



PIPELINES

South Sumatra to West Java Gas Pipeline Phase II for PT Perusahaan Gas Negara

South Sumatra to West Java Gas Pipeline Phase I for JFE Engineering

Uran Trombay Jawahardeep Offshore Oil Pipeline for ONGC

Pune - Sholapur Pipeline for Hindustan Petroleum

Mumbai - Manmad - Manglya Pipeline for Bharat Petroleum

Huwailah Flowline, Wellhead, Transfer line Project for Abu Dhabi Company for Onshore Oil Operations

PROCESS FACILITIES

Piping & Mechanical Work (Offsites & Utilities) Onshore Gas Development Project Phase III for Eastern Bechtel

POWER

Coal Fired Thermal Power Plant for PT. Merak Energi Indonesia/BHEL

STORAGE TANKS & TERMINALS

Petroleum Storage Expansion, Phase 5 for PB Tankers (Tankstore) Singapore

Onshore Gas Development Phase III for Abu Dhabi Gas Industries (GASCO)/ Eastern Bechtel

LPG Low Temperature Storage Tank for Reliance Industries

Site Erected Tanks for Eastern Bechtel

INFRASTRUCTURE (CIVIL)

Integrated Improvement cum Performance Based Maintenance on Hanumangarh to Ratangarh Road in Rajasthan. Package (HK-1) for RIDCOR

Integrated Improvement cum Performance Based Maintenance on Ratangarh to Kishangarh Road in Rajasthan. Package (HK-2) for RIDCOR

Integrated Improvement cum Performance Based Maintenance on Baran to Jhalawar Road in Rajasthan Package (LJ-2) for RIDCOR

Rehabilitation & upgradation of NH-76, Rajasthan (RJ-8) for NHAI

Rehabilitation & upgradation of Guwahati-Nalbari section of NH-31, East West Corridor, Assam (AS-4) for NHAI

Rehabilitation & upgradation of Guwahati-Nalbari section of NH-31, East West Corridor, Assam (AS-5) for NHAI

Rehabilitation & upgradation of Nalbari to Bijni section of NH-31 on East West Corridor, Assam (AS-8) for NHAI

Rehabilitation & upgradation of Lanka to Daboka section of NH 54, Assam (AS-16) for NHAI

Rehabilitation & upgradation of Nalbari to Bijni section of NH-31 on East West Corridor, Assam (AS-9) for NHAI

New Projects



Paradip - Haldia Crude Oil Pipeline Project Meeting Challenges



update



river crossings
totalling
4800 m

Punj Lloyd's expertise

in handling complicated horizontal directional drilling projects such as the Kandla-Bhatinda and Jamnagar pipeline projects helped it bag yet another prestigious job. The project was awarded to Punj Lloyd by Indian Oil Corp. as it was the only Indian company pre-qualified for this task. Once completed, this pipeline will allow Indian Oil Corp. to transport crude oil from Paradip port to Haldia Refinery till a refinery is set up at Paradip itself.

The scope of work included horizontal directional drilling of all major river crossings, totalling 4,800 m. The challenge of the project lay in the terrain that was hard, sticky clay mixed with coarse sand. The deadline of seven months was also a very tight one. The challenge of the project was the Mahanadi River Crossing of 1,381 m length.

Five of the crossings were in Orissa while one was in West Bengal. Mobilising the 250 T horizontal directional drilling rig in Orissa's remote locations that had few approaches, was an uphill task. Punj Lloyd had to acquire and grade 6 km of land to facilitate logistics at all the crossings.

