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ZIEGLER PAPER MILL

Environmental Report 2006

ecotopic Editorial . 3

ecoeffort Environmental performance . 4

ecogoal Review and outlook . 10

ecoconsult Contacts . 12

ZIEGLER
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DEAR READERS

This current edition of our annual Environmental Report is the fourth of its kind to be published. It will provide you with an overview of Ziegler Paper Mill's environmentally relevant activities and achievements during 2006. At the centre of the environmental objectives defined for the year under review were wastewater treatment and energy efficiency.

As far as wastewater treatment was concerned, it was necessary to bring the preliminary mechanical treatment of our industrial wastewater in line with increased requirements and to replace existing sedimentation equipment with a more up-to-date and efficient unit. An intensive pilot phase showed that given suitable flocculation conditions a high level of elimination of undissolved matter is possible using a revolving filter unit in the wastewater. In the subsequent planning phase, the plant was designed with three redundant filters and the necessary hydraulic buffering capacity for the maximum volume of wastewater likely from fully automated operations. By the end of the year, a start had been made on construction and installation, so that we will be able to begin using the plant in spring 2007.

As a manufacturing company in an energy-intensive sector,

energy efficiency is a matter of constant concern for us and enjoys a high priority, not least due to the problems of climate change that have once again become a topic of general debate. This and the soaring cost of energy led us to carry out a detailed energy study, together with an external partner, in order to identify potential ways of cutting our energy consumption. Several measures, primarily related to improving the function of our presses, have already been introduced. This resulted in our managing to keep energy consumption in 2006 virtually at the same level as in the previous year despite a significant rise in production.

Other measures, such as compressing exhaust vapours or making use of the residual heat from the steam generator, are either in the planning stage or require in-depth technical elaboration. So there still remains potential for further improvement in the future, too.

Dr. Reinhard Jäger, Production Manager and Head of the Environmental Management System

1. ZIEGLER AT A GLANCE

Ziegler Paper Mill produces premium-quality wood-free fine papers for the printing industry and customised specialty papers for industrial processing. Its headquarters and production facilities are located in Grellingen near Basel. Established in 1861, the mill has been family-owned for five generations. As an independent manufacturer of specialty papers, we have always valued quality over quantity. We have consistently pursued a niche policy and continue to be successful – thanks in no small part to the brand strategy we follow - in spite of the increasing concentration within the paper industry.

With market share of almost 50%, Switzerland is the principal market for our premium products. This is followed by Germany

with around 14%, the United Kingdom with about 9% and the rest of Europe with some 23%. Ziegler Paper is also active with its specialties in the markets of Asia and the North American continent. In Europe, we work together with international trading companies to distribute our papers, while in the USA we have our own sales company which has been marketing our papers since 2001.

Our services include consulting with individual customers and complete solution support. The high level of commitment of our staff and the manageable size of our company with its short decision-making paths allow us to hold our own in the marketplace despite the stiff competition prevailing there.

FACTS 2006	
Business	Production of premium-quality, wood-free fine papers and specialties
Product lines	Corporate Design, Natural Design, CAD/Office, Specialties
Plant and equipment	PM 3 (last overhaul 2004), slitter-winder, large-format sheet cutter, small-format sheet cutter; central power plant with 4 hydroelectric plants and gas turbine / combined heat and power plant; with excess power fed to the public power grid
Annual output	approx. 65,000 tonnes (sales volume)
Wire width PM 3	331 cm (trimmed)
Weight range	40–400 g/m ²
Quality assurance system	ISO 9001:2000, Registration No. 04100 19930262
Environmental quality system	ISO 14001:2004, Registration No. 04104 20020620
FSC certificate	FSC-STD-40-004 (1.0), Registration No. SQS-COC-24310
Raw stock	Market pulps from internationally recognised wood certification programmes; supplied with FSC certificate at customers' request. Transported exclusively by ship and rail.
Water	Own ground water well; high level of closed-loop recirculation
Workforce	182 people working days or shift work
Sales	approx. CHF 104 million
Investments	approx. CHF 6 million
Legal form	Family-owned corporation (AG) with share capital of CHF 1 million
Year established	1861

2. USE OF RESOURCES

The specific consumption of fresh water, raw materials and energy provides a measure for the efficiency of our utilisation of resources.

2.1 Fresh water

During the year under review, we again used considerably less fresh water in both absolute and specific terms than in the previous year. This is largely thanks to the continuing optimisation of our manufacturing processes. Although the 5.15 litres per gross kilogram of paper produced can be regarded as exemplary, there still remains potential for further optimisation.

