

Eka Purate® - A Sustainable
Water Treatment Solution

ENHANCING YOUR ABILITY
TO PRODUCE QUALITY PAPER



By MARTIN KOEPENICK

Lake Garda's beauty draws tourists and inspires Burgo Toscolano's passion for producing quality paper with sustainability at the forefront

PAPERMAKING IN PARADISE

Northern Italy's Lake Garda has attracted writers, poets, tourists, and even politicians since Roman times, because of the lake's serene reflective qualities, surrounded by mountains and vineyard covered hills. There are even lemon trees, because of the microclimate. Private yachts are plentiful. Along with James Bond's Aston Martin, recently filmed racing along treacherous cliffside roads, Ferraris and BMW motorcycles fly by on a routine basis.

Other "sports" at the lake include taking in the view, eating pizza and gelato or sipping prosecco, the local favorite drink.

However, this tourist destination, visited by more than 20 million people annually, is also a place to make paper, as demonstrated by the 190,000-tonne/yr Burgo Toscolano fine paper mill, located at an exclusive location on the lake.

According to Fiorenzo Pesenti, Burgo Toscolano's mill manager, "Living alongside the beauty of the Gardone Riviera, mingling daily with tourists, makes our paper mill something special.

"As residents and homeowners, this is our lake too, so we are naturally motivated to preserve its charm and character. From a business standpoint, we exceed all environmental requirements, and continuously strive to set a standard for sustainability, proven by our EMAS status. Water purity is a very high priority. With respect to everyone enjoying the beauty of the lake, we built a green space between the mill and the water, so that passing boats would see less of the mill."

Adds Alessandra Bogliano, responsible for Burgo's R&D and sustainability, "We view sustainability in a very broad way, and consider it a core competency. Our pulp is carefully selected, meeting forest sustain-



Fiorenzo Pesenti, mill manager: "Living alongside great beauty, we exceed environmental requirements."

ability criteria of the best international certification schemes (FSC/PEFC). All practices—from pulping, papermaking, coating, and water treatment, set a good example for environmental excellence and efficiency. Increasingly, our customers want not only high performance on their fast presses, but proof of best practices relating to sustainability."

Bogliano notes that environmental measures for water, air quality, and safety too, are not new to

Burgo and other paper producers. “What’s new is the sustainability link from the forest through the lifecycle of our customers’ products. The forest is the starting point, including stricter measures at the mill, and then high runnability grades, which produce dynamic imagery and less waste for printers—including what happens beyond our customers in terms of recycling.”

HOW THE SUSTAINABILITY PHILOSOPHY EVOLVES

Whatever Burgo Toscolano did last week is subject to change, even including highly successful practices. This is because its approach to sustainability is constant change, evolving all the time.

Says Bogliano, “When you have a holistic view as a papermaker, that means you monitor the precise history of pulp supply, and all raw materials going into your products, or being consumed while you make your products. You maintain a close relationship with your customers to better understand how



Alessandra Bogliano, responsible for R&D and sustainability: “Customers want high performance on their fast presses and proof of best practices related to sustainability.”

to serve them better in terms of functional and environmental performance. You also seek ways to gain value by minimizing waste, even after end consumers have finished with your products.”

Chemical and mechanical pulp arrives by truck in block and sheet form, coming from Scandinavia, The Americas and European sources. The goal is for all of the pulp to be certified (of which about 65% already is). Chips for mechanical pulp comes from Italian aspen forests. Bleaching employs hydrogen peroxide, achieving ECF status. All purchased pulp is elemental chlorine-free.

INNOVATIONS WITH WASTEWATER

The wastewater treatment system could be called the Toscolano Lake Garda method, because it is a custom approach to achieving a high standard for cleanliness of water returning to the lake, and re-use of water in the mill.

Speaking about water quality and consumption, Felice De Novellis, responsible for environmental projects at the mill, puts it this way, “We’ve always treated water with a lot of respect. That’s why water from the mill goes back into the lake so clean.

“The extra dimension in recent years is the Eka Purate® system, employing no traditional biocides and delivering tighter control of our oxidizing agent, chlorine dioxide. The end result is that we have very good ecological results, and less to worry about. We apply the minimum amount of chlorine dioxide to purify incoming and process water. Purate prevents microscopic bugs from having bad effects on the paper as its being formed, and keeps equipment clean.”

The wastewater treatment system itself combines a chemical mechanical and biological aerobic process. The chemical mechanical cleansing process separates out solid particles in the effluent by means of sedimentation and subsequent partial removal of the sludge, following appropriate cleansing. Then, residual suspended or dissolved pollutants are removed completely by biological action.

This cycle means that only highly cleansed water is returned to the lake, while at the same time the mill is able to reuse most of the solid sediment. The effluent treatment plant is large enough to satisfy the needs of a town of 60,000 inhabitants.

Adds Damiano Croce, who leads Eka Chemicals AkzoNobel in Italy, "The Eka Purate generator automatically doses at multiple locations at the lowest level possible. Programmed from measurements taken by the mill environmental team and Eka applications specialists, operability is monitored and ensured 24 hours a day via the EPI system (Eka Process Information)."

Continues De Novellis, "Purate contributes to higher performance of advanced chemistry, like the Compozil silica nanoparticle system, allowing us to run our machines smoother and more efficiently. The Eka Monitrol unit also contributes to accurate measurement and control of retention, producing targeted results for machine cleanliness & runnability. In addition, the use of all raw materials, are optimized, contributing to overall mill profitability and sustainability."

