

Identical COMPACT twins?

HAI!



▲ The two identical *PrimeLineCOMPACT* machines are designed for a speed of 1,800 m/min and for a paper width of 2.8 m.

“Hai” is Japanese for the English word “Yes!” Corelex Shin-Ei recently started up two identical ANDRITZ tissue machines at its greenfield mill near the base of Mount Fuji, 95 km from Tokyo. According to the President of Corelex Shin-Ei, the machines are “Robust. Efficient. Environmentally friendly. Easy-to-use.”

The Corelex Group started as a machinery company, San-Ei Regulator, known today as Corelex San-Ei. In 1969, the decision was made to go into papermaking. That was the beginning of Corelex Shin-Ei. Today, the company makes toilet and facial tissue from recycled paper in Japan. There are also mills in Vietnam that sell toilet and facial tissue products to the local market.

“Our first product was Kurochiri, known as black tissue (although it was a gray in color), because it was the simplest and the least expensive kind to produce,” says Satoshi Kurosaki, President of Corelex Shin-Ei. “It was produced from recycled newspapers and magazines. No deinking, just a pulper and a tissue machine.”

This tissue machine, which had a suction former and cylinder design, was upgraded. Maximum speed was 1,050 m/min, and Yankee diameter was 12 ft (3.66 m). “In 2014, we made the decision to consolidate our production into one greenfield tissue mill,” Mr. Kurosaki says. “There were financial incentives, since we paid rent for

the location of the old mill and we paid taxes for a location in Fuji City center.”

The greenfield mill is in Fuji City (eastern Shizuoka Prefecture), nearly at the base of Mount Fuji. It was constructed with three factors in mind: efficient production, the environment, and disaster management for the local region.

Strict noise control

“We make every effort to adhere to all environmental requirements, and this mill has virtually zero emissions,” Mr. Kurosaki explains. “The most challenging for us are the noise regulations. There is a residential district right next to our mill. We are not allowed to make more than 45 decibels of noise during night-time. For comparison, this is equivalent to the noise of a Toyota Prius hybrid car at idle.”

Due to the modern facility and practically zero emissions, the mill looks and operates like a modern office building. In addition,

trees have been planted to maintain the aesthetic beauty of the area, where Mount Fuji dominates in the background with its snow-capped peak.

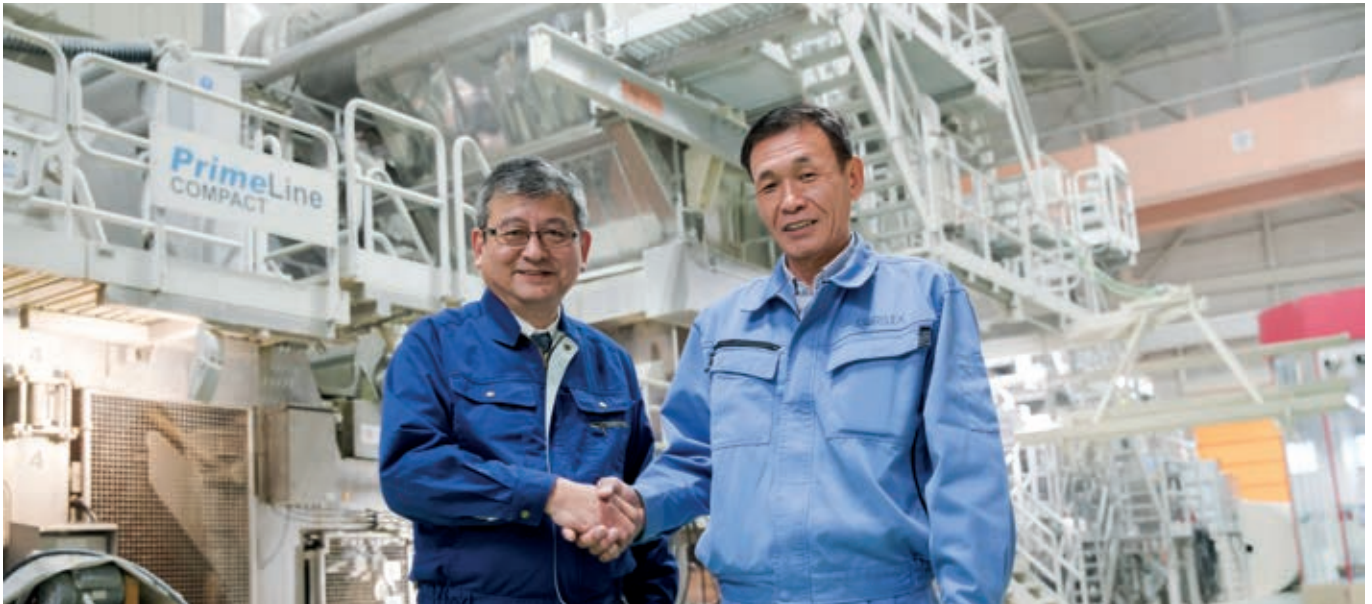
Open for emergency relief

The Pacific Ocean is only four kilometers away from the mill gate. Since Japan is vulnerable to earthquakes and tsunamis, the mill is purpose-built to sustain such forces. Multiple steel stairwells provide access to the terrace surrounding the offices upstairs. “The evacuation space is 28 m above sea level and is easily accessed,” Mr. Kurosaki says.

Corelex Shin-Ei signed a disaster management agreement with other entities, including the city of Fuji so that the mill can serve as a refuge shelter for local residents if something happens. The offices can be quickly transformed into a civilian crisis center with sustainable reserves of food and water.

