GOING THE EXTRA MILE

TEXT: JUNIOR ISLES **PHOTOS:** WÄRTSILÄ

THE FIRST OF 11 NEW WÄRTSILÄ power plants destined for Bangladesh was inaugurated in March of this year. The requirement to complete the Naryanganj project in just 270 days resulted in the Wärtsilä team providing unplanned assistance.

SATISFYING A PROJECT BOOM IN BANGLADESH BY STREAMLINING THE DESIGN PROCESS.

Economic growth in Bangladesh is rapid. According to the World Bank, GDP is expected to grow at 6.2% in the 2011 fiscal year. Unfortunately, development of energy generation resources on which this growth depends is not progressing at the same rate.

Although Bangladesh is heavily dependent on gas, issues affecting related exploration activities are jeopardising plans for the development of new power generating capacity. To avoid a severe power shortfall, the government plans to add 2000 MW of new capacity each year using a combination of different energy sources and technologies.

The first step has been to turn to the use of generating facilities driven by engines running on heavy fuel oil (HFO). As well as issuing a number of project tenders, the Bangladesh Power Board (BPB) also called on independent power producers (IPP) to develop HFO-based 'quick rental' projects that can be completed on a fast-track basis to combat the acute shortage of power. Wärtsilä has been selected as the equipment supplier for five of these.

BOTH REWARDS AND PENALTIES

"Summit Power Ltd and Khulna Power Company Ltd (KPCL), two of our old customers, and the Orion Group, a new customer for us, are responsible for executing these quick rental projects," says **Jan Erik Möuts**, Senior Project Manager, Wärtsilä Power Plants, Middle East & Asia. "The deal with BPB means they are rewarded for completing the projects in a period of nine months, but heavily penalised if there are any delays. They asked us if we could help them construct the plants quickly."

Wärtsilä accepted the challenge. IPPs awarded quick rental projects have demonstrated considerable faith in Wärtsilä's performance by signing contracts with the company in more than 85% of them. This trust has not been misplaced, as the first project was completed this spring. On 20 March 2011, the date set for completion, **Sheikh Hasina**, Prime Minister of Bangladesh, inaugurated the Naryanganj power plant just 270 days after the contract for the plant's construction was signed.

POWER FOR IRRIGATION AND INDUSTRY

Wärtsilä and Summit Power, Naryanganj's owner, have a longstanding relationship. The first project executed by Wärtsilä for KPCL, in which Summit Power has a 50% stake, was completed in 1998. Wärtsilä has subsequently completed another six projects for Summit Power.

As its primary function is to provide the power required for irrigation and industrial activities, the Naryanganj facility is an important element in the region's agricultural and industrial sectors. Its six 18-cylinder Wärtsilä 46 engines in V-configuration running on HFO generate 100 MW and can be converted to run on gas when this fuel becomes available.

Naryanganj was the first of the 11 new Wärtsilä power plants contracted for construction in Bangladesh to be completed. The scope of supply for most of these projects, whose total generating capacity is 900 MW, was finalised at much the same time in May-June 2010. This added an extra dimension to the fast-track completion schedule for Naryanganj.

SIMILARITIES MEANT PLANT DESIGN COULD BE STREAMLINED

"We suddenly had 10 active projects for Bangladesh and had to work out how to handle all of them at the same time," says Möuts. "So we set up a programme to assess their similarities and identify the smartest way of working."

Two engine types are common to all the projects – some use Wärtsilä 46 engines and some use the Wärtsilä 32. Several of the plants use the same number of engines, which

allowed the plant design process to be streamlined. It also enabled Wärtsilä to source the materials required in a short timeframe.

"The project team had to call on resources from different countries," says **Mahboob Morshed**, General Manager Services, Wärtsilä in Bangladesh. "Together with our people in Bangladesh, this international team established a sort of family culture with the customer, making everything possible."

TIME PRESSURES INCREASE

Ever since its first project in Bangladesh in 1997-1998, Wärtsilä has maintained close working relationships with its customers and established an excellent service business, building the company a solid reputation. The award of an O&M contract for the Naryanganj plant was one result.

Wärtsilä's contracted scope of supply for Naryanganj covered delivery of the engines. Summit Power was responsible for the balance of plant, some auxiliaries, plant construction and installation. But completing the project in just nine months proved too big a challenge for the company to handle alone.

Naryanganj is the first land-based HFO power plant in Bangladesh, and it was also the first time that 18-cylinder Wärtsilä 46 engines were being installed in a fixed location. Even though Summit Power had no previous knowledge of how to handle such large devices, the construction team proved equal to the task. Each 275-tonne engine was transported by barge to a location near the power plant site and then rolled the last few hundreds of metres using methods similar to those employed in building the pyramids. But more serious challenges lay ahead.

EXTENDING A HELPING HAND

One of the biggest problems faced by Summit Power was the sourcing and shipping of auxiliaries in such a short timeframe. Unfortunately, the ship carrying these items, most of which came from Europe, was delayed by approximately 30 days.

Summit Power was about to concede defeat when Wärtsilä stepped in and agreed to provide assistance not included in the agreed scope of supply. "We stepped outside our normal limits on this occasion," says Morshed. "After a meeting with our customers, we understood that they had essentially given up. We therefore worked together on a plan which would help them get the job done."

With Wärtsilä's assistance, the Summit Power team was reorganised and the decision was made to execute a number of tasks in parallel. Summit Power personnel handled the civil works while Wärtsilä personnel helped in the completion of mechanical and electrical work.

With the exception of the shipping problems, the Naryanganj project proceeded smoothly. Issues that did arise were resolved through good communications routines built up over the years. "I had completed three projects with Summit Power before this one, so communication was no problem," says Möuts. "We always knew exactly whom to call."

"We were all working towards the same goal – getting the project completed on time," he says. "In projects like this, it's important to realise that every single day counts. You have to do a lot of work in the early stages, and you have to start running right from day one. You cannot leave things until the final lap and then try to catch up!"

[Above] Each 275-tonne engine was brought in by barge and rolled the last few hundred metres. [Left] Naryanganj is the first land-based HFO plant in Bangladesh.