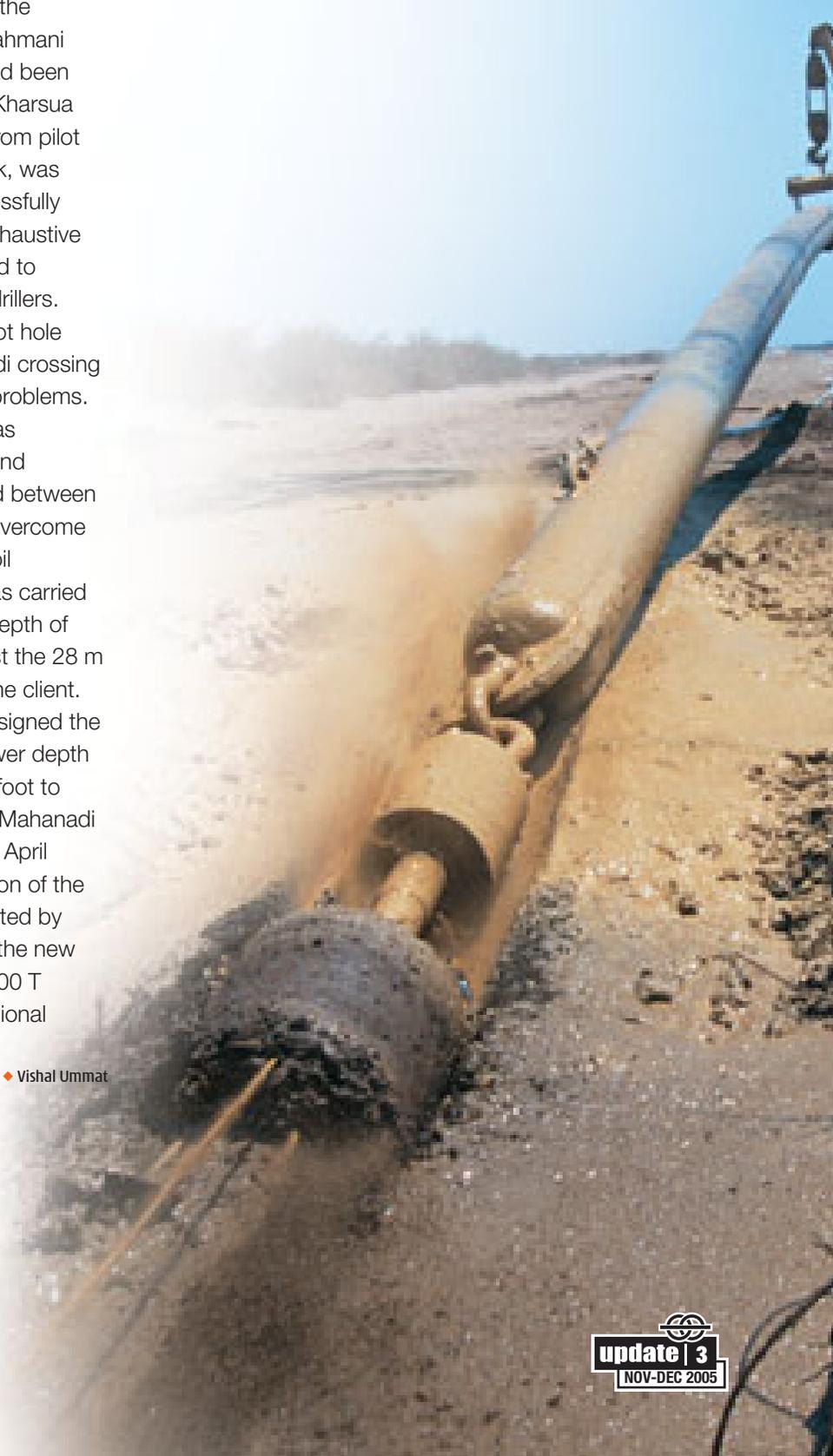
Work on the project began in March 2005, but heavy rain forced the team to stall operations. Within four months, string preparations at all locations except Suvernrekha had been completed and the crossings at Brahmani and Kharsua had been executed. The Kharsua river crossing, from pilot hole to pull back, was executed successfully as a result of exhaustive training imparted to surveyors and drillers.