THE PAPER MACHINES

The philosophy at Burgo Toscolano concerning paper machines is to run smoothly and waste nothing. Two paper machines produce both coated and uncoated grades.

PM 10 produces 3.80-m wide rolls of coated papers at 1,150 m/min. Installed in 1954, the machine has been rebuilt in 1980, 1999, and 2006. The most recent rebuild work for PM 10 included the sheet formation zone, including a dilution head box, machine head purification and further refining and automation of component dosages. In addition, upgrades of the press section, the coating facilities, dryers and the steam plant were made. They increased speed by 200 m/min, as well as boosting quality.

Burgo Toscolano also installed a single hard-nip and mat-on-line calender, equipped with a swimming roll and Peritherm roll with a surface temperature up to 120°C.

PM 11 produced uncoated papers with a 4.3-m wide wire, running at 870 m/min. This machine began in 1962, and was rebuilt in 1967, 1980 and 1995.

All grades of paper are sold in reels and sheets. Most of their production ends up as schoolbooks, novels like Dan Brown's *The da Vinci Code*, or coffee table books like *The Nature of Lake Garda*. Basis weights range from 40 to 150 g/m².



Production teams focus on running smoothly and wasting nothing

Model of sustainability

In 2007 the Toscolano mill became part of the newly formed Burgo Group, one of the main European graphic papers producers. Established more than 100 years ago, and owned by Marchi prior to the Burgo/Marchi merger, Toscolano now produces around 190,000 tonnes/yr of fine paper.

Situated within the picturesque Gardesana National Park on the banks of Lake Garda, care for the surrounding environment is a central objective for the mill, especially related to water. Its customized effluent purification plant, including employment of on-site chlorine dioxide instead of traditional biocides, reflects their strong environmental commitment, including going beyond the European Union's EMAS (Eco-Management and Audit Scheme).

Burgo Toscolano was Italy's first mill to be granted the Forest Stewardship Council (FSC) certificate for woodfree coated papers. The mill has also attained Performance for the Endorsement of Forest Certification (PEFC).

According to Burgo Toscolano's mill manager Fiorenzo Pesenti, "We work continuously to advance our range of high quality papers, always with environmental consciousness and customers in mind. We are partners with important players in graphic printing and institutions, like schools, who value well printed textbooks."

The Burgo Group is involved in expanding its business and transforming its know-how with the intention of applying it to other strategic sectors such as the distribution of paper products, engineering and energy. It considers the Toscolano mill a model of sustainability from which other mills in the group can learn and benefit.

RECYCLE EVERYTHING

Comments Pesenti, “We recycle everything possible. We separate well, including the rejects from coating. The waste we reuse is really good raw material. Therefore, we recover at all different stages and make sure that nothing goes to landfill. We even make bricks and fill holes in parking lots.”

The company-owned power station has two natural gas turbines with output of 14 MW. Emissions from the turbines are used by a boiler to produce steam, which represents an additional 8 MW of electricity. After it leaves the steam turbine, it is used to dry the paper.

Burgo Toscolano prides itself in having an integrated cycle — self sufficient in energy creation, enough to run the paper mill at full capacity.

THE SOUNDS OF TOSCALANO

Six external noise monitoring points along the perimeter of the site employ sensors to check for airborne emissions. Complaints are infrequent from neighbors. Some say that the 17th century church tower besides the mill is the loudest sound made on a regular basis, much appreciated at noon when its 12 rings inform the town that it's time for lunch.

Swallows, known to be migratory birds, live at Toscolano Maderno all the year long, nesting at the paper mill. While being a well-known environmental quality biological indicator, they confirm a good coexistence between the plant and the surrounding area.

It is common to have fathers and sons at the mill today, following on the local tradition of papermaking for more than 600 years. In fact, papermaking began on small streams near the town of Toscolano in the late 1300s, where well-crafted hand sheets were made for printers producing small books. They were prized by the rulers of Venice, and high-ranking notables of the Renaissance times, including Isabella d'Este.

Pesenti sums it up this way, “This paper mill is an industrial success in a thriving tourist location, where natural beauty guides all of us, and instructs us to cherish and protect it. Environmental performance sets a standard at Burgo Toscolano, bringing pride to all of us who work here.”



Felice De Novellis: responsible for environmental projects at the mill

Concludes Bogliano, “It’s one thing to have goals and a philosophy about the environment. It’s entirely different to have a constant focus on continuous improvement on a practical basis.” **PPI**

Martin Koepenick, Innova, Atlanta, GA, has been writing about the forest products industry for many years



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Cleaner results with inspired insight on site.



No matter what we think up at Eka, you can trust it to enhance not only the quality of your products, but your competitiveness and environmental profile too.

That's why Tapio Pajari is on a European mission for Eka Purate, our patented concept for generating chlorine dioxide on site. Effective on microbes and spores, it removes and prevents the formation of biofilm and slime deposits on surfaces and filters. Always a paper technician at heart, Tapio simply wants mills to experience the immediate benefit of pure water – fewer holes

and spots in their finished product, thanks to cleaner white water and shower spray systems. And of course, increased runnability and lower cost!

The brilliance, Tapio says, is that Eka Purate works with virtually every process he's come across during his twenty years in the business. It also makes good business sense, since the offsite monitoring allows you to concentrate completely on what you do best.

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