

Sappi

EMAS Statement 2017

Sappi Kirkniemi



sappi

Martti Savelainen
Mill Director



Foreword

Sappi is committed to sustainable development. This means that the planet, people and prosperity are addressed equally in day-to-day decisions and activities. Our sustainability starts from our skilled personnel, supported by our integrated management systems. We improve our processes continuously in a way that we can make more out of less by minimising energy consumption, raw material usage and the amount of waste.

Improvements in energy efficiency

One of the goals of the investment in paper machine line 3 at the Kirkniemi paper mill carried out at the end of 2016 was to improve energy efficiency. We achieved significant savings in the use of thermal energy in paper drying and exceeded all the goals set for the project.

In 2017, asphaltene was deployed as a new fuel at the Kirkniemi power plant. This did not require any changes in the valid environmental permit of the power plant.

Successful research and development

In autumn 2017, Sappi launched a new product at the Kirkniemi paper mill. As a result of a new coating technology, the Galerie Brite Plus product now offers a unique combination of high bulk and

gloss. Customers can select a lower basis weight, while maintaining the thickness and feel of their publication. The printed product is lighter, while less paper is needed in terms of tonnage. This enables lower production and distribution costs for customers. Thanks to Kirkniemi's own product development the environmental impact throughout the lifecycle of the product is reducing.

Investments in safety and wellbeing

Safety at the Kirkniemi paper mill decreased in 2017, regardless of the ongoing safety programme. Sappi Europe's safety programmes aim to improve the safety culture. In 2017, golden safety principles were set up together with the personnel at the Kirkniemi paper mill. By following these, everyone can work safely every day.

The theme of 2017 was wellbeing at the Kirkniemi paper mill. Every month, we focused on a specific theme that supports wellbeing. For example, we reorganised the serving line at the staff restaurant in order to better support healthy choices.

Kirkniemi, 9 March 2018

Fulfilment of environmental goals in 2017

In 2017, environmental work focused on developing the mill's environmental management system, including proactive environmental risk management in the day-to-day work of the personnel in a more systematic manner and the effluent treatment project.

We produced positive results from nearly all environmental protection indicators compared to the previous year. In particular, we made significant progress in terms of water management. Water management and the minimisation of the effluent volume are integral part of day-to-day activities at the mill. In 2017, the level of automation in the management of the mill's water balance was increased in

order to improve water management.

The effluent project, funded by Business Finland organisation and led by VTT Technical Research Centre of Finland, proceeded as planned. The goal of the partnership project was to find ways to reduce the volume of organic matter that is difficult to disintegrate in the mill's effluent. In 2017, test runs were carried out at the treatment plant following the laboratory stage. The project will continue until April 2018.

The target level of 1.4% set for material loss was not reached, as the loss rate increased to 1.7%. Challenges were set, for example, by trial runs related to the development of a new product that resulted in elevated

solid matter loss at the treatment plant.

The deployment of asphaltene, a new fuel used at the power plant, proceeded as planned. As a result, emissions to air have been at the level set in the power plant's environmental permit.

In 2017, no environmental risks elevated as a result of internal environmental incidents were identified. The number of registered environmental incidents decreased slightly from the year before. We also started to report proactive environmental risk observations in the mill's safety information system. A total of 76% of the mill's personnel took part in training arranged for the new reporting procedure.

