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ZIEGLER PAPER MILL

Environmental Report 2005

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ZIEGLER
P A P I E R

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DEAR READERS

We have published our Environmental Report every year since 2003 in order to provide you with an overview of Ziegler Paper Mill's environmentally relevant activities and achievements. This current issue contains information on 2005. While the previous year was dominated by the most thoroughgoing overhaul ever performed on our paper machine, 2005 saw the consolidation of this overhaul.

The environmental spotlight focussed on the overload of our mechanical wastewater treatment plant and the energy efficiency of our power generation run on natural gas, set against a backdrop of steadily rising energy costs and the CO₂ target agreement with the Energy Agency. Both problems proved to be tough challenges and will continue to keep us extremely busy during the coming year, as well. We are planning to replace the existing mechanical treatment plant with a more efficient system that leaves all options open for future wastewater treatment measures. The prices on the energy front confirmed very clearly that our policy of focussing on environmentally relevant issues in recent years is correct. At Ziegler Paper Mill, we have always seen this as the most significant risk to the environment since we operate in an extremely energy-intensive sector. Our next step will therefore be to

carry out a detailed energy study of our system, together with an external partner, in order to identify potential ways of cutting our energy consumption.

Mention should be made both of the re-certification of our environmental management system in accordance with ISO 14 001 in the form of a combined ISO 9 001/ISO 14 001 system and of our new FSC certification. Unlike the previous FSC-COC standard (Chain of Custody), the so-called FSC mixed credit system for the first time provides a system that functions at the practical level. In this way, it can be ensured that a volume of timber equivalent to that required to manufacture the certified product has been obtained from forests run in compliance with FSC guidelines. The product purchased does not necessarily have to physically contain FSC wood as a raw material. This is only sensible since FSC wood and non-FSC wood are identical in both physical and chemical respects and are therefore impossible to differentiate. The deciding feature is the complete proof that only as great a volume of FSC-certified products can be sold as correspond to the amount of timber felled in FSC-certified forests.

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 followed a niche strategy and continue to be successful in spite of the increasing concentration within the paper industry. The brand strategy we pursue is of considerable significance here. Switzerland and Germany are the principal markets for our

premium products and we work together with international trading companies to distribute our papers elsewhere in Europe. Ziegler Paper Mill is also represented in Asian markets and we have our own sales company in the USA which has been marketing our papers there since 2001.

Our services include consulting with individual customers and complete solution support. All of the people who work in our company – management as well as employees – identify strongly with Ziegler Paper Mill. This commitment and the manageable size of our company allow us to hold our own in the marketplace despite the stiff competition prevailing there.

FACTS 2005

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	59 400 tonnes (sales volume)
Wire width PM 3	331 cm (trimmed)
Weight range	40–400 g/m ²
Quality assurance system	SO 9001:2000, Registration No. 04100 19930262
Environmental quality system	SO 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	CHF 94 million
Investments	CHF 6.9 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 used considerably less fresh water both in absolute and specific terms than in the previous year, when the overhaul of our paper machine led to an increase in usage. Specific consumption was in fact even lower than for the year prior to the overhaul and may justifiably be regarded as exemplary.

	UNIT	2005	2004	DIFFERENCE FROM PREVIOUS YEAR
Fresh water usage	m ³	413 400	429 577	- 3.8 %
Specific fresh water usage	l/kg paper gross	5.90	6.39	- 7.7%

2.2 Raw materials

During the year under review, 1.037 kg of raw materials was

used to produce 1 kg of paper (gross weight) as opposed to 1.036 kg in the previous year.

	UNIT	2005	2004	DIFFERENCE FROM PREVIOUS YEAR
Specific raw material usage	kg bone dry /kg paper bone dry	1.037	1.036	+ 0.1%

Wood pulp, filler and potato starch are the three most important raw materials and make up more than 98% of our raw materials in terms of quantity.

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: for this reason, Ziegler Paper Mill makes exclusive use 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 able to considerably reduce both specific power consumption (- 3.0 %) and specific gas consumption(- 6.3 %). Total specific energy usage was thus reduced by -5.7%. Responsible for this were a series of measures that included an improvement to our heat recovery plant. Due to the 8.4% increase in paper production over the previous year, absolute power consumption was up by 7.3% and gas consumption by 3.7%.