	UNIT	2006	2005	DIFFERENCE FROM PREVIOUS YEAR
Fresh water usage	m ³	404,198	413,400	- 2.2 %
Specific fresh water usage	l/kg paper gross	5.15	5.90	- 12.7 %

2.2 Raw materials

During the year under review, 1.035 kg of raw materials was used to produce 1 kg of paper sold (without water component) as opposed to 1.037 kg in the previous year.

reduction in power is primarily the result of improvements in control procedures for electric drive motors, i.e. more efficient use of the drive motors only when required, although the need for using the motors is actually tending to increase.

	UNIT	2006	2005	DIFFERENCE FROM PREVIOUS YEAR
Specific raw material usage	kg bone dry /kg paper bone dry	1.035	1.037	- 0.2 %

Wood pulp, filler and potato starch are the three most important raw materials and make up more than 99% of our raw materials in terms of quantity. In summer 2006, a new cleaner plant for fibrous materials became operational, which produces a better level of dirt removal with lower precipitate volume. There is potential for improvement here for the future owing to the loss of raw materials due to processing. With total raw material usage in excess of 63,000 tonnes bone dry, the absolute savings that result are considerable even if the improvement is only minimal in percentage terms.

The environmental impact resulting from the production of raw materials is not relevant in the representation of Ziegler Paper Mill's environmental performance. Nevertheless, we can exert a substantial influence on the overall environmental balance sheet through our choice of suppliers: as in previous years, Ziegler Paper Mill therefore made exclusive use during the year under review of pulp bleached without chlorine that is obtained from sustainable timber resources with recognised certification programmes in compliance with FSC, CSA, EMAS, PEFC and ISO 14000

2.3. Energy

We are pleased to report that during the year under review we were again able to considerably reduce both specific power consumption (- 4.1%) and specific gas consumption (- 4.9%). Total specific energy usage was thus reduced by - 4.8%. The

The lower consumption of gas was due primarily to improved mechanical draining in the press section, coupled with other minor optimisation measures.

As a result of the 5.4% increase in gross paper production over the previous year, absolute energy requirements were 1.1% higher for electricity, while absolute gas usage remained virtually constant (+ 0.2%) despite the increase in output. This gratifying result is a major milestone along the road towards fulfilling the pledge that the Swiss paper industry has made to the government to reduce CO₂ emissions by 2010.

Hydroelectric power generation using our four plants is to a very large extent dependent on weather conditions and was in line with the average figure for the past several years.

As announced in our 2005 Environmental Report, we carried out a detailed energy study in 2006, together with an external company. This enabled us to identify further significant potential for cutting our energy consumption. Rapid measures that require relatively little time and funds to implement have already been incorporated into our production processes. These were already able to contribute to enhanced energy efficiency during the year under review, particularly in respect of gas consumption, which is responsible for CO₂ emissions. Further measures require a more in-depth study, while no proven technology is currently available for realising a third category of measures.

	UNIT	2006	2005	DIFFERENCE FROM PREVIOUS YEAR
Hydroelectric power production	MWh	12,408	11,139	+ 11.4 %
Thermal power production	MWh	29,632	29,397	+ 0.8 %
Power consumption	MWh	36,626	36,237	+ 1.1 %
Specific power consumption	kWh/kg paper gross	0.467	0.487	- 4.1 %
Gas consumption	MWh	149,755	149,526	+ 0.2 %
Specific gas consumption	kWh/kg paper gross	1.909	2.008	- 4.9 %
Specific steam consumption	kg steam/kg paper gross	1.887	2.000	- 5.7 %
Total specific energy consumption (electricity + gas)	kWh/kg paper gross	2.375	2.494	- 4.8 %

3. WASTE EMISSIONS

Every industrial activity generates waste products and paper making at Ziegler Paper Mill is no exception. Our on-going objective is to reduce the release of such waste products through a process of continuing improvement.

3.1 Wastewater

The fresh water obtained from the company's own groundwater catchment system is used over and over again thanks to in-house recycling. After having been used repeatedly, the water is cleaned by Ziegler Paper Mill in its own mechanical treatment plant. Before the clarified wastewater is returned to the ecosystem through surface water, it is also treated biologically at the municipal treatment plant.

Once again, we achieved a reduction in the volume of waste-

as a whole. Although the volume of waste solids was reduced significantly both in absolute and specific terms, there is still plenty of room for improvement in this area. Thus one of our prime environmental goals in 2006 was to replace our old overloaded wastewater treatment equipment for separating out solid waste with a more efficient modern plant (see more on this subject in the ACHIEVEMENT OF GOALS section).