Target	Key figure and target value	Status
Efficient waste sorting and utilisation	<ul style="list-style-type: none"> Utilisation rate > 99% Mixed waste after sorting < 80 t/a 	99,8% 76 t/a
Good management of environmental risks: Identification of risks, analysis of non-conformity, and preventive measures No severe incidental releases	<ul style="list-style-type: none"> 0 unexplained non-conformities causing disturbance at the effluent treatment plant 0 incidental releases 	0 pcs 0 pcs
Improvement of raw material efficiency and water management	<ul style="list-style-type: none"> Solid matter loss in effluent < 14 kg/t Effluent flow < 9.4 m³/t Daily excess of effluent flow 210 l/s, monitoring 	17,2 kg/t 9,0 m ³ /t 13 pcs
Improved energy efficiency: Energy savings objectives for 2017–2025 according to the target programme	Energy savings <ul style="list-style-type: none"> 18,3 GWh 	44,6 GWh
Compliance with environmental permit limits: Levels below the annual and monthly averages of emissions to watercourse set out in permit limits Air emissions from the power plant in compliance with the permit limits	<ul style="list-style-type: none"> COD_{Cr} < 4,500 kg/d Phosphorus < 7 kg/d Nitrogen < 100 kg/d Emissions < permit limits 	3,067 kg/d 4.8 kg/d* 51 kg/d OK
Effluent impact management	Effluent emissions in accordance with BAT, excl. solids in effluent Solids in effluent < 0,9 kg/t	Yes 0,41 kg/t
Efficient use of biofuel	<ul style="list-style-type: none"> Share of biofuel > 23% 	22,0%
CoC management	<ul style="list-style-type: none"> Share of certified fibre > 70% 	87%
Development of the mill's ISO 14001 environmental management system	Implementation of changes arising from the revised ISO 14001 system standard	Ready

* The monthly limit exceeded once

Compliance with permit conditions in 2017

The mill's emissions to watercourse have been in accordance with the environmental permit, apart from the excess of the monthly permit limit occurred in July with regard to phosphorus nutrients in effluent. The monthly average of 9 kg/d set for phosphorus emissions in the environmental permit regulation was

exceeded, with emissions in July being 11.7 kg/d. This temporary increase in emission levels resulted from challenges in nutrient dosage at the treatment plant in an uneven production and loading situation. The incident was investigated and a report on exceeded permit limits was submitted to the supervisory authority of the Centre for Economic

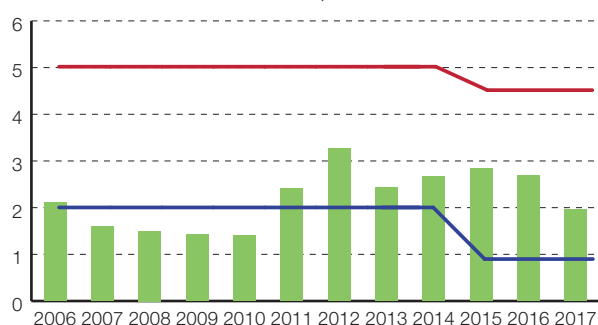
Development, Transport and the Environment of Uusimaa and the Town of Lohja.

The power plant's emissions to air have been in accordance with the permit conditions. The 2017 annual reports have been sent to authorities in the Environmental Administration's database in accordance with the permit conditions.

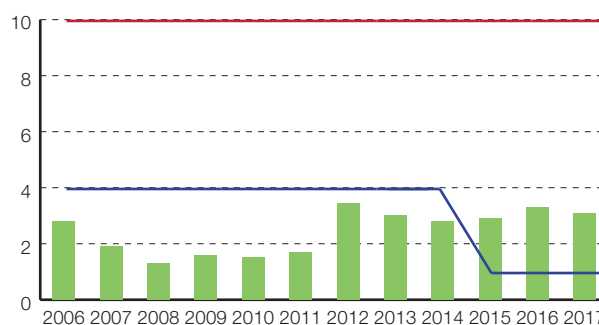
Emission parameter	Unit	Permit limit, monthly average	Permit limit, annual average	Realised annual average in 2017	Note
COD _{Cr}	kg/d	6000	4500	3067	No excess
Total phosphorus	kg/d	9	7	4,8	The monthly limit was exceeded once
Total nitrogen	kg/d	130	100	51	No excess

Emissions to watercourse have been in accordance with the BAT emission levels in the pulp and paper industry.

