

INDIA

SINAR MAS COMPLETES INDIAN COATED PAPER MILL

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INDONESIAN COMPANY AIMS TO SET NEW STANDARD FOR FINE PAPER IN INDIA.

IN THE SUN-BAKED HILLS NEAR BHIGWAN, EAST OF PUNE, ON the road to Solapur in Maharashtra State, Indonesia's Sinar Mas has built one of the finest coated paper mills ever seen in India, or anywhere else. The greenfield, 110,000 metric tons/year fine paper mill was undergoing start-up trials this spring, with construction expected to be finished by summer.

Sinar Mas is emphasizing quality at the mill. It intends to make coated paper in India that is as good or better than paper produced in Europe. "We will, I think, make history in this country ... we will change it," said Anil Kaul, vice president of operations. "When you see the equipment here, there is absolutely nothing lacking," he said, "absolutely nothing lacking."

Kaul had worked at the Shree Gopal mill until April 1993. He worked at Sinar Mas' P. T. Pindo Deli pulp and paper mill in Indonesia for a couple years after that, then became involved with the Bhigwan mill project in 1995.

The mill site was selected in part because of favorable government incentives and access to a supply of water. It is also situated to serve the bulk of the Indian coated paper market, which Kaul estimates to be around 120,000 metric tons/year. Between 65-70% of the demand comes from the western and southern parts of the country, he said.

Civil engineering for the mill began in February 1995. The company spent a lot of time meeting with local farmers, convincing them of the benefits of having the mill locate in the area and easing their concerns about the water it would be using and discharging.

Although the mill is located on a major highway (by Indian standards), the nearest town large enough to provide housing and schools for company employees and engineering staff is almost 30 km away. As the mill becomes operational, it will attract merchants and development to the area, said Jim Tsai, assistant to the executive director. Housing, located on a 300-acre site across

the road from the mill, is being provided in colonies typical of other Sinar Mas mills. (The mill itself occupies a 700-acre site.)

Perhaps the greatest challenge the mill will need to deal with over the next year is logistics. For the start-up period, hardwood pulp is being shipped from Indonesia and trucked in from Bombay. (India's roads are notorious for accidents. The mill expects to lose at least one truckload out of every 100.) A rail line runs within a few kilometers of

the mill, but a link has yet to be built. The mill also plans to import a better grade of coal for the operation than is found in India, with an ash content of roughly 3% vs. 40%. Although the material itself will cost more, it will end up costing less to ship. Clay and calcium carbonate are available in India, but for the quality the mill wants, it will need to import those materials from Europe and wait three months for delivery.

Short fiber is being supplied from Indonesia by PT Indah Kiat's Jambi mill, near Palembang in central Sumatra and the Perawang mill in the Riau Province of Sumatra (see *Tappi Journal*, June 1995, p. 43). "That's our advantage," Kaul said, both because it's a better quality fiber and because wood fiber is less readily available in India.



The Sinar Mas mill, near Bhigwan, India, as seen from the effluent treatment area



Mill manager Anil Kaul



The quality control lab



The warehouse and shipping area



The pulp storage area

When fully staffed, the mill will employ about 700 people, roughly a third the number an older mill in India might require. Technicians and operators from Taiwan have been helping with the startup, and permanent staff have been recruited from Indian mills.

To a certain degree, the company had to introduce cultural changes into the workplace. For example, by tradition, certain groups would not handle broke. So Sinar Mas has made it a standard requirement for employment at the mill that all general workers are each required to keep their area clean. Repulpers are located under each section of the machine, including finishing, so that broke can be cleared quickly.

Total length of the manufacturing building is 600 m. At the stock preparation end, Sinar Mas can store a 4- to 5-day supply of pulp, sorted in long fiber and short fiber, inside its warehouse. At the other end, finished goods are stored and shipped from a 150-m x 36-m warehouse with 25 bays.

