Recovery System

Lean Slurry Disposal System & Ash Water Recovery System have been conventionally used for disposal of ash slurry in dilute form generated at various power plants and are still in demand. MBPL offers such systems which comprises of centrifugal slurry pumps for disposal and clariflocculator or tube settlers for recovery of water. MBPL's Lean Slurry Disposal System & Ash Water Recovery System are installed upto a capacity of 4x1255m³/hr. for distances upto 16km.

#### Ash Slurry Disposal – High Concentration Slurry Disposal (HCSD) System

MBPL has been a pioneer in adopting the environmental friendly High Concentration Slurry Disposal (HCSD) Systems in India by commissioning the HCSD system for a combination of fly ash and bottom ash, a first of its kind in India. HCSD system comprises of a controlled & monitored feeding system for fly ash and bottom ash followed by a homogenous mixiture in an adequately designed Agitator Retention Tank (ART) and further pumping to disposal area through the piston diaphragm/hydraulic piston pumps. HCSD system operates on a higher concentration of about 60%, that's why the water consumption is drastically reduced and literally no water is released at the disposal area. The ash slurry disposal takes place based on a sloped disposal concept thereby it spreads and solidifies, leaving hardly any residual ash to fly off. The system has unique advantages of less land area requirement, lesser leaches in the disposal area, low velocity system, lesser size pipes and less power consumption. MBPEs HCSD systems are installed upto a capacity of 315m³/hr. for distances upto 17km.

#### Ash Slurry Disposal - Mine Backfilling

For Mine Backfilling, MBPL has employed both lean slurry disposal system as well as HCSD/MCSD systems in India. MBPL's Mine Backfilling systems are installed upto a capacity of 3x1250m³/hr and for distances upto 25km.







### **Material Handling Systems**

(For industries like Cement/Steel/Paper/Foundry/Chemical/Process)

#### **Material Handling- Mechanical System**

Certain applications specially require Mechanical System for conveying fly ash. For transportation/feeding/blending/classification of fly ash in cement industry, MBPL provides various system like bagging/bag unloading system, truck & tanker loading/unloading system, wagon loading/unloading system, bucket elevator system, air slide system, weigh bin system, classifier system, blending system etc. as per the application requirement. MBPL's Mechanical Systems are installed with a wide range of capacities in cement industries.

#### **Material Handling - Pressure Pneumatic Conveying System**

MBPL offers Pressure Pneumatic Conveying System for conveying of various powdery materials like clinker dust/sand/bentonite/salt, etc. for industries like Cement/Steel/Paper/Foundry/Chemical/Process etc. MBPL with its patented Dome Valve design and Dense Phase Pneumatic Conveying technology has always kept a brand name with these industries by giving practical solutions to the various requirements arising from time to time, irrespective of the batch type/continuous conveying, shorter/longer distances, lower/higher capacities, extreme physical/chemical properties, temperature ranges etc. MBPL's Pressure Pneumatic Conveying Systems installation capacity range is undoubtedly remarkable.



### **Water Intake System**

#### **Travelling Water Screens**

MBPL's Travelling Water Screens for water intake system have been installed at various plants since long. MBPL provides both "through flow screens" as well as "dual flow screens" with a size and metallurgy to meet the application requirement. MBPL's TWS are installed with a flow rate upto 60,000m<sup>3</sup>/hr.

#### **Stop Log Gates**

MBPL's has installed Stop Log Gates for water intake system at various plants. MBPL provides stop log gates with size and metallurgy to meet the application requirement. MBPL's SLG's are installed for sizes upto 4.5m x 28m.

# Bulk Material Handling Plant (Coal/Lime)

MBPL executes projects of Bulk Material Handling (Coal/Lime Handling) on Turnkey/EPC basis. MBPL undertakes system design and supply of all associated equipments like Wagon Tipplers, Track Hoppers, Paddle/Plough Feeders, Crushers, Screens, Belt Conveyors, Apron Feeders & Stacker cum Reclaimers, apart from execution of civil, structural and electrical works. MBPL's Coal/Lime Handling Plants are installed upto a capacity of 2000TPH, lengths upto 1.5km and for power plants upto 2x660MW.