The cleaning efficiency of the downstream municipal biological treatment plant was ensured at all times

During the year under review, the Office of Environmental Protection and Energy once again took six random samples to check the composition of our wastewater and found in all cases that our waste treatment plant and the composition of the wastewater samples conformed to requirements.

	UNIT	2006	2005	DIFFERENCE FROM PREVIOUS YEAR
Wastewater	m ³	321,635	327,746	- 1.9 %
Specific wastewater	l/kg paper gross	4.10	4.40	- 6.8 %
Waste solids	kg	98,231	101,853	- 3.6 %
Specific waste solids	g/kg paper gross	1.252	1.368	- 8.5 %

water produced in comparison with the previous year – corresponding to the reduction in the amount of fresh water used – despite a marked growth in paper production. For this reason, the volume of specific wastewater was almost 7% lower than the extremely good level recorded the year before. The 2006 level of 4.1 litre/kg paper gross represents the lowest value achieved to date and is thus exemplary for the sector



3.2 Waste air

The generation of electricity and heat in our central power plant produces waste air which is generally measured every two years on the authority of the Basel Air Pollution Control Office or when any changes are made to the power plant. These measurements were performed in September 2006.

When talking about the waste air from our central power plant, a distinction must be made between

level. To meet this goal, we are actively working on an industry solution under the leadership of the Energy Agency for Industry (EnAW), a Swiss organisation that was founded in 1999, and were successfully audited for the first time in 2003.

Although the reduction target applies to the industry as a whole, the calculation model devised by the EnAW makes it possible for the results of individual companies to be shown. The current status for Ziegler Paper Mill is given below:

TARGETED REDUCTIONS AT ZIEGLER PAPER MILL AS % [BASED ON EnAW CALCULATION MODEL WITH CORRECTION FOR COMBINED HEAT AND POWER GENERATION]				
	LEVEL	ACTUAL	TARGET	AGREED TARGET
	2000	2006	2006	2010
CO ₂ emission in %	77.8	91.6	82.0	85.0
CO ₂ intensity in %	100.0	73.9	97.5	96.0
Energy efficiency in %	100.0	120.8	102.5	104.0

- the emission of the air pollutants carbon monoxide (CO), sulphur dioxide (SO₂), nitrogen oxides (NO_x) and soot, all of which tend to have a regional impact and
- the release of the greenhouse gas CO₂ from fossil fuels, which has a global impact.

3.2.1 Air pollutants CO, SO₂, NO_x, soot

The report of the measurements carried out in September 2006 can be summed up as follows:

- CO concentration and soot volume are less than 10 % of the permitted limit.
- The natural gas that we use as a fuel contains virtually no sulphur, which means that SO₂ concentration is under the detection limit.
- The NO_x content of waste air emissions amounts to only some 60–70% of the permitted limit when water injection is running automatically.

3.2.2 Release of fossil CO₂

The release of CO₂ is one of the most important environmental issues in the area of climate protection. Alternative technologies that do not depend on fossil fuels are not likely to be available in the near future. This is one more reason for Ziegler Paper Mill to rely on the solution that is the best for the environment at the present time: natural-gas-based cogeneration of electricity and heat with a focus on the best possible energy efficiency. Swiss CO₂ legislation requires that by 2010 fossil fuel emissions of CO₂ resulting from energy generation are reduced by 15% in absolute figures compared with the 1990

During the year under review, it proved possible to keep absolute gas consumption practically stable and to again reduce specific consumption significantly. Absolute CO₂ emissions, however, exceeded the target as a result of considerably higher increases in production which were greater than forecast. Thanks to the efforts made in past years to increase the efficiency of both electricity and gas usage, we are pleased to report that CO₂ intensity and energy efficiency are both markedly better than targeted goals.

The findings of the energy study that was performed and the results of the measures already implemented make us optimistic that it will be possible to achieve a further major increase in energy efficiency with regard to gas usage.

3.3 Solid waste

Our waste management programme is governed by the motto: "Prevent – recycle – re-use!"

- The major waste products in paper production are the manufacturer's own paper scrap and paper sludge from the mechanical treatment system. While almost all our own scrap is recycled internally, paper sludge can be appropriately treated and used as a porosity agent in the clayware industry.
- Waste from packing paper, cardboard, printed matter and spool cores is recycled externally as waste paper.
- Stretch film waste is also recycled externally.
- Wood waste from shipping and packaging is recycled externally in CO₂-neutral thermal processes.
- The vast majority of waste materials from maintaining the infrastructure are separated, collected and recycled externally.

