BALANCE OF PLANT CAPABILITIES
Industry Insight

The growth of the economy is directly proportional to the growth of its infrastructure.

In India, to sustain a GDP rate of 7%, the rate of growth of power supply needs to be over 10 percent annually. In spite of the overall development that has taken place, the power supply industry has been under constant pressure to bridge the gap between supply and demand (All India average energy shortfall of 9.9% and peak demand shortfall of 13.5%). Around 440 million people in India do not have electricity.

Readiness of the nation: An aggressive mission called “Power for All by 2012”

| 1. Total Number of operational power plants in India | 133 |
| 2. Total Installed capacity | 2,03,000 MW |
| 3. Total number of plants owned by private sector (BOT) | 52 |
| 4. Total number of plants owned by the government | 81 |
| 5. Total installed capacity proposed (for 2009-10) | 14000 MW |
| Over the 11th Plan (ending 2011-12), intent to add | 78,000 MW |
| The 12th Plan (2012-17) targets additions | 100,000 - 110,000 MW |

OPPORTUNITY:
While there is surge in initiatives to generate power and install new plants; there is a need for reliable proven partners -“Balance of Plant” solutions providers to take the concepts to reality.

SPML - Single Point BoP Solution Provider

SPML has the core capability and competency as a preferred, trusted and reliable partner in the construction of large power plants in the domains of civil, mechanical and electrical works.

The experience is start-to-end balance-of-plant equipments, materials and solutions such as coal and ash handling systems, intake water, water treatment plants, cooling water systems, air-conditioning and ventilation systems, fire protection systems, cooling towers and civil works and services.

SPML provides engineering, procurement, construction, project management and commissioning services on a Turnkey basis to the Power Sector leveraging its proven project management and delivery experience of over 27 years, its construction capability, engineers and domain experts.

Engineering
SPML has strong demonstrated capabilities in engineering spanning from conceptualization stage, to feasibility studies, front-end design and complete detail design. Ably supported by its in-house capabilities to provide engineering services in masterplanning, development, marketing and management, SPML is well positioned to provide end-to-end seamless and integrated solutions.

Procurement
SPML has built a very strong supply chain of reliable global vendors and suppliers. Comprehensive selection procedures and processes in selecting and sourcing diverse equipments and materials such as high-pressure fabricated equipments, large rotating equipments, packages, skids, electrical and instrumentation systems. Adherence to quality standards and timely supply of equipments and materials has been a consistent feature of our projects.

Construction
SPML manages a large fleet of construction equipments. The infrastructure equipments combined with our core assets - experienced professionals, ensure value creation in every project, while setting new benchmarks.
SPML has the capabilities of complete system integration of power plants, detailed power plant engineering with the various auxiliaries and equipments in the BOP package.

Turnkey Engineering, Procurement, Construction & Commissioning of:

**Mechanical Package:**
- **Cooling Water System**
  - Cooling water intake system CW Piping and Cooling Tower
  - Debris Filters, Condenser Tube Cleaning System, Self Cleaning Filters
  - ACW System, Air Cooled Heat Exchangers & PHE’s
- **Water Treatment System**
  - Raw water/fire water reservoir, Raw water pumps
  - Raw water chlorination, Pre-treatment Plant, Water treatment Plant, Pre Filtration, UF, Softening Plant
  - Condensate Polishing Unit
  - RO, DM Plant, Desalination plants
  - Effluent Treatment Plant
- **Fuel/Material Handling System**
  - Ash Handling system
  - Gas Conditioning Skid
  - Fuel Handling system
- **General Mechanical Systems**
  - IA/PA System
  - Fire Fighting System
  - EOT Crane
  - Ventilation & Air Conditioning
  - LP Piping
- **Emergency DG Sets**
  - Diesel Generator set
  - Fuel system with day tank
  - Protection and control panel

**Electrical & C & I:**
- Plant Electrical Systems, Switchyards, Generators & Station Transformers
- LT Auxiliary and Distribution Transformers
- HT, LT Switchgears & Busducts
- Interconnection HT & LT cabling
- DC System & UPS
- Lighting Systems
- Plant Communication Systems
- Plant Electrical Systems
- Earthing and lightning protection
- Complete C & I system including SCADA

