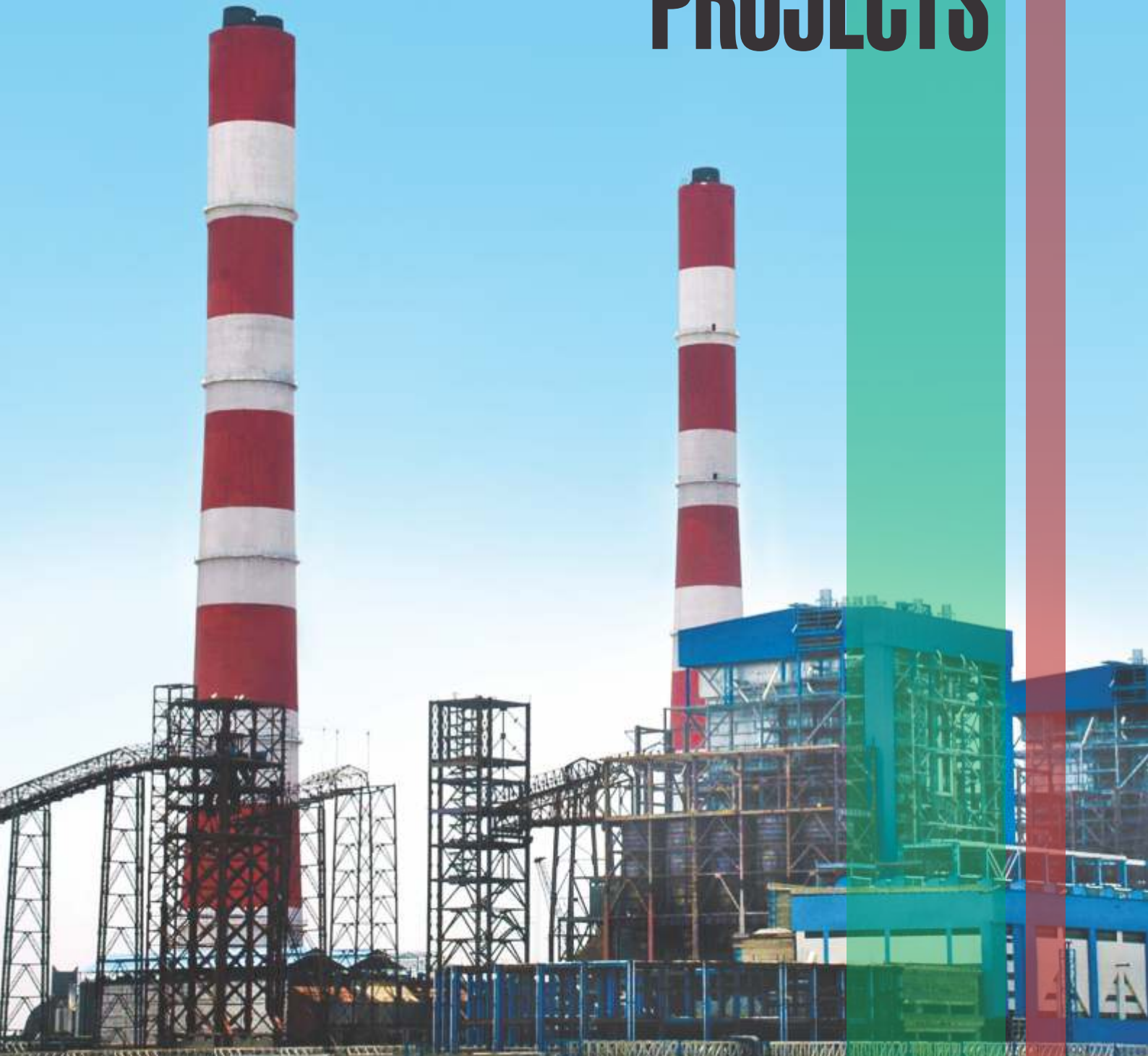


COAL BASED PROJECTS



L&T-Sargent & Lundy Limited

The Company

L&T-Sargent & Lundy Limited is a joint venture between Larsen & Toubro Limited, India and Sargent & Lundy^{LLC}, USA providing engineering and consulting services for electric power business across the globe. Operating since 1995, it combines deep domain expertise, internationally aligned systems and processes, and unique 3D modeling technique to converge technical consultancy with high-end solutions and delivery.



Joint Venture Partners

The synergy created by coming together of an engineering and construction conglomerate and a consulting giant has enabled L&T-S&L to consistently deliver solutions, which are technically sound and operationally efficient.



Larsen & Toubro

Larsen & Toubro is a USD 14 Bn technology, engineering, construction, manufacturing and financial services conglomerate, with global operations. It is ranked 4th in the global list of Green Companies in the industrial sector by reputed international magazine Newsweek and ranked the world's 9th Most Innovative Company by Forbes International. L&T is one of the largest and most respected companies in India's private sector and has attained and sustained leadership in its major lines of business over seven decades.



Sargent & Lundy

Sargent & Lundy^{LLC}, USA (S&L) - With over 120 years of experience in providing engineering services exclusively focused on power, S&L is acknowledged as a premier force worldwide. S&L has an extensive and credible consulting experience in projects as diverse as combined cycle power plants, gas and coal based projects, renewable energy and nuclear projects. S&L has been ranked second among engineering firms in USA by Engineering News-Record magazine (2011 & 2012).