Sinar Mas contracted with Sunds Defibrator to supply the stock preparation system for the mill. Equipment supplied by Sunds includes two PreFlo bale pulpers and six Conflo refiners for the softwood/BCTMP and hardwood lines, along with two DeltaScreen units and two Deflo deflakers for the broke handling line. The order also includes three under-the-machine Preflo pulpers, a couch pit and five Preflo finishing pulpers, as well as a large Conflo JC-04 for the trimming position in the stock

proportioning system, according to Sunds. The system also includes an Ahlstrom-designed deculator.

Pulp is fed to a Voith Sulzer paper machine fitted with a diffusion head box, a trip-nip and fourth press. Kaul noted that the rolls are crown-controlled and steam vented. A Valmet dryer hood encloses Voith-designed dryers made by a licensee (Larson & Toubro) in India. The unit is fitted with a Yokogawa DCS system.

A BTG on-machine roll coater with infrared dryer gives the mill added flexibility to produce art paper or surface-sized paper on the machine. A Nipco soft-nip calender is equipped with MD and CD basis weight measurement, CD caliper, and CD moisture control.

Finished paper can be run through a Jagenberg off-machine, four-blade coater and one of two IHI supercalenders, then routed to a Jagenberg Vari-roll rewinder or Atlas rewinder. The Jagenberg coater can run at 1300 m/min, Kaul said. It has a maximum deckle of 3.15.

Coated papers can be air-dried, cylinder dried, or run through infrared dryers.

The mill's finishing area has also been designed to adapt to market conditions and customer requirements. Sinar Mas can process up to 300 tons/day on its three automatic Will Pemco Synchrofly sheeters, for example. A laminate machine can handle 400g/m² boards.

The finishing area is air conditioned, providing protection from temperatures that may reach 43° C (109° plus F) outside.

The mill has two wrapping machines to encase its finished products in protective plastic. That's important to protect the paper from monsoon rains, insects, dust, and damage during shipment.

The mill pipes in water 6.5 km from a large reservoir. It's allowed to pump 35,000 m³/day Treated effluent will be discharged to a drainage canal 11.5 km away from the mill. The treated effluent will exceed Canadian standards, Kaul said. It will be cleaner than the water obtained from the reservoir that serves the area.

Effluent from the mill passes through a belt filter, to remove the primary sludge, and a centrifuge, to process bio-sludge. From a primary clarifier, the effluent passes on to two aeration ponds, then to a secondary clarifier. It's given tertiary treatment in a "clariflocculator," then chlorinated to disinfect it and reduce the BOD. Next, the



Refiners



The dryer and winder at Sinar Mas India



The forming section of the new Voith paper machine



The boiler complex under construction

water is routed through pressure sand filters containing anthracite. That brings the suspended solids below 5 ppm. Finally, an aeration cascade brings the oxygen content of the water up to 5.5–6 ppm before final discharge. The mill intends to recirculate about 70% of the water it uses. During startup, all of the treated water was being re-circulated to the mill.

Because the mill is so different from other paper mills in India, Sinar Mas has had to look outside the country for most of its research and testing support. Pilot trials have been conducted at the machine manufacturers' facilities.

A well-equipped quality control lab, divided into wet and dry sides, will allow Sinar Mas to monitor and verify the quality and printability of its products. An IGT coating tester, for example, reveals how the mill's paper can be expected to perform under actual printing conditions. An L&W densometer, a Kajaani FS200 fiber analyzer, and a full range of other testing devices will

measure physical properties from porosity, basis weight, tensile strength, and Parker print to hygro-expansion, TSO, tear, TMI, folding, burst, gloss, and color.

Although electrical power is available from the national grid, brief outages are common once or twice a day. The labs have an uninterrupted power supply to help protect the equipment and maintain the integrity of test results. The mill is installing a 30-MW power plant to meet its own electrical needs.

The mill's circulating fluidized bed combustion boiler has a capacity of 175 tons/hour. An electrostatic precipitator is expected to remove 99.8% of the particulates from the operation. Ash silos have a 6-month capacity, if the mill uses imported coal.

If all goes well, the mill could capture much of the market for coated printing paper in India. It will certainly raise the expectations in the India printing industry. **TJ**

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