**Civil Works:**
- Soil investigation
- Complete Civil design and engineering
- Foundations for Turbine, Boiler, Air Cooled Condenser
- TG Building, Equipment Foundations and Plant Buildings
- Cooling Towers, Chimneys
- Reservoirs and Intake Systems
- Plant Civil Works, Roads, Trenches, Pipe racks, Culverts, etc.
- Sewage disposal system – Septic tanks
Signature Projects - Indicative List

Our team has worked tirelessly day after day to ensure that the project time schedules are met and quality standards adhered against odds, time after time, always, all the time. Here’s an insight into few of the signature projects in the domain of Balance of Plant.

Water Intake & Water Supply Package - Bakreswar Thermal Power Plant (3x210 MW)

- **Location**: Birbhum, West Bengal
- **Client**: West Bengal Power Development Corporation Ltd
- **Project Value**: INR 1400 Mn, USD 35 Mn
- **Status**: Completed (ahead of schedule)

**Scope of Work:**
Design, Build with subsequent Operation & Maintenance for 5 years Twin intake plant water system package for the Bakreshwar Thermal Power plant

- Pre-treatment, filtration, demineralization & waste water management
- Construction of Intake Pump House - 5576 sqm, with complete pumping machinery (electro-mechanical)
- Twin MS Cross Country Pipelines = 38 km long of 900mm dia
- Raw Water Treatment Plants = 72 MLD
- Construction of DM Plant - 60 MLD
- 120 M x 10.66 M span RCC deck Slab bridge on Chandravaga River
- Construction of Bituminous Macadam Road = 20 km
- 33 kV Switchyard, Double circuit 33 KV Transmission Line = 16 km
- 6.6 kV Under Ground Cable laying - 4 km

Completed the Project three months ahead of schedule. This was an OECF, Japan Funded Project.

WBPDCL is credited with this project being the first large package EPC contract for Plant water system in a Thermal Power Plant in West Bengal. It is apparent that without this concept of turnkey package such tight scheduling of procurement, construction and erection activities could not be achieved.

The success of this project has shown the advantages of large multidisciplinary turnkey design-cum-construct package of contract over traditional form of contracting, and this has set an example for similar projects in the Industry.
2 Raw Water Make up System from Panchet Dam Reservoir to Santaldih Thermal Power Station under WBPDCL (3x250 MW)

Location : Santhaldih, West Bengal
Client : The West Bengal Power Development Corporation Limited (WBPDCL)
Project Value : INR 985 Mn, USD 25 Mn
Status : Completed and commissioned

Scope of Work:
Intake Structure I Water transmission conveyance through Twin Pipeline System I Switchyard and Sub Station Building I Transmission Line I Roads.

Raw Water Makeup System:
- Turnkey execution of Intake & pump house
- Raw water transmission main
- MS pipeline - 54 Km of 914 OD
- Transmission Line - 27 KM
- 33 kv / 6.6 kV switchyard & substation
- Bituminous Macadam Road - 27 KM
- Voice communication system - along the 27 km stretch pipeline

A Matter of Pride: SPML is proud to be associated with this project which was integral to industrial resurgence in West Bengal. Problems regarding right of way of the pipeline (12,000 MT), which spans over nearly 25 villages were effectively sorted out and the project was successfully undertaken against the sudden and unprecedented rise of 6 metres in water levels.

3 Main Plant, CW & offsite Civil works package for Bongaigaon TPP (3x250 MW)

Location : Bongaigaon
Client : National Thermal Power Corporation Limited (NTPC)
Project Value : INR 3295 Mn, USD 83 Mn
Status : In progress

Scope of Work:
The Project involves construction of complete civil/structural works: Main Power House (Unit 1,2,3), Transformer Yard, Service / Control Room Building, Compressor House, DG Set Building, DM Water Pump House, CW Pump House with Civil, Structural and Architectural Works, CW Channel, CW Intake Duct, a host of Civil Works and complete offsite Buildings.