Services Offered



Be it site selection, designing, project reports, detail engineering services, site support services or renovation and modernization services, L&T-S&L offers the complete gamut of Power Plant Engineering and Consultancy Services ranging from concept to commissioning and beyond.

EPC Contractor's Engineer

- Pre-bid Engineering Support
- Post-award Engineering
- Basic Engineering
- Detail Engineering Services
- Site Engineering Support
- Commissioning Support

Lender's Engineer

- Technical and Financial Due Diligence (Pre-financial Closure Phase)
- Construction Monitoring (Implementation Phase)
- Performance Testing (Start Up & Testing Phase)
- Operations Monitoring (Post Commissioning Phase)

Transmission & Distribution

- Basic and Detailed Engineering Indoor / Outdoor / GIS Substations
- Power System Studies
- Distribution System Design

Owner's Engineer

- Site Assessment Study
- Feasibility Study
- Detailed Project Report
- Tender Specification
- Bid Evaluation and Finalization
- Review Engineering
- Inspection
- Performance Testing
- Commissioning Support
- Project Management
- Site Supervision Services



Special Engineering Services

- Special Consulting Assignments
- Performance Testing
- Repowering Studies
- Technical Training
- Renewable Energy (Wind/Solar/Biogas)

Power System Studies

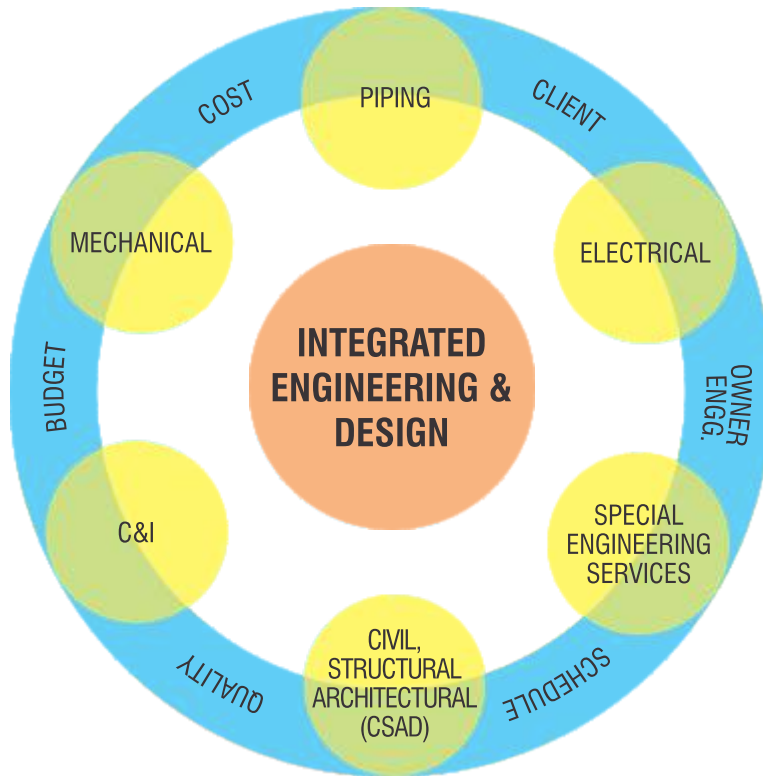
- Load Flow & Voltage Regulation
- Dynamic Motor Starting Study
- Short Circuit Study
- Transient Stability
- Relay Co-ordination
- Switching & Lightning Surge Analysis
- Insulation Co-ordination Study
- Harmonic Analysis

Renovation & Modernization

- Energy Audits including Boiler Performance Evaluation Test
- Steam Path Audits
- Remaining Life Assessment (RLA)
- Detailed Project Report
- Preparation of Techno-commercial Specification
- Evaluation of EPC Bids and Order Finalization
- Supervision of R&M Work as OE