- Our paper products can be completely recycled after use by our customers and contribute to the recovered fibre that is essential for maintaining the waste paper fibre cycle.
- Packaging materials from our paper shipments can also be dealt with by our customers using the same means of recycling and re-use cited above.

3.4 Noise

In the year under review, no complaints were received from local residents. The last measurements taken show full com-

pliance with noise emission limits along the perimeter of the mill site.

4. ACCIDENTS

There were no accidents or other incidents that might have resulted in contamination of the soil or water (River Birs, groundwater) or any other environmental threat.

5. ENVIRONMENTAL IMPACT AND WORK SAFETY

Our employees are our company's most important economic agents. They also guarantee that Ziegler Paper Mill performs top-quality work. In compliance with our legal obligations, but also out of respect for our people and their health, we ensure the best possible standards of work safety and protection against pollution within the mill.

5.1 Noise

The most critical source of risk to our employees at the mill is noise, particularly in the pulp preparation plant and in the vicinity of the wire section. Apart from the possibility of regular medical hearing check-ups, our efforts focus on prevention. After successful testing on a selected group of workers, new individual ear protectors were distributed to staff during the spring. The advantages of these are that they are both extremely comfortable to wear and can be adjusted individually to combat troublesome noise, while also allowing staff to speak together without undue difficulty.

5.2 Heat

Since the major overhaul to our paper machine in 2004, there

5.3 Work safety

As far as work safety is concerned, measures focused squarely on prevention. Together with other companies in the Swiss paper industry, a number of campaigns were carried out aimed at drawing attention to a variety of potential accidents. In addition to this, areas of work safety were also dealt with during the periodic training sessions held for our shift workers.

	UNIT	2006	2005	2004
Industrial accidents	Number	22	14	17
Non-work-related accidents	Number	17	29	13
Time lost due to industrial accidents	%	0.89	0.17	0.34
Time lost due to non-work-related accidents	%	0.59	0.60	0.11

After the positive trend demonstrated by industrial accidents in the previous year, we were hit by a massive setback in the year under review, when 22 such accidents occurred. We will therefore be making additional efforts in 2007, first and foremost by including members of staff more closely in accident prevention measures.

The accidents suffered by staff that are not related to their jobs occur during their free time when they are not at work. Although it is not possible for the company to have any direct influence on these, we feel that the general awareness of the risks inherent in various activities that we instil in our staff by means of our preventative campaigns also has a positive indirect influence on their leisure activities.

6. AUDITS AND LEGAL REQUIREMENTS

The year under review saw the successful monitoring audit of our combination quality assurance system in accordance with ISO 9001:2000 and environmental management system in accordance with ISO 14001:2004 by the TÜV Nord.

In addition, a maintenance audit for the FSC-STD-40-004 (1.0) chain-of-custody standard was performed by the SQS. This authorises Ziegler Paper Mill to continue supplying FSC products with the FSC label in accordance with the mixed-credit system. These have been subjected to thorough monitoring and come from forests run in compliance with the principles and criteria of the Forest Stewardship Council (FSC).

No significant changes in any legal stipulations relevant to our environmental performance came into force during the year under review.

ACHIEVEMENT OF GOALS

The immediate objectives planned for the 2006 review year were the following measures:

- Pilot trial and installation of a new plant for the preliminary mechanical treatment of our industrial wastewater. This objective is the logical consequence of shortcomings found in the elimination of solid waste from our wastewater.

This goal has essentially been achieved, however with a delay of some four months. An in-depth pilot phase demonstrated that with the type of filter selected it is possible to remove the specified level of solids from the wastewater with all categories of our paper. The new plant will go on line with effect from March 2007.

- Performance of an in-depth study with specialist experts to determine the potential for saving energy. This aim is dictated on the one hand by the huge increase in the cost of energy and on the other by our pledge to reduce CO₂ emissions as part of the 2010 agreement with the Swiss government. In addition, this goal is an expression of Ziegler Paper Mill's commitment to the continuous improvement of our own energy efficiency.

The energy study has now been completed. It is divided up into the individual measures to be taken and shows that there is vast potential for saving energy. Various measures have already been implemented either wholly or in part, first and foremost in the press section. These measures already contributed significantly to the improvement in energy efficiency recorded during the year under review.

Further measures require a more in-depth evaluation in terms of both technical and financial feasibility. Over and above this, potential energy savings were highlighted for whose implementation the necessary technology is still not available.

FUTURE OBJECTIVES

The company's management has decided on the following new concrete environmental goals for 2007:

- Successful start-up of the new wastewater treatment plant for eliminating undissolved substances.