Yankee – the heart of a tissue machine

“Before making the decision about the tissue



▲ (l-r) Toshio Okunishi of ANDRITZ and Takemi Tanaka of Corelex.

machines, we visited several suppliers,” says Takemi Tanaka, General Plant Manager. “We got a good reference for the ANDRITZ Steel Yankee delivered to Corelex Doh-Ei Paper, one of our group’s companies, in 2012.”

Doh-Ei Paper replaced a cast iron Yankee with an ANDRITZ Steel Yankee in order to get higher drying capacity and energy savings. According to Toshio Okunishi, Group Manager for ANDRITZ in Japan, the performance of an ANDRITZ *PrimeDry* Steel Yankee is better than the performance of a cast iron Yankee of the same size. “Steel Yankees have an evaporation rate 10-15% higher than cast iron, which results in 8-10% better throughput,” Mr. Okunishi says. “Steel Yankees are considered safer than cast iron due to the

elasticity of the steel. We use state-of-the-art manufacturing methods to ensure safety and quality.”

COMPACT solution

“During the tender phase for the new tissue machines, we had a lot of constructive discussions with ANDRITZ engineers, and they proposed various possibilities to improve our production efficiency,” Mr. Kurosaki says. “We consider ANDRITZ to be a reliable supplier.”

ANDRITZ supplied two identical *PrimeLineCOMPACT* tissue machines with Steel Yankees. For the new recycled fiberline, ANDRITZ also delivered two Speed Washer units and a CompaDis disperser.

The 2.8 m trim ANDRITZ machines have maximum design speeds of 1,800 m/min. They are equipped with *PrimeDry* Steel Yankees with 15 ft (4.57 m) diameters. The machines produce high-quality tissue from recycled fiber for the production of core and coreless toilet paper rolls and facial tissue paper. The coreless tissue roll is a unique patent developed by Shin-Ei Paper.

According to Mr. Okunishi of ANDRITZ, the *PrimeLineCOMPACT* machine design is ideal for customers who appreciate a standardized, modular approach. “The idea behind COMPACT is to combine cost efficiency with proven quality,” he says. “The key to its cost efficiency is the level of standardization, which reduces engineering hours, manufacturing hours, installation time, and even transport costs. COMPACT ensures a certain production quantity and high quality in a streamlined, cost-effective package.”

The highlights of the twin *PrimeLineCOMPACT* machines at Shin-Ei Paper are the fully automated raw material handling and the Steel Yankees with head insulation to conserve energy. For each machine, a single-layer headbox feeds stock to a *PrimeForm* CrescentFormer that has a very high dewatering capacity. Whitewater flow from the former is controlled by special guide vanes so that the energy of the water jet is broken

▼ Parent rolls of tissue.





▲ Tissue on the reel – TM1 produces heavy weight toilet tissue; TM2 produces lighter weight toilet tissue and facial tissue.



outside the machine. This improves the web section's housekeeping.

The press section consists of a single suction press to dewater while maintaining high product quality. Beginning at the creping doctors, the sheet run is equipped with threading and sheet support equipment.

Head insulation around the Steel Yankee conserves thermal energy during the production process. Potential steam savings is in the range of 2-5%. In addition to energy savings, the insulation produces less contamination due to its even surface.

A new kind of “converting”

The raw material for the greenfield mill comes from areas within 150 km from Fuji (e.g., Tokyo, Nagoya, and Niigata). “Of course we prioritize neighboring areas when collecting waste paper,” Mr. Kurosaki explains. “These are mainly collected by third-party companies, but we pick up papers containing potentially sensitive information ourselves from local governments, because we have the clearance to do this work. Technically speaking, we are converting discarded government documents into disposable tissue!”

Every project has challenges. “There were some delays during erection, but I appreciated ANDRITZ’s effort to resolve the issues thor-

oughly,” Mr. Tanaka says. “We put our heads together and arrived at the right solutions, and worked cooperatively through the issues.”

“Every problem is an improvement opportunity,” Mr. Kurosaki says. “Sometimes we feel that European suppliers could be more flexible with some details. Their approach – which is maybe a cultural difference – might be a reflection of the confidence they have in their excellent technologies.”

The need for speed in Japan

With the new mill taken into use, several old tissue machines were shut down and their production has been integrated into the two high-performance tissue machines.

The start-up of the twin ANDRITZ machines took place in spring 2015. Since then, the machines have reached speeds up to 1,900 m/min (1,800 m/min design) on 100% recycled fiber. “We can be proud of this, the fastest in Japan,” Mr. Kurosaki says. “The machine in San-Ei’s Kawasaki mill runs up to 1,600 m/min, and machines producing toilet tissue with virgin pulp in Japan are also running at 1,600 m/min.”

The grade mix for the two machines is split such that TM1 produces heavier weight toilet tissue, while TM2 produces lighter weight toilet and facial tissue products. “In addition to the speed, we are producing high-quality products from lower quality raw materials,” says Mr. Tanaka. “With ANDRITZ tissue machines, we are running at the highest speed level in Japan even utilizing recovered fiber. It is amazing. I say with pride that we are the most vibrant company of our size, and we will keep developing.”

Mr. Tanaka has a very high opinion of the user-friendliness of the *PrimeLineCOMPACT* machines. “The functionality of the automation systems is excellent,” he says. “Everything is digitized and PLC controlled. The line is very easy to operate even for new or inexperienced employees. We have only three operators per shift, thanks to the advanced ANDRITZ automation.”

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Environmentally
friendly. Easy-to-use.”

Satoshi Kurosaki
President of Corelex Shin-Ei