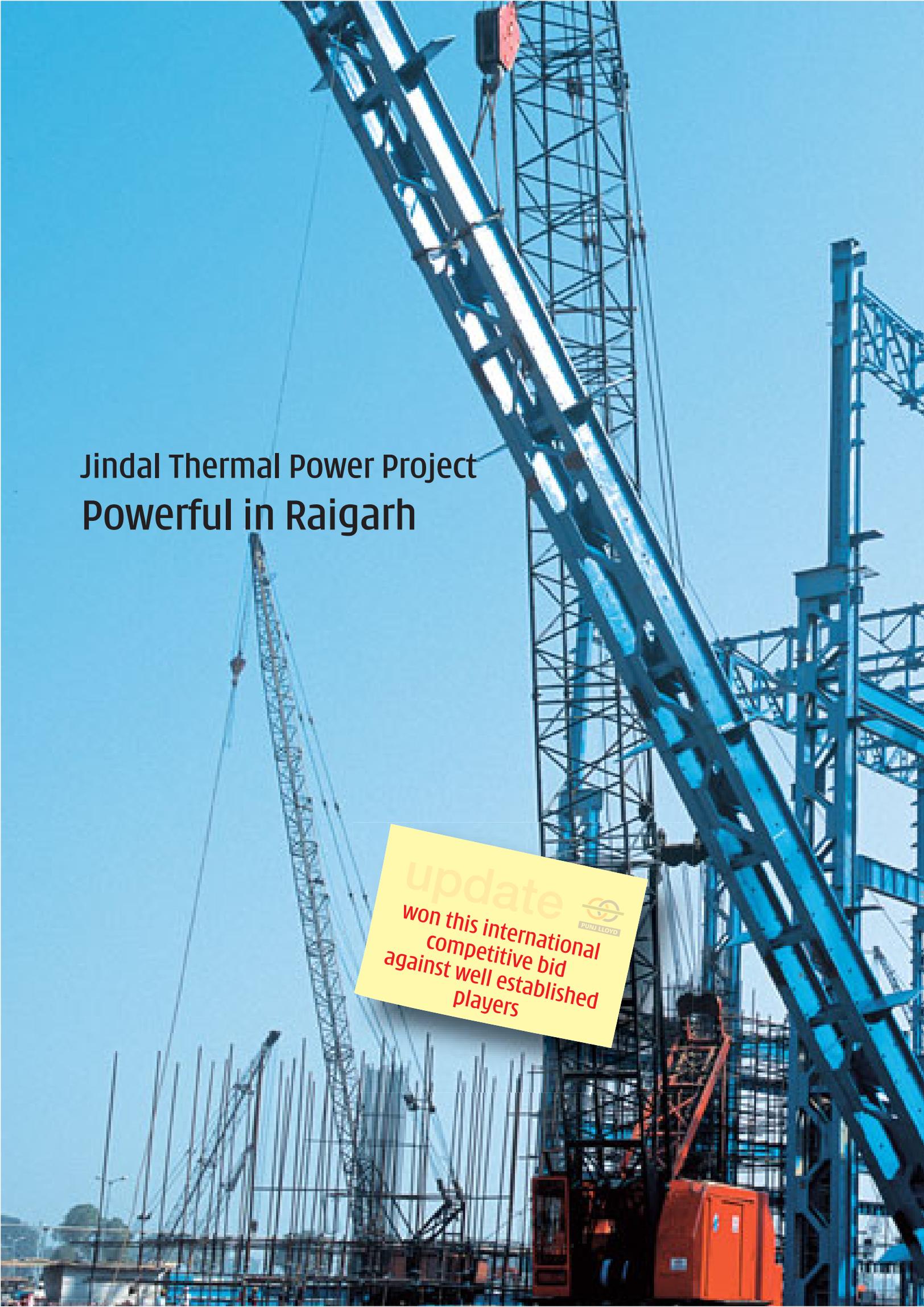
Drilling the pilot hole for the Mahanadi crossing posed serious problems. The soil here was extremely soft and N values ranged between 10 and 15. To overcome this problem, soil investigation was carried out at a lower depth of 40 m, as against the 28 m prescribed by the client. Punj Lloyd redesigned the profile at the lower depth and plans are afoot to renegotiate the Mahanadi river crossing in April 2006. Completion of the project is expected by May 2006 with the new Herrenknecht 400 T horizontal directional drilling rig.

◆ Vishal Ummat

Details of the six river crossings

Kharsua River	539 m
Baitrani River	558 m
Brahmani River	565 m
Haldi River	680 m
Suvernrekha River	1075 m
Mahanadi River	1381 m





Jindal Thermal Power Project Powerful in Raigarh

update



**won this international
competitive bid
against well established
players**

For Punj Lloyd, the Jindal Thermal Power Project in Raigarh has been a tale of some extraordinary achievements. First and foremost, Punj Lloyd won this international competitive bid against

seasoned and well-established players in the power sector. Several factors collectively worked in the company's favour. Primary among these were Punj Lloyd's outstanding technical expertise, excellent execution strategy, exceptional systems, special equipment, experienced

manpower and superior financial strength.

The project involves execution of civil work for 2 units and CW pipeline for the complete plant of 4 x 250 MW. The project site is located at Tamnar, 40 km from the nearest town of Raigarh, in the state of Chhattisgarh.