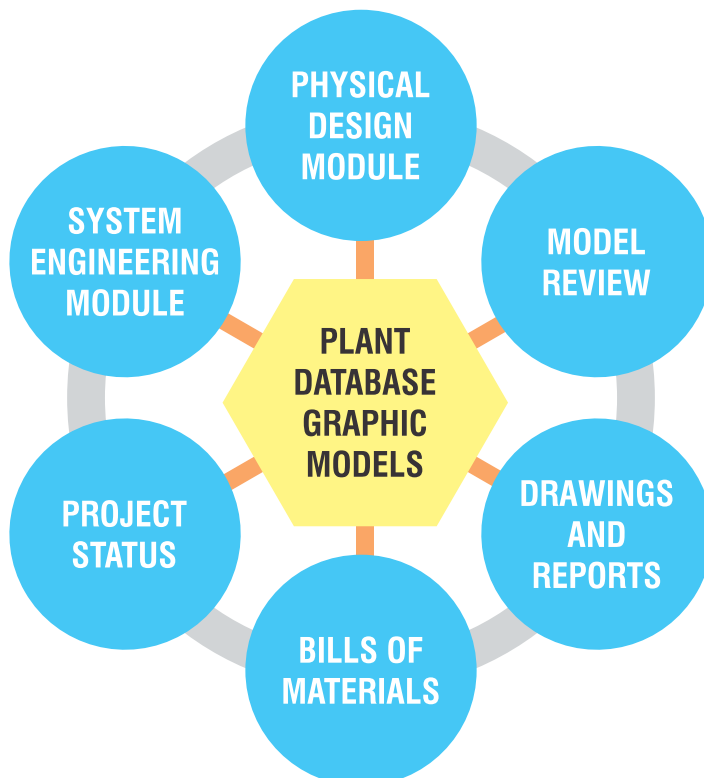
Professional Expertise

Processes, systems and technology yield better results when talent combined with experience drive them. The multi-skilled team at L&T-S&L consisting of 650 engineers and designers bring together specialists in the field of conventional and non-conventional energy, engineering disciplines, project management and client servicing. Integral to this team are experts in the field of information technology, quality assurance and finance.



Coupled with professional strength, L&T-S&L uses PLADES - proprietary 3D - modelling software for integrated plant engineering.

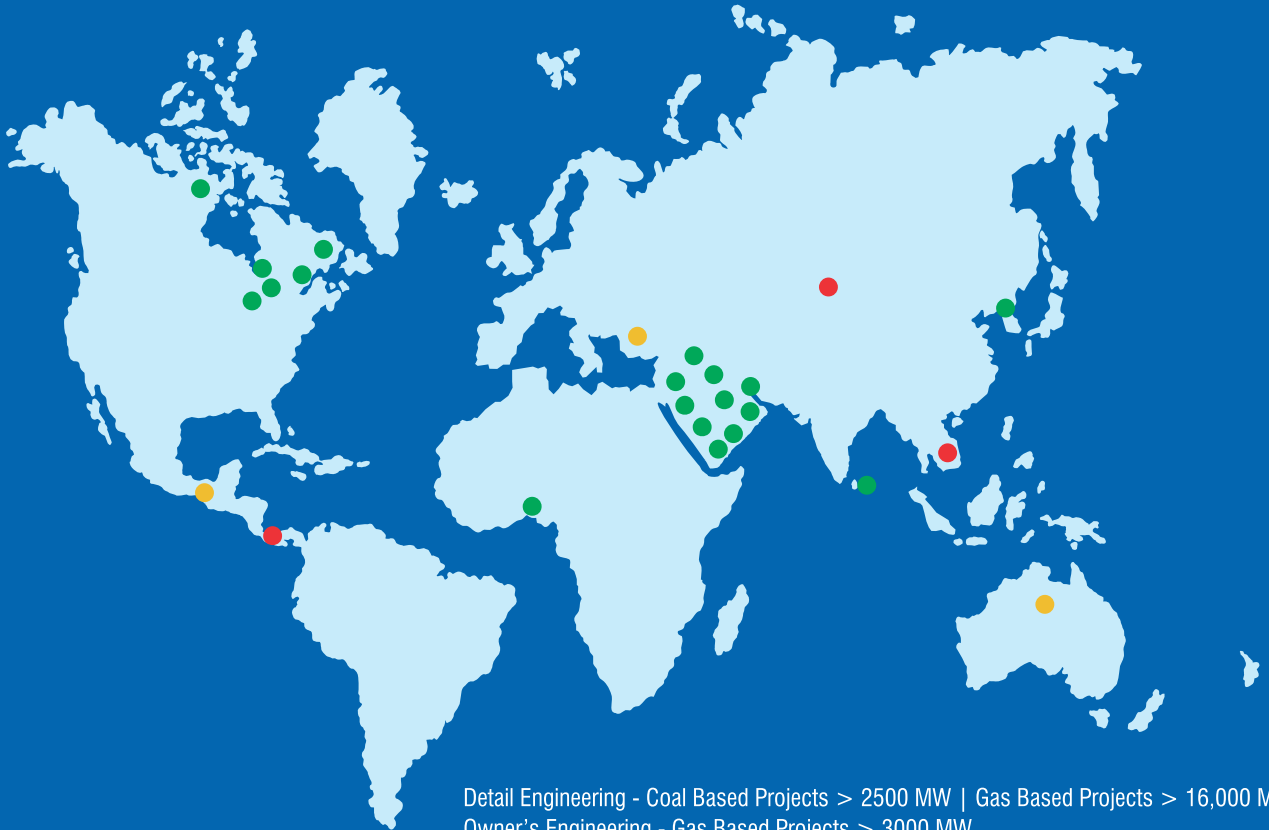
This enables optimized utilization of resource and interactive visualization ensuring ease of construction, operation and maintenance of the plant.