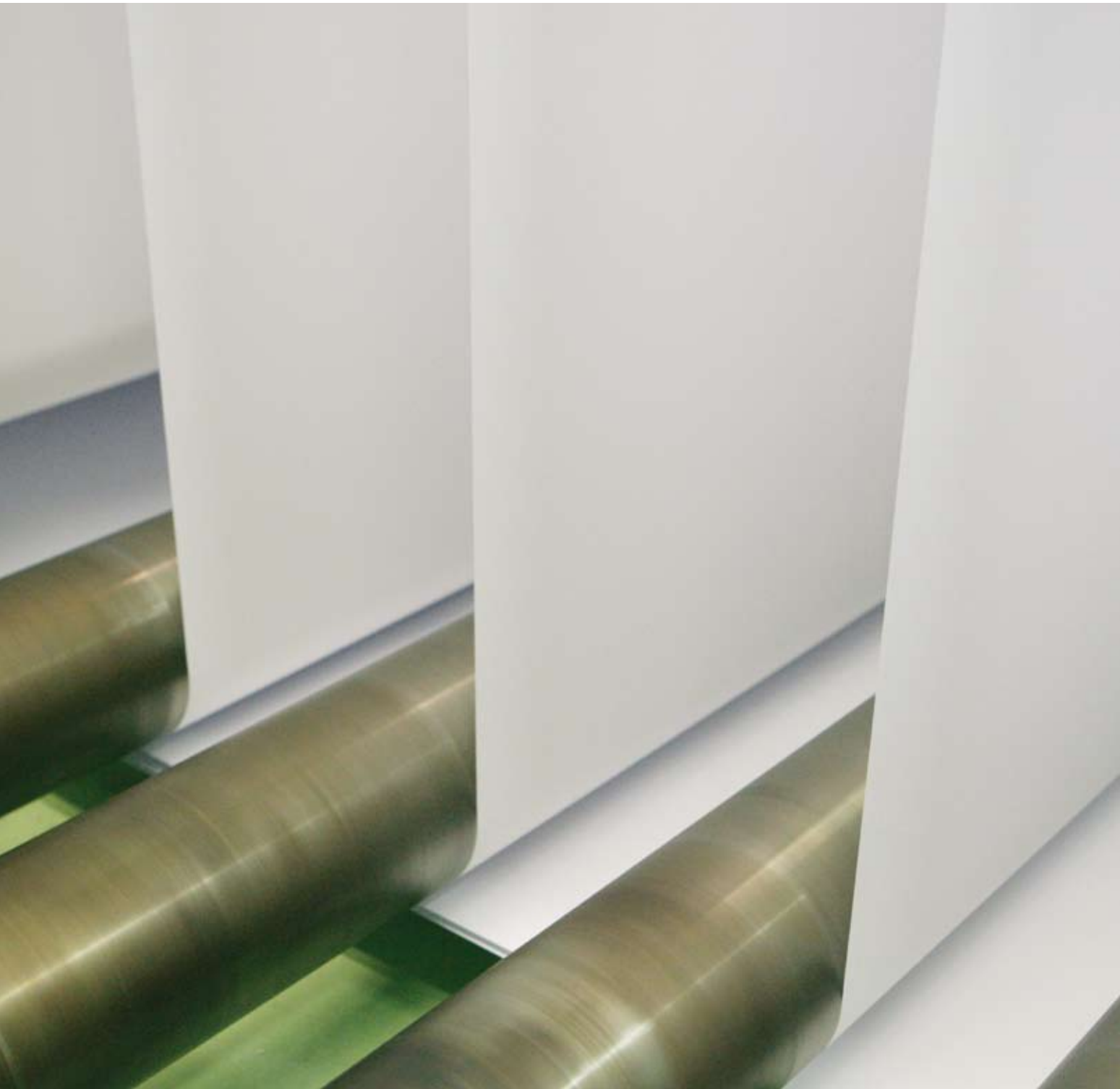
Due to the delay that has carried it over into the current year, this goal represents the continuation of last year's objective.

- Reducing loss of raw materials in wastewater (fibrous and filler materials) to a specified amount.

As explained in section 2.2 Raw materials, the installation of a more powerful new cleaner plant will enable potential savings of fibrous and filler materials in particular. In relative figures, this saving might appear minimal, but in terms of absolute volumes it is considerable.

- Revision of existing environmentally relevant criteria.

The ISO 14 000 standard requires evidence of on-going improvement in the environmental balance sheet. The current environmentally relevant criteria have existed in their current form since this standard was implemented in our processes. As these have proved to make insufficient distinction and provide inadequate information, it has been decided that a revision is called for



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