Major scope of work

- Power Houses
- TG Foundations
- Boiler Island
- ESP Foundations
- Cooling Towers
- Mill Building Foundations
- Duct Support Foundations
- ID and FD Fan Foundation
- Stacker Reclaimer Foundations
- Cooling Water System
- coal Handling Plant
- 38 m high RCC Coal Bunkers
- Ash handling Plant
- Chlorination Plant
- H₂ Generation Plant
- Workshop Building

The scale of the assignment is mammoth and its complexity and magnitude unprecedented.

The work comprises detailed engineering, fabrication, wrapping and coating, erection, testing and commissioning of the 5.8 km long Cooling Water piping network with pipes ranging from 600 mm to 2500 mm dia. The project is to be completed in an extremely challenging time period of 10 months. This is against the industry average of 15 months.

What has added to the complexity of the work and stringent timelines was the advent of the

monsoon rains within a month of Punj Lloyd commencing work. Due to excessive and continual rainfall, the soil absorbed and retained moisture. This resulted in swamp-like conditions which rendered the movement of heavy equipment and vehicles almost impossible. Progress continued, albeit at a slower pace than the team would have liked. However, once the monsoons were over, the Punj Lloyd team worked relentlessly to make up lost time. This extra hard work paid off and soon progress was back on schedule.