Main plant civil works for Bongaigaon Thermal Power Plant (3 x 250 MW)
- Number of Piles - 8550 Nos.
- Quantity of Excavation - 10,20,000 Cum
- Quantity of Concreting - 3,60,000 Cum
- Quantity of Structural - 38,500 MT
- Quantity of Road Work - 20 KM

Break through project in power plant with an esteemed client like NTPC; the project is being implemented against odds such as harsh weather conditions, dynamic geopolitical background and unpredictable rains. The dedicated efforts of the engineers and domain experts at the project site, has ensured a seamless progression of the project as per timelines - the benefits of the same can be leveraged by the state of Assam.
Main Plant Civil Works Package for Korba Super Thermal Power Project Stage III (1x500 MW)

Location: Korba, Chhattisgarh
Client: National Thermal Power Corporation Limited (NTPC)
Project Value: INR 676 Mn, USD 17 Mn
Status: In progress

Scope of Work:
Plant civil works at NTPC Korba Main Plant (1x500 MW)
All civil/structural works including piling:
- TG Hall, Mill bunker, boiler, ESP, Chimney, Control building, Service Building, Compressor house
- Duct supporting structure, Pump house, Common service & switchgear building, D.M. transfer pump house & ARCW pump house, Pipe/Cable Support Galleries & Trestles in out laying Area, Pipe/Cable pedestal in out laying Area, Roads and Drainage and Sewerage System, Canteen Building, Fire Station Building, Boundary Wall, Gate House and other miscellaneous work

Breakthrough project in power plant with an esteemed client like NTPC. Typical constraints of space while working in an existing plant site for a capacity expansion/addition had to be overcome, while meeting the time schedules and milestones as per the client requirements.

Circulating Water System and Fire Protection System (Package Code - A04) for Thermal Power Station-II Expansion (2x250MW)

Location: Neyveli, Cuddalore District, TamilNadu
Client: Neyveli Lignite Corporation Limited
Project Value: INR 332 Mn, USD 8 Mn
Status: In progress

Scope of Work:
- Circulating Water system comprising of CW open channel from Cooling Tower to CW pump house, CW pump house with forebay, maintenance bay, switch gear & control room, CW piping, ventilation system etc.
- Fire protection system comprising of pumps, diesel engines, piping of hydrant and spray water system with all associated civil, electrical and allied system.

Supply, installation, testing & commissioning of 5 Nos. Vertical Turbine Pumps of 22,000m³/hr at 22MWC with 1,800kW Motor.
Scope of Work:

Civil Work - Korba Offsite for NTPC
- Pump house & offsite civil work
- Pump house forebay, Duct, Drain, Fire station building, Permanent store, Roads, Switchgear rooms

All civil, piling, structural and architectural works of:
- C.W. Pump House Fore bay and switch gear control room
- Trash Rack and stop log gate with lifting arrangements
- CW duct and CW channel
- Hydrogen Generation Plant Building & M store Building
- Canteen Building
- Fire Station Building
- Pipe/Cable Support Galleries & Trestles in out laying Area
- Pipe/Cable pedestal in out laying Area
- Roads and Drainage and sewerage system
- Boundary Wall, Gate House, CISF office
- Earthing Mat
- Foam House Building
- Miscellaneous Work

Location: Korba, Chhattisgarh
Client: National Thermal Power Corporation Limited (NTPC)
Project Value: INR 279 Mn, USD 7 Mn
Status: In progress

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Scope of Work:

Design, engineering, manufacture, civil works, inspection, supply, erection, testing & commissioning and performance & guarantee testing of the equipment & system comprising mainly:

- 4 nos. Ash Water Re-Circulation Pumps - 1,100 m³/hr., 60 MWC
- Ash Water Pipeline - 800 mm NB x 8 mm x 8.500 Mtr. long.