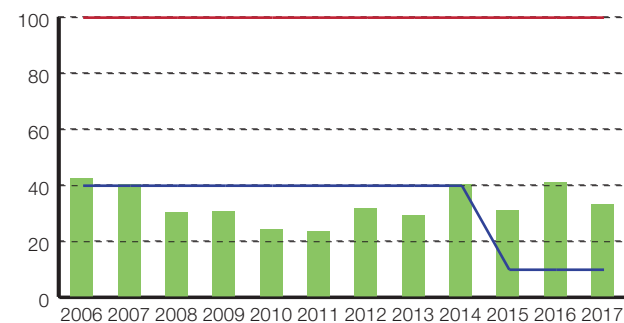
Specific emission of COD_{Cr}, kg/t of paper



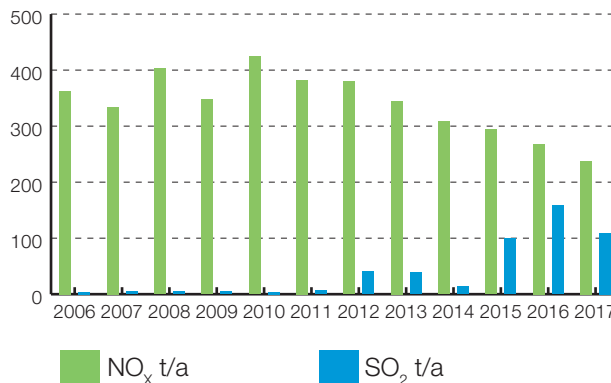
Specific emission of phosphorus, g/t of paper



Specific emission of nitrogen, g/t of paper



Sulphur dioxide and nitrogen oxide emissions to air, t/a



— Bat ref max

— Bat ref min

■ NO_x t/a

■ SO₂ t/a

Material balance

The material balance gives an overall picture of the use of resources, the products manufactured and emissions generated in 2017.

Input

Energy

Fuel (GWh)

Natural gas to energy production 50
Natural gas to the coating process 76
Coal 646

Asphaltene 21

Biofuels 202

Share of biofuel 22.0%

Use of energy in production

Electricity 804 GWh

Electricity specific 1.42 MWh/t

Heat 610 GWh

Heat specific 1.08 MWh/t

Heating of buildings

55 GWh

Fuels for industrial vehicles

Diesel 2.1 GWh

Liquid natural gas 0.07 GWh

Raw materials

and auxiliary chemicals

Total wood supply (m³)

Roundwood 582 000

Wood chips 0

Use of wood specific 1.03 m³/t

Fibre raw materials (t, dry)

Mechanical pulp produced 192,000

Purchased chemical pulp 106,000

Total pulp specific 546 kg/t

Other chemicals (t, dry)

Pigments and fillers 226,000

Binders 22,000

Additives 12,000

Total chemicals specific 477 kg/t

Fresh water intake (1,000 m³)

Raw water intake from the lake 23,650

Intake for cooling and sealing 18,400

Cooling and sealing water specific 32.4 m³/t

Intake as process water 5,355

Process water specific 9.4 m³/t

Intake as process water for the power plant 372

Size of the mill area

112 ha

Personnel

558



Output

Emissions into the air

Mill and power plant

Sulphur dioxide SO₂ 109 t

SO₂ specific 0.19 kg/t

Nitrogen oxides NO_x 246 t

NO_x specific 0.43 kg/t

Particles 2.3 t

Particles specific 0.004 kg/t

Fossil carbon dioxide 246,600 t

CO₂ fossil specific 435 kg/t

CO₂ biogenic 79,580 t

Industrial vehicles

SO₂ 0.002 t

NO_x 5.5 t

Particles 0.34 t

CO₂ fossil 633 t

Products

Paper production 566,850 t

Share of PEFC certified fibre 87%

Waste materials (dry)