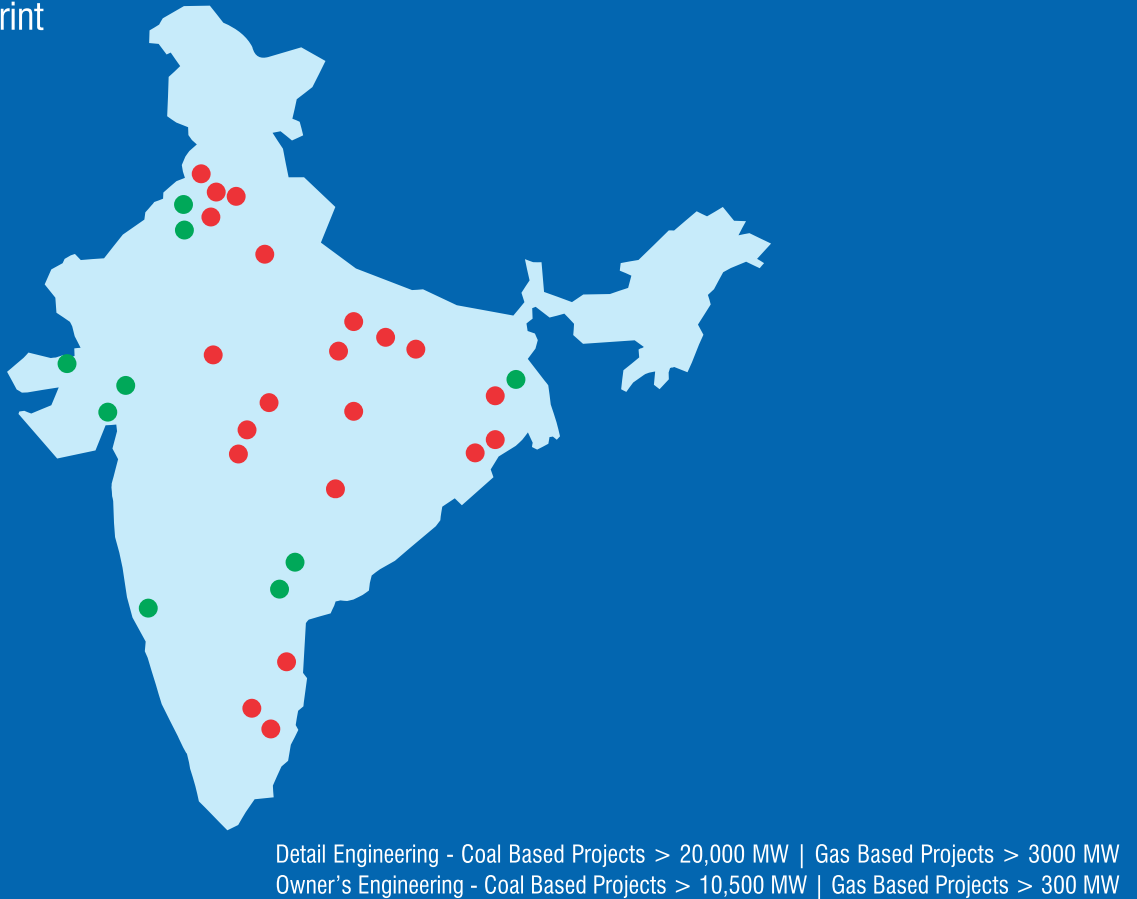
Benefits of PLADES

- Shared Database
- Unrestricted license
- Integrated Engineering
- 3D Model Review
- Intelligent Drawing
- Interface Management
- BOQ Extraction
- Plant Walkthrough
- Effective Visualization
- Interference Checks
- Space Planning