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.

	UNIT	2005	2004	DIFFERENCE FROM PREVIOUS YEAR
Hydroelectric power production	MWh	11 139	11 155	- 0.1 %
Thermal power production	MWh	29 397	28 444	+ 3.4 %
Power consumption	MWh	36 237	33 780	+ 7.3 %
Specific power consumption	kWh/kg paper gross	0.487	0.502	- 3.0 %
Gas consumption	MWh	149 526	144 163	+ 3.7 %
Specific gas consumption	kWh/kg paper gross	2.008	2.144	- 6.3 %
Specific steam consumption	kg steam/kg paper gross	2.000	2.058	- 2.8 %
Total specific energy consumption (electricity + gas)	kWh/kg paper gross	2.494	2.646	- 5.7 %

The problem of the target agreement on CO₂ reduction, which contains absolute quantities, and the dramatic rise in energy prices once again confirm that we are correct in making increased energy efficiency our highest priority. For this reason, we

will be carrying out a thoroughgoing energy study in collaboration with an external expert in 2006 aimed at identifying further potential sources for reducing energy consumption.

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

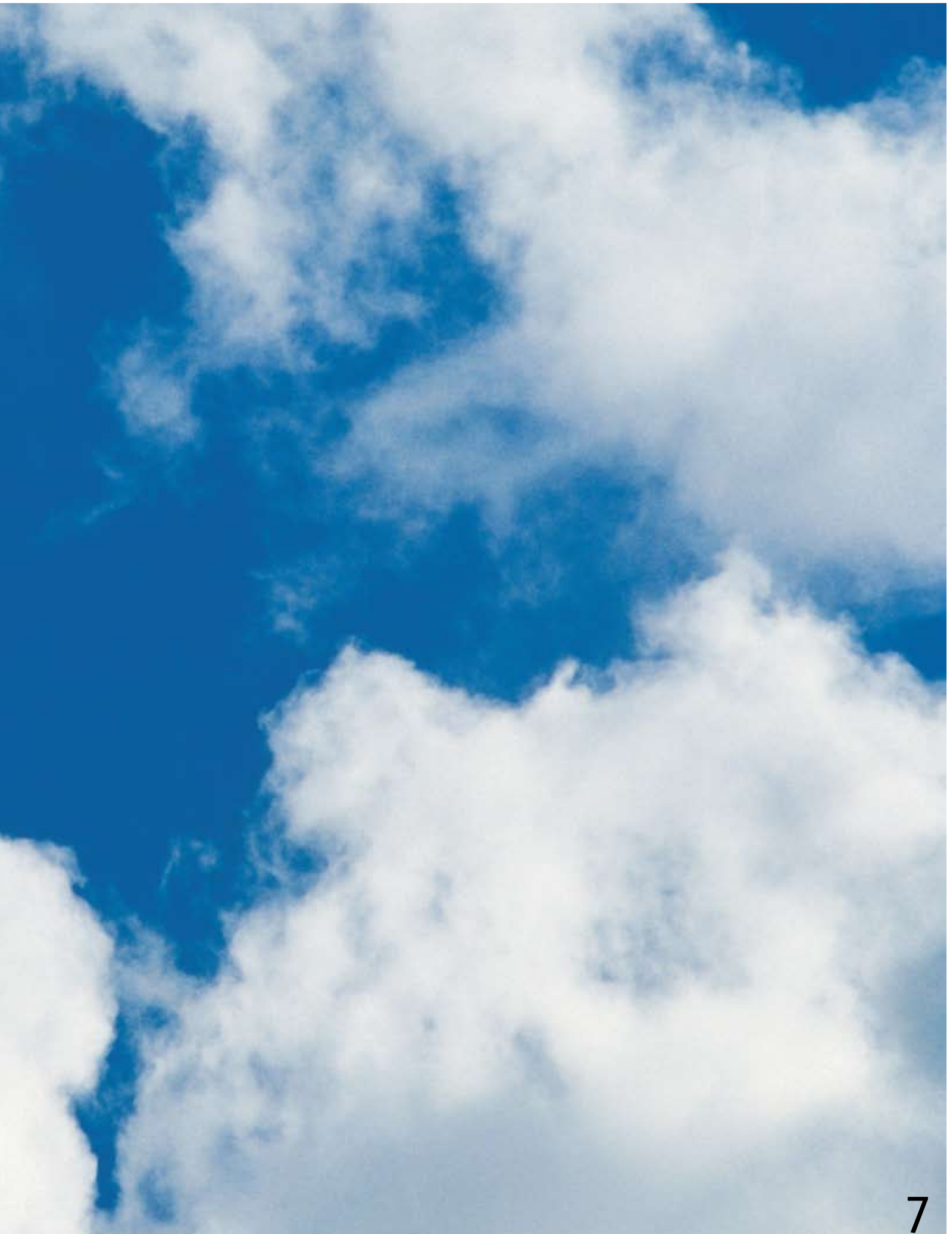
The fresh water obtained from the company's own ground-water catchment system is used over and over again thanks to in-house recycling. After having been used repeatedly, the water is cleaned by Ziegler Paper Mill in its own mechanical treatment plant. Before the clarified wastewater is returned to the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