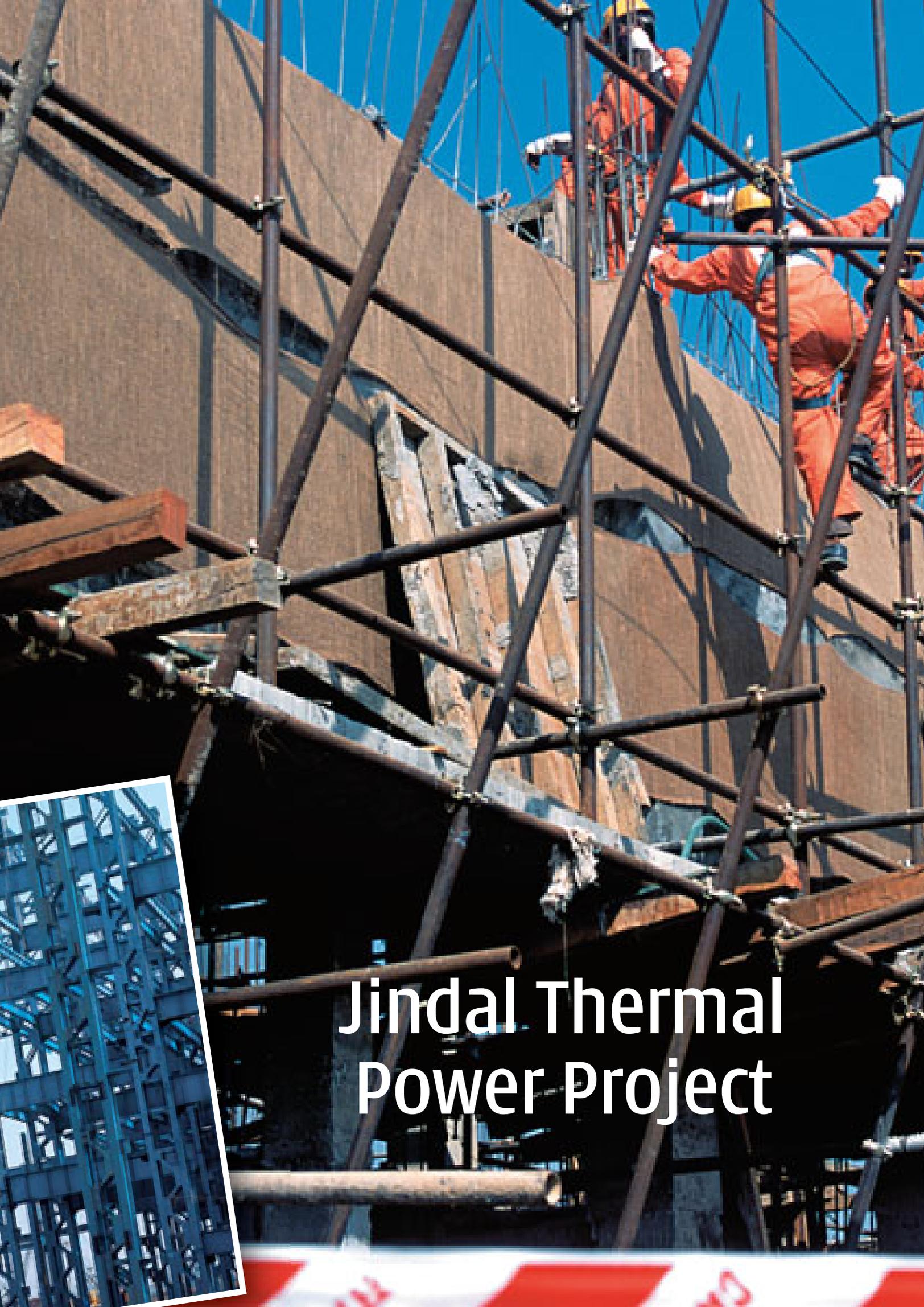
Some of the quantities involved

Piles	: 6,000 nos
Excavation	: 596,000 m ³
Concreting	: 98,000 m ³
Structural Steel Fabrication & Erection	: 15,000 MT
Brick work	: 17,500 m ³
Plastering	: 152,000 m ²
Metal Cladding	: 8,500 m ²
Grating	: 150 MT



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Jindal Thermal Power Project

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*its complexity
and magnitude
unprecedented*



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the variety of material
to be procured on this
project is very large

Within a period of 16 days the team mobilised 10 piling rigs, one excavator and six dumpers.

The procurement of huge quantities of material – including 70,000 T of cement, 15,000 T of structural steel, 17,000 T of reinforcement steel along with other materials had to be organised within a very short time period to ensure work carried on unhindered. This was made possible through meticulous planning and some dexterous vendor management strategies.

The variety of material to be procured on this project is very large. Therefore, vendors supplying the best quality reinforcement, cement, false flooring panels, metal cladding, waterproofing material, and sanitary fittings have been carefully identified and finalised.

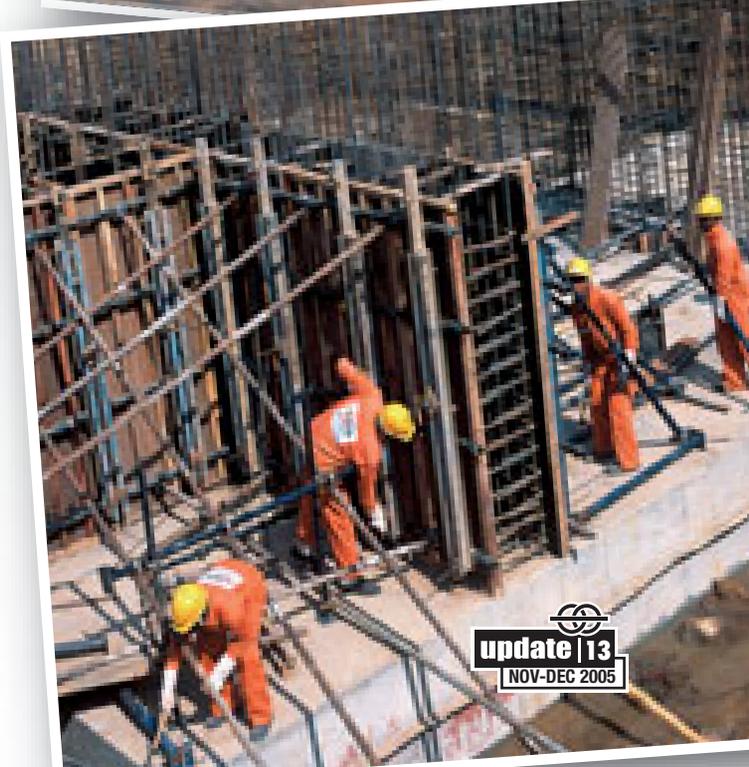
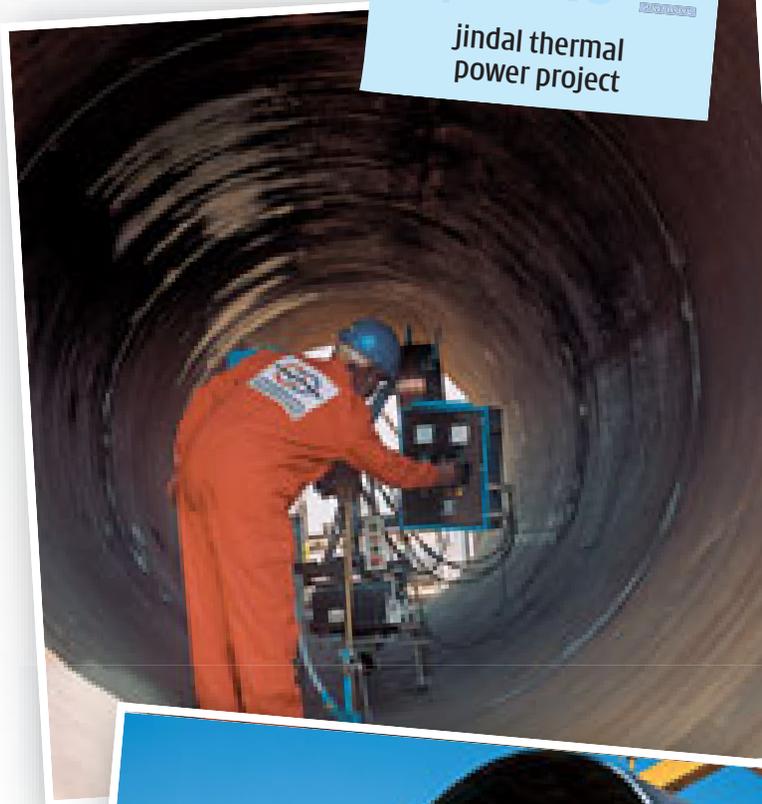
The tight schedule necessitates simultaneous work on several fronts like the power house, ESP area, boiler area, mill area, cooling towers, CHP tunnels, CW pump house, CW tunnels and coal handling plant at the mine area. In addition, single pours are being carried out to avoid cold joints.

