

By Martin Koepenick

Partenope gets two for one

The Italian mill raises stock quality and saves energy with the installation of all-in-one screening

LOCATED IN NAPLES, Italy, Cartiera Partenope, produces a wide range of packaging grades and machine-glazed (MG) paper from 100% recycled stock on the 100-130 tonne/day PM 1, and tissue grades on the 150 tonne/day PM 2. The company started up in 1981, operating a light kraft machine, and modernized in 1990 with a complete new line, including stock preparation.

With a maximum speed of 1,000 m/min, PM 1 produces packaging and MG grades with high quality office waste. The Yankee machine is designed to deliver a shiny surface on one side of the white MG papers. Other grades include recycled packaging paper, bags and specialty papers (including colored grades) and high wet-strength offerings.

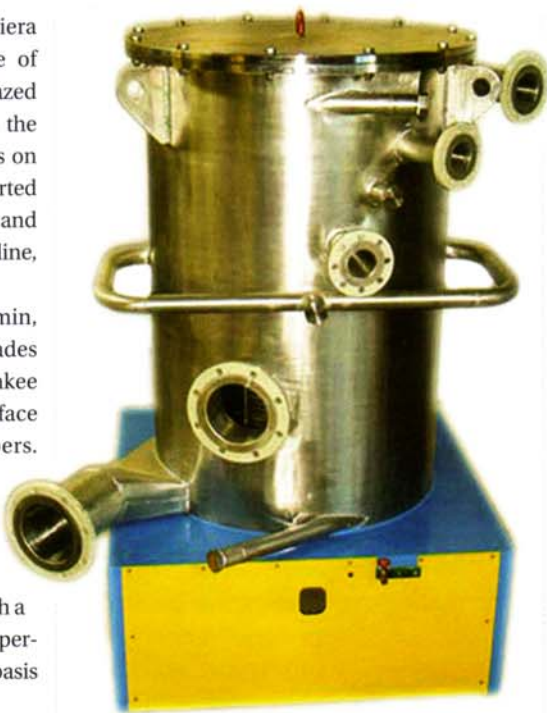
These products are available in reels with a maximum width of 3.2 m, or rewound in personalized weights and diameters, with basis weights between 30-90 g/m².

In 2001, Partenope added the tissue machine. PM 2 produces tissue paper available in reels up to 3.12 m-wide and basis weights between 15-27 g/m².

HIGHER QUALITY, LESS ENERGY

In 2004, Partenope decided to upgrade its stock preparation system. When management compared the mill's conventional screening technology to a novel multi-stage all-in-one stock preparation concept, it believed that higher quality and energy savings would pay off — not to mention the benefit of the gain in space.

In July 2004, the company installed



ScreenOne is an integrated three-stage screen that uses fine slot screening to maximize fiber quality at a very low reject rate, lowering energy consumption.

ScreenOne from Kadant Lamort on both machines. On PM 1, three-stage fine screening without a tailing screen replaced the conventional system. PM2, the same configuration as PM1, features slot screening installed prior to dispersion.

THE CONCEPT BEHIND SCREENONE

Compact three-stage fine screening incorporates primary, secondary and tertiary units.

Intermediate deflocculation and dilution zones, called ID2 and ID3, are the heart of the system.

Inside the screen ID2 creates intermediate deflocculation, and, subsequently, ID3 creates dilution. These features, associated with a proprietary guidance of the stock inside the screen, produces the same conditions in one unit as a screening system comprised of equipment in two or three stages.

ID2 increases screen capacity by 50% at the same energy consumption and with better screening efficiency. This is obtained thanks to an optimal use of the whole screening area of the basket.

Employing a compact, fine slot screen with three internal stages, the unit operates at medium consistency.

For Partenope's PM 1, the ScreenOne operates at a consistency between 3.0 and 3.8% with very fine slots — 0.15 mm on all the three stages with a reject rate below 0.5% by weight.

The single screening machine at the Italian mill is able to adapt automatically to production that can vary by up to 60 tonne/day. The final desired paper quality is consistently reached, even with this extremely low level of rejects of the ScreenOne.

THE CUSTOMER'S VIEW

"Thanks to the partnership work between our mill and Kadant Lamort, quality targets have been reached, and cost savings have far exceeded our expectations," says Partenope owner and mill manager, Ciro Serrao. "Steam savings, gained from shutting down hot dispersion on all grades but white MG papers, and a

Table 1 - PM 1: SCREENONE VS. THREE-STAGE SLOTS SYSTEM (CONSUMPTION DATA)

	PM 1	
	Before (with three-stage)	After (with ScreenOne)
Slots screen	(160+55+37) = 252 kW	110 kW
Chest and pumps	(7.5+22+7.5+22) = 59 kW	0 kW
Thickening	(3 x 5.5) = 16.5 kW	(1x5.5) = 5.5 kW
Total power consumption (without hot dispersion)	327.5 kW	115.5 kW
Hot dispersion	(2x22+75+15+220) = 354 kW	0 kW
Total power consumption (with hot dispersion)	681.5 kW	115.5 kW
Steam consumption (2 bar)	1,500 kg/steam/h	0 kg/steam/h
Power reduction (with hot dispersion)		212 kW
Power reduction (without hot dispersion)		566 kW

Table 2 - PM 2: SCREENONE VS. HOT DISPERSION SYSTEM (CONSUMPTION DATA)

	PM 2	
	Before (only hot dispersion)	After (with ScreenOne)
Slots screen	0 kW	110 kW
Chest and pumps	0 kW	0 kW
Thickening	0 kW	(1x5.5) = 5.5 kW
Hot dispersion	(2x22+75+15+220) = 354 kW	0 kW
Total power consumption	354 kW	115.5 kW
Steam consumption (2 bar)	1,500 kg/steam/h	0 kg/steam/h
Power reduction		238.5 kw
Steam reduction		1500 Kg/h
Total cost reduction (power + steam)		(240,000 + 326,000) = Euro 566,000

dramatic COD reduction in process and effluent water, are noteworthy," he adds.

Serrao notes that his team has observed longer felt life and machine runnability, thanks to the high level stickies and glue removal made possible by ScreenOne units.

Kadant Lamort's sales manager for Italy, Marcello Giorgi, says that many mills face similar concerns about energy costs, overall efficiency, and the need to reduce maintenance. "Because all-in-one screening reduces the number of components in the system, fewer motors, pumps and agitators lower energy consumption, and also reduce maintenance and spare parts. Any time you can simplify a process, you free up maintenance people for other important tasks," he explains.

According to Partenope process engineer, Francesco Giusti, "The chronic problem of screens plugging is gone and now we run a problem free system with a very low final reject rate. ScreenOne freed up operators from persistent problems with the former slot screening system. In addition, the compact unit gives us more space in the stock preparation area compared with traditional systems."

KEY BENEFITS

Improved paper quality: High runnability for stock preparation and the paper machines. Very fine slots basket installed (0.15 mm wide slots).

Energy savings:

- PM 1 hot dispersion put "on idle" for brown grades; stickies completely removed with ScreenOne. Hot dispersion used only for white grades to reduce ink specks.
 - PM 2 hot dispersion shutdown for all grades. Low specific energy: 10.2 kWh/tonne for white grades and 14 kWh/tonne for American OCC (10.2kWh/tonne)
- Low reject rate and fiber losses: The reject rate is 0.5-0.8% with white grades wastepaper, 2% for European OCC and a little higher for the American OCC.

Other benefits: Less lime content in the water, because of colder temperature. Improved energy performance of approach flow (second stage pressure screen stopped = 37 kW less). PPI