Total waste 55,240 t

Total waste specific 97 kg/t

Waste utilisation rate 99.8%

Bark and sludge combusted 32,600 t

Share of recyclable waste 59%

Ash 19,800 t

Ash specific 35 kg/t

Total landfill waste 52 t

Landfill waste specific 0.09 kg/t

Hazardous waste 82 t

Hazardous waste specific 0.14 kg/t

Other waste 2,706 t

Other waste specific 4.8 kg/t

Discharges to watercourse

Effluent flow 5,089,000 m³

Effluent flow specific 9.0 m³/t

Chemical oxygen demand (COD_{Cr}) 1,119 t

COD_{Cr} specific 1.97 kg/t

Biological oxygen demand (BOD₅) 52 t

BOD₅ specific 0.09 kg/t

Phosphorus (P) 1.76 t

P specific 3.1 g/t

Nitrogen (N) 18.5 t

N specific 33 g/t

Total solid matter 234 t

Solids specific 0.41 kg/t

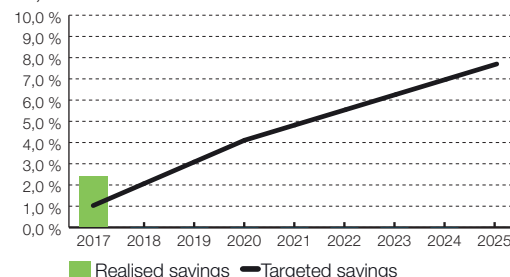
Development of environmental protection

Energy efficiency comprises a significant part of environmental work

The mill's energy efficiency system (EN 16001) was certified and Sappi Kirkniemi joined the national energy efficiency agreement in 2009. Savings objectives of the new agreement period started in 2017 have been set until 2025. The aim is to reach total energy savings of 7.5% by that year. In 2017, the savings objectives were exceeded clearly. The most significant savings resulted from the investment in paper machine 3.

The mill has the ISO 50001 certificate as an indication of a systematic improvement of energy efficiency.

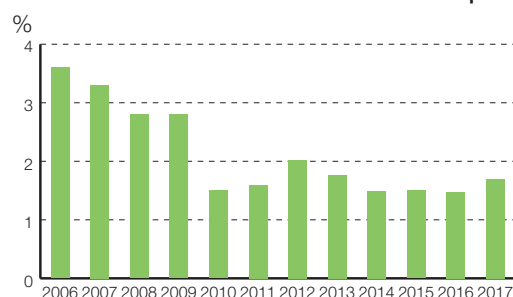
Fulfilment of energy efficiency savings
%, cumulative



Material efficiency saves costs and reduces the environmental impact

By improving our material efficiency, we use natural resources sparingly, control the secondary flows of our production and recycle our waste efficiently. Material loss, i.e. the volume of raw material accessing the effluent treatment plant with water, is an indicator of the efficient use of raw material. In 2017, material loss was 1.7% in production, being higher than the target level of 1.4%. Challenges were set, for example, by trial runs related to the development of a new product that resulted in elevated solid matter loads at the treatment plant.

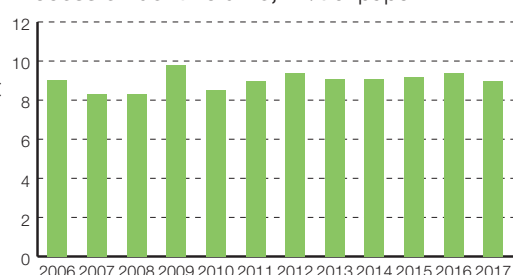
Solid matter loss at the effluent treatment plant



Efficient use of water through continuous improvement

Water is circulated in the manufacturing process according to the counter-flow principle and fresh water is only used where it is necessary. The efficiency of water use has been improved since the 1980s. This means that reducing the rated volume of water is a challenge. The use of water is monitored and controlled using a tool developed at the mill. It is in use in all production departments. In 2017, the level of automation was increased in water balance management. This improved the level of water management even further and reduced the rated load from the previous year.

Process effluent volume, m³/t of paper



Utilisation of waste

The waste utilisation rate has stabilised at the level of 99.8%. This means that the proportion of disposable waste is only 0.2% of the total waste volume. Utilisation chains worked well in 2017. All ash from the power plant and all sludge from the effluent treatment plant were delivered for utilisation. The volume of mixed waste sorted at the mill and delivered to waste management companies has stabilised at the level of roughly 80 tons. The functionality of sorting is ensured by appointed persons in each department. Regular and systematic waste management audits examine the functionality of sorting.