There are as many as 275 Punj Lloyd staff along with 3,000 contract labourers at the site. As a corporate practice, Punj Lloyd makes it a point to use local resources while executing its projects all over the world. Hence, even on this project, local labour has been hired and local vendors have been engaged to supply aggregate, sand and diesel.

During the last eight months, 41 conventional rigs, two mechanical rigs and one hydraulic rig has been mobilised. Piling work has been accomplished and 6,000 piles of 450-700 mm dia have been completed in five months.

Some of the prime achievements of this project so far have been:

- Completing 73 piles
- Erecting 317 MT of structured steel in a single day.
- Achieving 50,000 m³ RCC within four months.
- An HSE award given by the client to the team for good performance.





As the project moves forward, enthusiasm levels at the site remain buoyant. The work is progressing well on track, with the end goal of completing the project on, or even before time.

◆ Anupam Dhiman

update 

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HSE at Thermal Power Plant Project

The Jindal Thermal

Power Project mobilised 3,000 workers.

Excavations executed were to a depth of 7 m for the Turbine Generator foundation. The job also entailed putting up a powerhouse at a height of 36 m. The high risks involved in this power project work called for some strict precautions to be put into place.

Pre-employment medical tests were made compulsory and every member of the team was trained in the areas of health and safety. Personal Protection Equipment of IS standards are mandatory. Those working at a height of 2 m and above was medically examined before they commenced work. A special height pass certified that they were fit to work at such heights. These workers were provided with full-body safety harnesses. All critical locations were equipped with lifelines and fall arresters. Daily Tool Box talks and regular HSE training were conducted on-site to inculcate the HSE culture among the work force.

Each electrical winch was equipped with



electrical protection of ELCB and double earthing. Continuous water sprinkling kept the site dust-free. In addition, special measures were also taken to reduce noise pollution.

Deep excavations were conducted under the supervision of HSE officers, and that too only after adequate safety measures were taken. All lifting tools and tackle were tested before use every day. Slopes and access ways were built to prevent landslides.

The area was barricaded and cordoned off with bright illumination at night. Ambulances with qualified first-aid specialists were parked in the vicinity in case of an emergency.

With such safety measures in place, Punj Lloyd achieved two million safe man hours without lost time injury. Two team members won

Thermal Power Plant in Indonesia

Punj Lloyd recently collaborated with Bharat Heavy Electrical Limited (BHEL) to jointly bid for the 2 x 60 MW Coal Fired Thermal Power Plant at Merak, Indonesia. The contract, secured on a turnkey basis, will be executed jointly by Punj Lloyd and BHEL through its associate company, PT Punj Lloyd Indonesia.