### **Red Mud Disposal Systems**

MBPL's diversified area includes execution of Red Mud Disposal Systems on Turnkey basis for the aluminium industry. MBPL is in service for disposal of red mud collected from drum filters as well as Mud Washers/Thickeners. In case of drum filters, system comprises of screw feeder, belt conveyors and Agitator Retention Tank (ART). The softened slurry in ART is then pumped to the red mud pond through piston diaphragm pumps or centrifugal pumps. In case of Mud Washers/ Thickeners, wherein the system comprises of direct pumping of the mud washer discharge in the red mud pond through piston diaphragm pumps. The decant water from the red mud pond is pumped back to the system through submersible pumps or centrifugal pumps installed on floating pontoons. MBPL's Red Mud Disposal Systems are installed upto a capacity of 350m<sup>3</sup>/hr, for distances upto 5.5km and for alumina refineries with a capacity of upto 1.5MTPA.

### **Operation and Maintenance**

Proper operation & maintenance of a system can only deliver the desired output on sustainable basis. Taking note of the same, MBPL has always trained and guided their customers for better operation of the systems. Fo<mark>r c</mark>ustomers, who desire to have the regular operation and maintenance to be carried out through the technical expertise of the OEM, MBPL has a team dedicated to take up the O&M on a regular basis. O&M of MBPL's major installations are taken care of by MBPL directly.



### **Awards & Recognitions**



### API Tanks & Vessels, ASME, U-Stamp -**Refinery/Gassification Application**

MBPL's diversified area includes engineering & manufacturing of Tanks & Vessels as per API (620,650 etc.) for refinery/gasification applications. MBPL has engineered the shop manufactured Slurry Mix Drums as per API 620/650, Slag De-Watering Bins as per API 620 (4.2m dia. x 20m long) & Sulphuric Acid tanks as per API 650 for gasification/refinery projects. MBPL's works is certified with "U" Stamp for pressure vessels.



### **Major Projects/Clients**

#### **Overseas Projects**

- 2x1000 MW Central Java TPP, Indonesia thru' Mitsubishi Hitachi, Dubai
- 1x1000 MW (UNIT-4) Janamanjung TPP, Malaysia thru' Alstom, USA/China
- 1x1000 MW (UNIT-4) Tanjung Bin TPP, Malaysia thru' Alstom, USA/France/India
- 2x800 MW, Talin TPP, Taiwan A/c. IHI / CTCI thru'CBMHL, UK/China
- 3x800 MW Linkou TPP, Taiwan A/c. CTCl thru' CBMHL, China
- 3x700 MW Janamanjung TPP, Malaysia A/c ABB Alstom Power thru' CBMHL, UK
- 1x696 MW Mae Moh TPP, Thailand thru' ALSTOM, USA
- 2x600 MW Long Phu-1 TPP, Vietnam thru' Power Machines, Russia/ CBMHL, UK
- 2x600 MW Song Hau-1 TPP, Vietnam thru' Lilama, Vietnam
- 2x600 MW Wangqu TPP, China thru' CBMHL, UK
- 2x600 MW Hancheng TPP, China A/c Harbin Power thru' CBMHL, UK
- 2x550 MW Taichung TPP, Taiwan A/c Mitsui Babcock, U.K. thru' CBMHL, UK
- 1x430 MW Pagbilao Expn. TPP, Philippines thru' Daelim, Korea
- 2x150 MW Therma Visayas TPP, Philippines thru' Hyundai, Korea
- 2x135 MW CFBC Boiler, PT Cikarang, Indonesia thru' Metso
- 2x103 MW CEBU TPP, Indonesia A/c KEPCO SPC Power thru' Doosan, Korea
- 3x18 MW KPC PT Kaltim Prima Coal, Indonesia thru' Punj Llyod

#### **Coal/Lime Handling Systems**

- Athena Energy Ventures Pvt. Ltd
- JSW Energy Ltd.
- · Meenakshi Energy Pvt. Ltd
- Nagai Power Pvt. Ltd
- NTPC Ltd
- Telangana State Power Generation Corp. Ltd.