International Footprint



National Footprint



Legends: ● Gas based Plants ● Coal based Plants ● Hydro-electric Plants

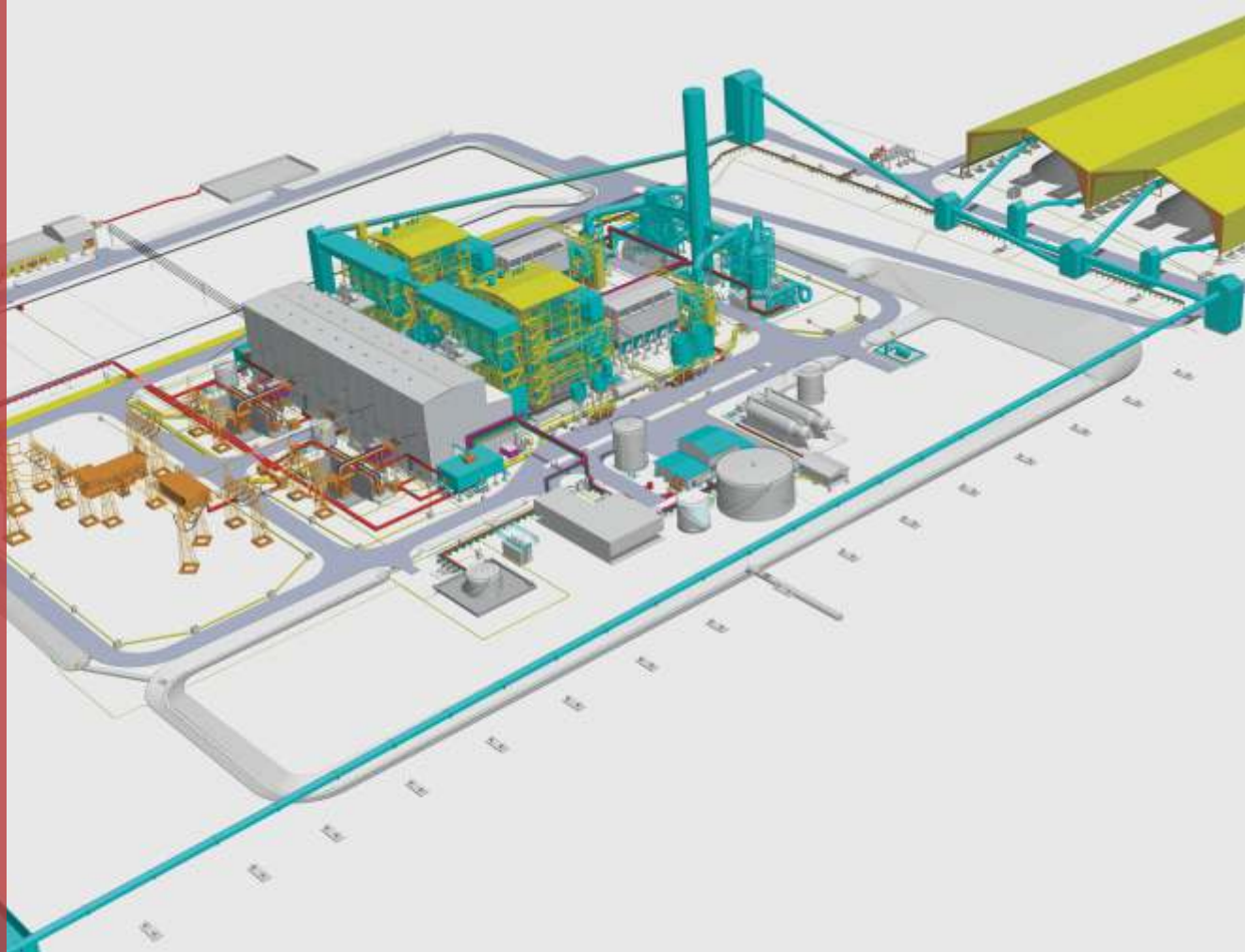


1x700 MW

Supercritical Thermal Power Plant Thailand

Client	Doosan Heavy Industries & Construction Co. Limited, Korea
L&T-S&L's Scope	Complete Basic and Detail Engineering for EPC of Entire Plant
Configuration	<ul style="list-style-type: none"> One (1) Doosan-Babcock make Supercritical Boiler One (1) GE-Doosan make Steam Turbine Generator (STG)
Key Technical Features	<ul style="list-style-type: none"> Supercritical Boiler: 249.7 Bar g and 568.6 °C with 94.04% Efficiency NCV-Based STG is Tandem Compound, Single Reheat, Regenerative, Condensing, Multi-cylinder Design with Combined HP-IP and Separate LP Casing of Capacity 700 MW

	<ul style="list-style-type: none"> Feed Water, Condensate System, Condenser Air Extraction, Circulating Water including Intake, Water Treatment, Compressed Air, and Firefighting Systems Piping System, Civil Structural Design, Electrical and C&I Engineering
Fuel	Coal
Year of Commissioning	2012



2x150 MW

PACO Thermal Power Plant Panama, Central America

Owner	Minera Panama S.A., Central America
Client	SK Engineering & Construction Co., S. Korea / Sargent & Lundy, USA
L&T-S&L's Scope	Complete Basic and Detail Engineering for EPC of Entire Plant
Configuration	<ul style="list-style-type: none"> Two (2) Seentec make Boilers (Subcritical) Two (2) SKODA make Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> Pulverized Coal Fired Subcritical Boiler 150 MW Steam Turbine Generator: Tandem Compound, Reheat, Condensing Turbine Type Flue Gas Desulphurization (FGD) System for SO_x Control Selective Catalytic Reduction (SCR) Unit for NO_x Control Baghouse for Flue Gas Dust Collection

	<ul style="list-style-type: none"> Once-through Seawater Based Cooling Water System Topping Desuperheater in Feed Water Circuit Dry Bottom Ash Handling System Thermal Desalination Plant for Seawater Plant Design for a High Rainfall Zone (approx. 4 to 5 meters of Annual Average Rainfall) with Rainwater Harvesting Facilities Gas Insulated Switchyard (GIS) Twin Flue Chimney
Fuel	Coal
Year of Commissioning	2015



2x800 MW

Sri Damodaram Sanjeevaiah Super Thermal Power Station Krishnapatnam, Andhra Pradesh, India

Owner	Andhra Pradesh Power Development Company Limited (APPDCL), India
Client	Larsen & Toubro Limited, India
L&T-S&L's Scope	Complete Basic and Detail Engineering of STG Island
Configuration	Two (2) L&T-MHI make Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> STG of Capacity 800 MW; each Consists of One Combined HP / IP and Two (2) LP Cylinders, Tandem-Compound Quadruple Exhaust, Condensing Reheat Turbine Designed for High Operating Efficiency and Maximum Reliability

	<ul style="list-style-type: none"> Main Steam Parameters: 242 bar (a); 565 °C Hot Reheat Parameters: 54.6 bar (a); 593 °C
Fuel	Domestic Washed Coal and Imported Coal in 70:30 Ratio
Year of Commissioning	2014



2x700 MW

Rajpura Coal Based Super Thermal Power Plant Punjab, India

Owner	Nabha Power Limited, India
Client	Larsen & Toubro Limited, India
L&T-S&L's Scope	Complete Basic and Detail Engineering for EPC of Entire Plant
Configuration	<ul style="list-style-type: none"> Two (2) L&T-MHI make Supercritical Boilers Two (2) L&T-MHI Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> Supercritical Boilers with Vertical Water Walls and Internal Rifle Tubes. Furnace Designed for Lower Slag Deposition and Lower NOx Fuel Firing System STG of Capacity 700 MW each having One (1) Combined HP / IP and Two (2) LP Cylinders, Tandem-Compound Quadruple Exhaust, Condensing Reheat Turbine Designed for High Operating Efficiency and Maximum Reliability Natural Draft Cooling Towers