Location: Barh, District - Patna, Bihar
Client: National Thermal Power Corporation Limited
Project Value: INR 237 Mn; USD 6 Mn
Status: In progress
**Station Piping Package for Simhadri Super Thermal Power Project - Stage II (2 x 500 MW)**

**Location**: Simhadri, Vishakapatnam

**Client**: National Thermal Power Corporation Limited (NTPC)

**Project Value**: INR 1049 USD 21 Mn

**Status**: In progress

**Scope of Work:**
Design, Engineering, Manufacturing, Shop fabrication, Assembly, Testing and Installation of complete station piping:
- Condenser DM Water Normal M/U System and Boiler & D/A Fill System
- Compressed Air System
- Raw Water System
- CW Blow down cum Service Water & APH Wash Water System
- Drinking Water System
- HVAC M/U System
- Condenser DM Water emergency M/U System and Condensate Spill System
- Sea Water make up system
- Sweet Water make up system
- Effluent & Sludge Disposal System

Signature projects illustrated in the pages, were a result of the consistent support and encouragement from all the stakeholders - our esteemed clients, partners, vendors, suppliers and business associates. Together as a team, we have been working to meet the project charter.
SPML Expertise in Hydel Energy Generation

Energy fuels growth - SPML leads in reliable, clean & renewable energy generation

SPML is spearheading, executing and managing high-value projects in the Energy sector, on a Public Private Partnership (PPP) & Build-Own-Operate-Transfer (BOOT) basis. With over 30 ongoing projects, across various states in India, SPML is a premier Mini-Hydel energy generation and management company, focused on managing energy needs of consumers.

SPML undertakes:
- Setting up, operation and maintenance of new hydro power plants
- Modernization & upgrading of existing hydro power plants

Indicative list of the projects

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<td>Kosi Basin Hydroelectric projects Phase-III (8 projects) - Aggregate 28 MW Capacity</td>
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*The above projects are being developed through special purpose vehicles and joint promoters

Kabini Mini - Hydel Power Plant - Crowning Glory

Project Capacity - 20 MW, Annual Generation - 65 MU

Overcoming enormous geological challenges, the project was completed in a record 20-month time frame. An eco-friendly, non-polluting project that taps surplus water which otherwise would not have been utilized. The plant ensured improved electrical system stability, reduced voltage and uninterrupted power supply to the region.

- Excellence in Project Management in Hydro Power Sector (SHP) from ENERTIA Publication as part of their Annual ENERTIA Awards 2008. The award is in the category for sustainable Energy & Power, for the development and efficient operation of the 20 MW (10 MW x 2) Kabini Hydro Power Project, the 2nd largest private sector mini hydel scheme in the Karnataka.
SPML Experience in EPC - Power Projects

SPML provides turnkey power solutions - concept to commissioning
- One of the largest contributor of rural electrification in India
- Power Transmission & Distribution projects forms more than 50% of SPML’s initiatives
- Over two lakh rural households across the country benefited through SPML’s Power Generation, Transmission and Distribution initiatives

* Power Generation, Transmission & Distribution - Contracting Projects

Construction & Operations Of Hydro/Thermal Power Plants
- Penstocks & Gates
- Turbines
- Electro Mechanical Equipment
- Transmission Lines
- Up to 220 kV
- Transmission Line Hardware
- Sub Stations
- Standby Generation
- Motor Control Centres
- Lighting
- SCADA & PLC
- Under Ground Cabling
- Up to 220 kV Substations

Rural Electrification - DTC, Transmission Lines, Household Connection, Metering
- Rural Load Management Solutions

Indicative list of the projects

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**Subhash Projects And Marketing Limited (SPML)** is a leading infrastructure development company with more than two and half decades of multi-disciplinary experience in Water, Power, Environment, Infrastructure, Manufacturing and Technology. An ISO - 9001: 2000 certified company, SPML has executed more than 400 projects across India and is currently developing infrastructure projects with projected investments worth INR 150 Bn; USD 4 Bn.

Having established its leadership in the contracting business, SPML has proven business capabilities in the Water, Energy, Environment and Infrastructure domain, on a Public Private Partnership (PPP) & Build-Own-Operate-Transfer (BOOT) basis.