#### **Ash Handling Systems**

- · Adani Power Ltd.
- Adhunik Power and Natural Resources Ltd.
- Ahmedabad Electricity Co. Ltd.
- Andhra Pradesh Power Generation Corp. Ltd.
- Aryan Coal Beneficiation (I) Ltd.
- Athena Energy Ventures Pvt. Ltd
- Bajaj Hindustan Ltd.
- Bihar State Electricity Board
- CESC Ltd.
- Chhattisgarh State Power Generation Co. Ltd.
- Coastal Energen Pvt. Ltd.
- Damodar Valley Corp.
- Essar Group
- Gujarat State Electricity Co. Ltd.
- GMR Energy Ltd.
- Haryana Power Generation Co. Ltd.
- Hindalco Group
- Hinduja National Power Corp. Ltd.
- Hindustan Power Projects Pvt. Ltd.
- Ind Bharat Ltd.
- Jaiprakash Group
- Jindal India Power Ltd.
- Jindal Steel & Power Ltd.
- JSW Energy Ltd.
- Karnataka Power Co. Ltd./Raichur Power Corp. Ltd
- LANCO
- Madhya Pradesh Power Generation Co. Ltd.
- Maharashtra Power Generation Co. Ltd.
- Maruti Clean Coal & Power Ltd.
- M<mark>eena</mark>kshi Energy Pvt. Ltd.
- Nava Bharat Energy India Ltd.
- Na<mark>tiona</mark>l Aluminium Co. Ltd.
- NCC Ltd.
- Neyveli Lignite Corp. Ltd.
- NLC-TNEB Power Ltd.
- NTPC Ltd
- Odisha Power Generation Corp. Ltd.
- Punjab State Power Corp. Ltd.
- Raj<mark>astha</mark>n Rajya Vidyut Utpadan Nigam Ltd.
- Ratan India Power Ltd. (previously Indiabulls)
- Re<mark>liance</mark> Industries Ltd.
- RKM Powergen Pvt. Ltd.
- Sintex Infra Projects Ltd.
- Surana Power Ltd.

- TANGEDCO
- Tata Group
- Thermal Powertech Corp. (I) Ltd.
- TRN Energy Ltd.
- Telangana State Power Generation Corp. Ltd.
- Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.
- Vedanta Group
- West Bengal Power Development Corporation Ltd.

#### **HCSD Systems**

- Adani Power Maharashtra Ltd.
- APGENCO
- Aryan Coal Beneficiations (I) Ltd.
- Athena Energy Ventures Pvt. Ltd
- Bajaj Hindustan Ltd.
- CSPGCL
- GSECL
- GMR Energy
- Jindal Power Ltd.
- JSW Ltd.
- Hindalco Group
- MAHAGENCO
- NALCO
- NTPC Ltd
- Ratan India Power Ltd.
- · Tata Group
- · Vedanta Group.

#### Mill Reject Handling Systems

- Adani Power Ltd.
- APGENCO
- DVC
- GMR Energy Ltd
- Hindalco Group
- Hindustan Power Projects Pvt. Ltd.
- HPGCL
- Jaiprakash Power Ventures Ltd.
- Jindal Power Ltd.
- KPCL
- L&T Ltd.
- Lanco Infratech Ltd.
- MAHAGENCOMPPGCL
- NCC
- NLC-TNEB Power Ltd.

- NTPC Ltd
- Ratan India Power Ltd.
- RRVUNL
- Surana Power Ltd.
- TANGEDCOTATA GROUP
- TSGENCO
- UPRVUNLWBPDCL.
- Red Mud Disposal Systems
- Balco
- Nalco
- Utkal Alumina
- Vedanta Alumina

#### **Operation & Maintenance**

- Adani Power 2x660 MW TPP, Kawai
- Adani Power 4x330 MW + 5x660 MW. Mundra
- Adhunik Power 2x270 MW TPP, JH
- APCL 3x500 MW IG TPP, Jajjar
- APGENCO 1x210 MW Rayalseema TPP
- Coastal Energen 2x600 MW Tuticorin TPP
- CSPGCL 2x250 MW Korba East TPP
- CSPGCL 440 MW Korba East TPP
- CSPGCL 4x210 MW Korba West TPP
- DVC 3x210 MW + 2X500 MW Mezia TPP
- GSECL 1x500 MW Ukai TPS
- GSECL 2X250 MW Sikka TPS
- CSPGCL 4x210 MW Korba West TPP
   HPGCL 2x110 MW + 1x210 MW Panipat TPS
- HPGCL 2x660 MW Rajiv Gandhi TPS, Hissar
- JSPL 6x135 MW TPP, Angul, Odisha
- JSW Ltd. 8 x 135 MW Lignite Based TPP, Barmer, Raj.
- MAHAGENCO 1x210 MW Bhusawal TPS
- MAHAGENCO 1x200 MW + 2x210 MW Koradi TPS
- NTPC Mauda, 2 x 500 MW, Phase-II
- PSPCL 6x210 MW Ropar TPP
   PSPCL 2x250 MW Lehra Mohabbat TPP
- RIPL 5x270 MW Amaravati TPP, MS
- RRUVNL 2x250 MW Chhabra STPP, Raj.
  RRUVNL 2x600 MW Kalsindhi TPP, Raj.
- Vedanta Group 4x600 MW IPP, Jharsuguda thru Evonik
- Tata Group 2x525 MW Maithon TPP

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