	<ul style="list-style-type: none"> STG Auxiliaries like Boiler Feed Pumps (BFP), Condensate Extraction Pump (CEP), DM Cooling Water Pumps, Vacuum Pumps, Heat Exchangers etc. Deaerator, HP / LP Heaters and Condensers are Dual Pressure Once-through Type having Divided Water Box Balance of Plant including Coal Handling, Ash Handling, Water System, HVAC, Firefighting, Fuel Oil System, etc. High Efficiency Electro Static Precipitators (ESP) Civil Works including Raw Water Reservoir and Ash Pond Twin Flue Stack
Fuel	Coal
Year of Commissioning	2014

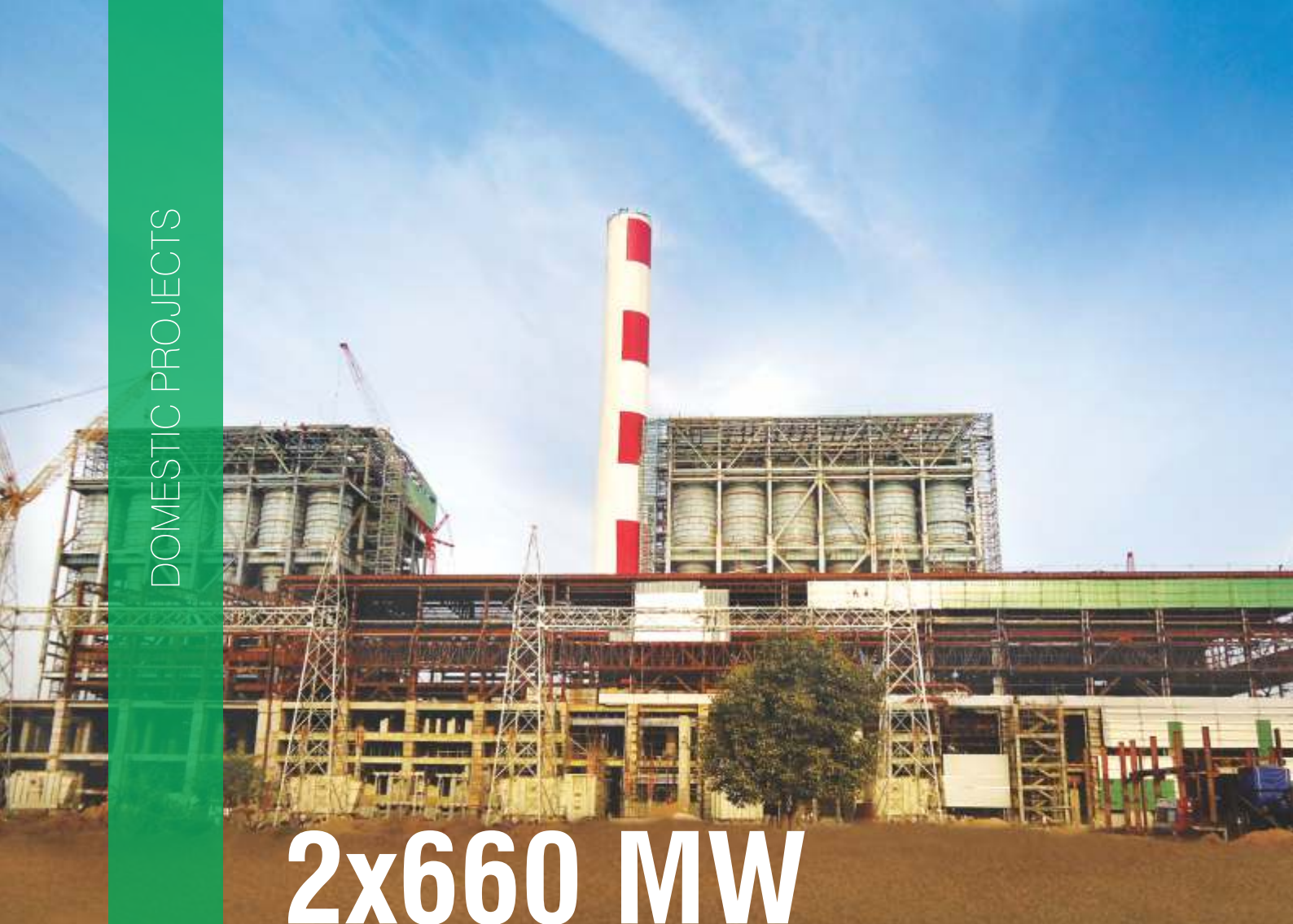


3x660 MW

Koradi Super Thermal Power Station Expansion Maharashtra, India

Owner	Maharashtra State Power Generation Co. Ltd. (MAHAGENCO), India
Client	Larsen & Toubro Limited, India
L&T-S&L's Scope	Complete Basic and Detail Engineering for BTG Island with Related Auxiliaries and Extended BOP
Configuration	<ul style="list-style-type: none"> • Three (3) L&T-MHI make Supercritical Boilers • Three (3) L&T-MHI make Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> • Supercritical Boilers with Vertical Water Walls and Internal Rifle Tubes Simpler in Construction having Lower Pressure Drop. Furnace Designed for Lower Slag Deposition and Lower NOx Fuel Firing System • STG of Capacity 660 MW each Consists of One (1) Combined HP/IP and Two (2) LP Cylinders, Tandem-Compound Quadruple Exhaust, Condensing Reheat Turbine Designed for High Operating Efficiency and Maximum Reliability