Share of utilisable waste, %



Environmental goals for 2018

Annual environmental goals are based on the mill's environmental policy and central environmental aspects. The goals can be measured, and their fulfilment is monitored regularly. We aim to minimise the environmental impact of our operations by following the principle of continuous improvement.

The mill's environmental goals have been set for a three-year period (2016–2018). However, the goal set for the rated load of solids in purified effluent discharged into the lake will be 0.8 kg/t in 2018. Otherwise, the objective is to maintain the current level of environmental protection, regardless of the challenges resulting from the development of the use of mechanical pulp at the mill and the expansion of the product range.

Objectives in 2018	Key figure/indicator	Target value
Efficient waste sorting and utilisation	Utilisation rate Mixed waste after sorting	> 99% < 80 t/a
Good management of environmental risks: Identification of risks, analysis of non-conformity, and preventive measures No severe incidental releases	Number of unexplained non-conformities causing disturbance at the effluent treatment plant Number of incidental releases	0 pcs 0 pcs
Improved energy efficiency: Savings objectives for 2017–2025 according to the target programme	Energy savings • Electricity, heat, fuel	18,3 GWh
Improvement of raw material efficiency and water management	Solid matter loss in effluent Effluent flow • Volume of daily excess of effluent flow 210 l/s, monitoring	< 14 kg/t < 9,4 m³/t
Wastewater impact management	Effluent emissions in accordance with BAT, excl. solids in effluent Solids in effluent	yes < 0,8 kg/t
Compliance with environmental permit limits: Levels below the annual and monthly averages (in brackets) of emissions to watercourse set out in permit limits	COD _{Cr} Phosphorus Nitrogen	< 4 500 kg/d (6000) < 7 kg/d (9) < 100 kg/d (130)
Emissions into the air from the power plant in compliance with the permit limits	Emissions vs. permit conditions	In accordance with permit conditions
Efficient use of biofuel	Share of biofuel	> 23%
CoC management	Share of certified fibre	> 70%

Sappi Europe is the leading European producer of coated fine paper used in premium magazines, catalogues, books and high-end print advertising. Sappi Europe's head office is located in Brussels, Belgium. All mills that produce Sappi paper in the EU area are ISO 9001, ISO 14001, ISO 50001 and OHSAS 18001 certified and EMAS registered. The mills hold chain-of-custody certification under the FSC® (Forest Stewardship Council) and/or PEFC™ (Programme for the Endorsement of Forest Certification) schemes.

Sappi Europe is a division of Sappi Limited (JSE), a global company headquartered in Johannesburg, South Africa, with nearly 13,000 employees, production in seven countries on three continents, sales offices in 50 countries and customers in over 100 countries around the world. Learn more about Sappi at www.sappi.com.

As an accredited environmental verifier (FI-V-0001), Inspecta Certification has examined the information of the environmental management system and 2017 EMAS statement of Sappi Finland Operations Oy's Kirkniemi mill. Following this examination, on 19 March 2018 the environmental verifier has herewith confirmed that both the environmental management system and the Finnish environmental statement are in compliance with the requirements of the EMAS Regulation (EC) No. 1221/2009. The verification concerns only the version in Finnish.

The EMAS statement 2017 of Sappi Kirkniemi mill is a revised version of the EMAS statement 2015. The EMAS statement includes key information about the mill's environmental obligations and impact, and the development of environmental protection. The EMAS statement and its annual reports are available in PDF format on the Sappi website at www.sappi.com: Locations – Kirkniemi Mill. Please send any feedback and questions to the mill's environmental manager via email to jenni.kukkonen@sappi.com or by calling +358 10 464 2116.

Sappi Europe

Kirkniemi mill
Pikkukyläntie 8
08800 Lohja

Tel. +358 10 464 2999
www.sappi.com



sappi