PT Merak Engineering, the client for this project, is a Chinese company. Therefore winning the project against Chinese competitors was not an easy task. This is the largest EPC contract secured by BHEL for a coal-based thermal power station in the international market.

From the financial structure, the plot plan and layout to the configuration of the main machinery, the boiler and turbine, Punj Lloyd has evolved the entire concept of this captive power project. The civil work, balance of plant equipment (consisting of mechanical, electrical and C&I packages), erection and commissioning of all equipment including the boiler and turbine will be done by Punj Lloyd. The complete engineering of the project will also be done by Punj Lloyd. The project is slated to be completed in 24 months.

◆ Bivash Banergee

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personal protection equipment of IS standards was mandatory

awards of best safety engineers for their roles in implementing a safe working environment at the Raigarh site.

◆ Vivekanand Maroor

Safety Processes ONGC Gas Terminal Area

Punj Lloyd has been working in the ONGC Gas Terminal Area at Hazira for the last six months. The project involved civil, mechanical and structural work for British Gas Exploration & Production India Ltd. The project entailed hot tapping inside the gas terminal at five different locations, including 8" dia flare line at a height of 9 m and 24" and 26" dia process lines inside the pit at a depth of 5 m.

Stringent safety measures were made mandatory to counter the hazard of high percentage

of hydrocarbons in the atmosphere. Besides the use of PPE at the site, special precautions were taken before commencing hot work inside the area. The ONGC Permit System under the supervision of ONGC safety officers was implemented.

Since safety is critical to the project, prior to hot tapping, several safety precautions were taken. Once work permits for hot tapping were procured, general plant safety briefings were conducted. Emergency escape routes and muster points were marked and contingency

plans discussed with the work force. Tool Box Talks were conducted regularly before commencing work. Emergency evacuation procedures were explained and radio contact provided to the team. Additionally, during welding and tapping, the area was evacuated and barricaded.

This high level of safety consciousness earned Punj Lloyd the Best Contractor Safety Award by ONGC. The project was completed on time in December 2005.

◆ Supratim Ghosh

update 
best contractor
safety award
by ONGC



Punj Lloyd Awarded Again

Over the years, awards and accolades have been pouring in for Punj Lloyd. The company has been a regular recipient of the prestigious project export awards from the Project Exports Promotion Council of India for the last three years.

Punj Lloyd won the PEPC award for breaking new geographical boundaries upon securing projects in Kazakhstan and Turkey in 2003. Then, in 2004 came the award for Maximum Overseas Construction Contracts Secured and Foreign Work

Secured in New Areas.

In 2005, Punj Lloyd was declared second best in the categories of Maximum Value of Overseas Construction Contracts Secured and Maximum Turnover from Overseas Construction Contracts. On December 12, 2005, the awards were presented by E V K S Elangovan, Hon'ble Minister of State for Commerce & Industry and received by Tarwinder Singh, Director, Infrastructure Services of Punj Lloyd Limited. ◆





Annual Greentech Environment Excellence Award 2005

Punj Lloyd has walked away with the prestigious 6th Annual Greentech Environment Excellence Award for 2005. Greentech Foundation is an NGO that encourages industry to follow impeccable health, safety and environment practices. While the award is gaining popularity, this is the third consecutive year that Punj Lloyd has been honoured by the Foundation.

The award is coveted as it reinforces the company's commitment to environment protection. It also enhances its eco-friendly corporate image while boosting the morale of employees and stakeholders. Moreover, it motivates the management and staff of organisations to keep up standards of excellence

and eventually helps develop the client base.

For the Greentech Environment Excellence Award, the Foundation invited nominations from Industrial and Service Sector organisations. Documents were submitted in support of their environmental achievements and these were evaluated carefully.

The award is pegged to encourage strategies that improve Environmental



Management standards.

It lays emphasis on duties, responsibilities and concerns that protect the environment and save it from pollution and damage. It also encourages environmental professionals to become role models for others. Above all it recognises Industrial units/Service Sector Units/Organisations for their contribution to environment protection.

The Greentech 2005 Conference & Exhibition on Environment Management was held in October 2005 in Goa. The Certificate and Gold Award was presented to Praveen Puri of Punj Lloyd in the presence of several prominent representatives from Government and the industrial sector. ♦

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