	<ul style="list-style-type: none"> • STG Auxiliaries like Boiler Feed Pumps (BFP), Condensate Extraction Pump (CEP), DM Cooling Water Pumps, Vacuum Pumps, Heat Exchangers etc. • Deaerator with Stork Design, HP / LP Heaters • L&T make Dual Pressure Once-through Type Condensers having Divided Water Box • Concrete Volute Type Cooling Water Pumps • HVAC System, Firefighting System, Fuel Oil System etc.
Fuel	Coal
Year of Commissioning	2014



2x660 MW

Jaypee Nigrie Super Thermal Power Plant Madhya Pradesh, India

Owner	Jaiprakash Power Ventures Limited (JPVL), India
Client	Larsen & Toubro Limited, India with L&T-MHI Boilers Pvt. Limited, India
L&T-S&L's Scope	Complete Basic and Detail Engineering of Boiler and STG Island and its Auxiliaries including Critical Piping
Configuration	<ul style="list-style-type: none"> Two (2) L&T-MHI make Supercritical Boilers Two (2) L&T-MHI make Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> Supercritical Boilers with Vertical Water Walls with Internal Rifle Tubes Simpler in Construction, Lower Pressure Drop and Lower Slag Deposition Deaerator with Stork Design, HP / LP Heaters

	<ul style="list-style-type: none"> STG of Capacity 660 MW each Consists of One (1) Combined HP / IP and Two (2) LP Cylinders, Tandem - Compound Quadruple Exhaust, Condensing Reheat Type Designed for High Operating Efficiency and Maximum Reliability STG Auxiliaries like Boiler Feed Pumps (BFP), Condensate Extraction Pump (CEP), DM Cooling Water Pumps, Vacuum Pumps, Heat Exchangers etc. L&T make Dual Pressure Once-through Type Condensers having Divided Water Box
Fuel	Coal
Year of Commissioning	2014



2x600 MW

DB Thermal Power Plant Chhattisgarh, India

Owner	DB Power Limited, India
Client	Larsen & Toubro Limited, India
L&T-S&L's Scope	<ul style="list-style-type: none"> • Complete Basic and Detail Engineering for BOP and BTG Civil • Electrical and its Auxiliaries for BTG and BOP (Except GT, UT and Generator)
Configuration	<ul style="list-style-type: none"> • Two (2) BHEL make Subcritical Boilers • Two (2) BHEL make Steam Turbine Generators (STGs)
Key Technical Features	Coal Handling Plant <ul style="list-style-type: none"> • 2x2000 TPH Belt Conveying System • 4x1200 TPH Vibrating Grizzly Feeder and Crusher • Stacker (2000 TPH)-cum-Reclaimer (1800 TPH)

	Ash Handling Plant <ul style="list-style-type: none"> • 6x87 TPH Bottom Ash Handling System • 6x64 TPH Fly Ash Vacuum Conveying System • 3x128 TPH Fly Ash Pressure Conveying System • 4 nos. of 1600 TPH RCC Fly Ash Silos
	Water Treatment Plant <ul style="list-style-type: none"> • 3x90 TPH DM Plant with UF Unit • 2x245 kg/hr, 2x10 kg/hr, 2x25 kg/hr Gas Chlorination Unit • 3x800 m³/hr Hydrogen Cycle Based CPU Unit • 275 meters Height Twin Flue Cone RCC Chimney
Fuel	Coal
Year of Commissioning	2014



2x600 MW

Shree Singaji Thermal Power Plant Malwa, Madhya Pradesh, India

Owner / Client	Madhya Pradesh Power Generation Company Limited (MPPGCL), India
L&T-S&L's Scope	Complete Owner's Engineering including Technical Spec. Preparation, Bid Evaluation, Contract Finalization, Review Engg., Commissioning, Testing and PG Tests, Inspection Services and Field Engineering Support
Configuration	<ul style="list-style-type: none"> Two (2) BHEL make Boilers Two (2) BHEL make Steam Turbine Generators (STGs) Balance of Plant by L&T Power
Key Technical Features	<ul style="list-style-type: none"> Subcritical Drum Boilers with Vertical Water Walls, Natural Circulation, Two Pass and Single Reheat Capacity of 1975 TPH, 178 kg/cm² (g) and 540 °C, Lower Pressure Drop and Lower Slag Deposition STG of Capacity 600 MW with Tandem Compound Arrangement, Condensing Reheat Type for High Operating Efficiency and Reliability

