

Energy-efficient production

of world-class pulp

Stora Enso's Imatra Mills in eastern Finland form one of the world's biggest wood-processing complexes, including Europe's largest integrated kraft pulp mill. The mills currently produce about 1.1 million tonnes of paper and board per year, the main products being liquid and food packaging boards, in which Imatra Mills are the global market leader.

The mills at Imatra are divided between two sites, Kaukopää and Tainionkoski. About 2 100 people work at the mills, which have three paper machines, four packaging board machines and pulp production lines. About 70% of the output is marketed within the EU.

Highly successful investment

In 2001 Stora Enso completed a major investment project, building the new short-fibre pulp line 3 and modernising and converting the existing pulp line 2 to long-fibre pulp production.

The investment has proved very successful and paid for itself even sooner than expected. Production targets were exceeded in the third year after start-up.

The top-class pulp yields high quality boards and papers. The short-fibre pulp is very pure, which is essential for boards for the food industry. The quality of the long-fibre pulp has also improved since the investment, especially in strength.



Quality pulp for quality boards

The Imatra pulp mills form by far the biggest pulping complex in Europe and one of the biggest and most advanced in the world. It is also the world's only manufacturer of liquid packaging boards that produces all four different types of pulp required: bleached pine, bleached birch, unbleached pine and chemi-thermomechanical spruce pulp. Since the investment, no pulp needs to be purchased, which reduces costs and enhances quality as there is no need to use dried pulp. Most of the pulp is used by the mills at Imatra, but a small proportion is supplied to Stora Enso's mills at Skoghall and Fors in Sweden.

High energy self-sufficiency

One of the greatest advantages of integrating a pulp mill with paper and board machines at the same site is energy efficiency. Imatra Mills are over 90% self-sufficient as regards thermal energy due to the use of black liquor by-product from pulping and bark from wood processed at the mills as fuel. Natural gas is the only fossil fuel and the only purchased fuel used at the mills, accounting for less than 10% of heat production.

Enhanced energy production

The major investment in pulping completed in 2001 has significantly decreased carbon dioxide emissions from

The reason for using different pulp grades is to achieve maximum stiffness for minimum weight. Fibre is the most expensive component of pulp cost, so a lot of effort is made to minimise fibre consumption.

Pulp grades produced and used in board production at Imatra:

- **bleached birch pulp** used for the top layer to give good printability, smoothness, and opacity without compromising strength properties
- **bleached pine pulp** used for the top and middle layers of packaging boards to give strength and stiffness
- **unbleached pine pulp** used for middle and back layers of packaging boards for liquid cartons to give strength
- **spruce-CTMP** (chemi-thermomechanical pulp) used for the middle layer of liquid packaging boards to give bulk and stiffness

fossil fuels because the increase in pulp production has increased production of by-product black liquor and bark that are used as fuel instead.

This is one major advantage of a mill site that integrates pulping with paper and board production: most of the electricity consumed by the paper and boards machines is generated by burning by-products of pulp production.

Electricity

The mills generate about 60% of the electricity they consume and the rest is purchased. The high degree of self-sufficiency is important in keeping costs down.

Continuous energy improvements

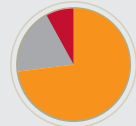
Stora Enso is looking beyond the major savings from increased energy efficiency at Imatra Mills achieved in the past three years. The mills have signed an industrial energy-saving agreement that commits them to continuous improvement in energy efficiency. No major investments have been required in the past couple of years, but minor improvements are being made all the time. This will have important environmental and economic benefits. ●

Energy procurement at Imatra Mills in 2004

Fuels

	GWh		GWh
Black liquor	4 690	Natural gas	504
Bark	1 261	Oil	5
Domestic fuels	5 951	Imported fuels	509
TOTAL	6 460		

- Black liquor 73%
- Bark 19%
- Gas 8%



Electricity

	GWh
Back pressure power	812
Purchased power	586
TOTAL	1 398

- Back pressure power 58%
- Purchased power 42%