	<ul style="list-style-type: none"> STG Auxiliaries like BFP, CEP, DM Cooling Water Pumps, Vacuum Pumps, Heat Exchangers Deaerator, HP (2 nos.) and LP (3 nos.) Heaters HP Steam Pressure and Temperature: 170 Bar (a); 537 °C HRH Steam Pressure and Temperature: 40.51 Bar (a); 537 °C Water Cooled Condenser with Closed Circuit Cooling System BOP including CHP, AHP, Water System, HVAC, Firefighting, Fuel Oil System etc. ESPs, NDCTs and Twin Flue Chimney Power Evacuation: 220 kV and 400 kV Switchyard
Fuel	Coal
Year of Commissioning	2014



2x600 MW

Anpara 'C' Thermal Power Station Extension, Uttar Pradesh, India

Owner / Client	Lanco Anpara Power Limited, India
L&T-S&L's Scope	Complete Owner's Engineering including DPR, Technical Spec. Preparation, Bid Evaluation, Contract Finalization, Review Engg., Commissioning, Testing and PG Tests, Inspection Services and Field Engineering Support
Configuration	<ul style="list-style-type: none"> Two (2) Dongfang Electric, China make Boilers Two (2) Dongfang Electric, China make Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> Subcritical Boiler with Vertical Water Walls, Simpler in Construction, Lower Pressure Drop and Lower Slag Deposition Water Cooled Condenser with Closed Circuit Cooling System

	<ul style="list-style-type: none"> STG of Capacity 600 MW with Tandem Compound Arrangement, Condensing Reheat Turbine Designed for High Operating Efficiency and Maximum Reliability STG Auxiliaries like Boiler Feed Pumps (BFP), Condensate Extraction Pumps (CEP), DM Cooling Water Pumps, Vacuum Pumps, Heat Exchangers etc. Deaerator, HP (3 nos.) and LP (4 nos.) Heaters Balance of Plant Including Coal Handling, Ash Handling, Water System, HVAC, Firefighting, Fuel Oil System etc. ESPs with Bag Filters, IDCTs and Twin Flue Chimney
Fuel	Coal
Year of Commissioning	2012

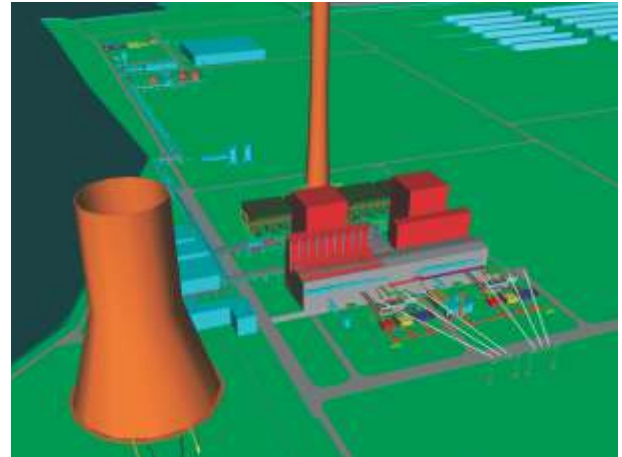
DOMESTIC PROJECTS



2x300 MW

Lanco Amarkantak Mega Thermal Power Station
Pathadi, Chhattisgarh, India

Owner	Lanco Amarkantak Power Private Limited, India
Client	Zelan Projects Private Limited, Malaysia
L&T-S&L's Scope	Complete Detail Engineering Services of all BOP Mechanical Systems
Configuration	<ul style="list-style-type: none"> Two (2) Dongfang Electric, China make Boilers Two (2) Dongfang Electric, China make Steam Turbine Generators (STGs)
Key Technical Features	<ul style="list-style-type: none"> Boilers Having Drum Type, Natural Circulation with Two Pass and Single Reheat of Capacity 1025 TPH, 17.45 MPA and 540 °C STGs of Capacity 300 MW each with Tandem Compound, Single Reheat, Regenerative, Condensing, Multi-cylinder Design and Combined HP-IP, Separate LP Casing BOP Systems including CHP, AHP, DM Water, Pre-treatment Plant, Fire Protection, ETP, Cooling Towers and Chimney
Fuel	Coal
Year of Commissioning	2010



2x660 MW

NCC Thermal Power Plant
Andhra Pradesh, India

Owner	NCC Power Projects Limited, India
Client	NCC Limited, India
L&T-S&L's Scope	Complete Basic and Detail Engineering for BOP, BTG - Civil (Except TG Foundation), Chimney Design and Review Engineering of BOP Civil
Configuration	<ul style="list-style-type: none"> Two (2) Harbin, China make Supercritical Boilers Two (2) Harbin, China make Steam Turbine Generators (STGs)
Key Technical Features	<p>Coal Handling Plant</p> <ul style="list-style-type: none"> 2x1800 TPH Belt Conveying System, Crusher and Vibrating Grizzly Feeder, Stack and Reclaimer <p>Ash Handling Plant</p> <ul style="list-style-type: none"> 2x65 TPH Bottom Ash Handling System, Fly Ash Conveying System, HCSD System, RCC Fly Silos and Bottom Ash Silos <p>Water Treatment Plant</p> <ul style="list-style-type: none"> 2x1200 m³/hr Pre-treatment Plant, RO Units, Mixed Bed Units and Seawater Electrolyzer 260 MVA Generator Transformer, IPBD, 11 kV and 3.3 kV switchgear 275 meters Twin Flue RCC Chimney
Fuel	Coal
Year of Commissioning	2015

Contact Us

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