	UNIT	2005	2004	DIFFERENCE FROM PREVIOUS YEAR
Wastewater	m ³	327 746	350 101	- 6.4 %
Specific wastewater	l/kg paper gross	4.40	5.21	- 15.6 %
Waste solids	kg	101 853	91 631	+ 11.2 %
Specific waste solids	g/kg paper gross	1.368	1.363	+ 0.4 %

In 2005, we achieved a significant reduction in the volume of wastewater produced in comparison with the previous year despite a marked growth in paper production. For this reason, the volume of specific wastewater was more than 15% lower than the year-back level and, at 4.4 litre/kg paper, represents the lowest value we have achieved to date and is thus exemplary for the sector as a whole.

Less gratifying, however, was the rise in the absolute volume of waste solids of more than 11% (a rise of 0.4% in specific terms). 2004 had been a bad year as a result of the temporary shutdown of wastewater drainage to our preliminary mechanical treatment plant. This shows that our preliminary

mechanical treatment unit is not capable of dealing adequately with the volume of paper sludge resulting from increased production. One of our top-priority environmental goals is therefore to replace this old treatment plant with a more up-to-date and efficient system. The efficiency of our downstream biological wastewater clarification system was not affected by the higher volume of sludge produced. During the year under review, the Office of Environmental Protection and Energy 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.



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.

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

- 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

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.

NO_x emissions depend to a very great extent on the injection volume used in the gas turbine, since this affects the combustion temperature. Continuous long-term monitoring during the previous year showed that using an injection volume of 200 litres an hour to operate the gas turbine ensured that the permitted limit could be safely maintained. On the basis of these findings, the government office responsible issued

authorisation for the gas turbine to be run using an injection volume of 200 litres an hour. Measurements performed during the year under review now show that the permitted limit is only reached when an injection volume of less than 160 litres an hour is used.

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 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.

Although we succeeded in reducing specific gas consumption

CO ₂ EMISSIONS AT ZIEGLER PAPER MILL AS % [BASED ON EnAW CALCULATION MODEL]				
	LEVEL	ACTUAL	TARGET	REDUCTION TARGET
CO ₂ in %	1990	2005	2007	2010
	100.0	89.6	82.7	85.0

substantially in the year under review, absolute CO₂ emissions were considerably above the target level due to the increase in production, even though no agreed target value exists for 2005.

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 our own scrap is completely 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.
- 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 noise emission measurements were performed and no complaints were received from local residents. The last measurements taken show full compliance 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.

Our measures here focus first and foremost on protecting our staff from the detrimental effects of heat and 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. A selected group of workers therefore took part in long-term tests with new individual ear protectors. 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. These tests having proved successful, it was decided towards the end of 2005 that all members of our workforce affected by noise should be issued with individual ear protectors.

Exposure of our employees to heat, especially in the summer months, was reduced to a completely acceptable level by the modifications carried out to the paper machine in the previous year. This was achieved despite the fact that the paper machine now operates at considerably higher temperatures than before its overhaul.

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. The positive trend demonstrated by industrial accidents is

	UNIT	2005	2004	2003
Industrial accidents	Number	14	17	23
Non-work-related accidents	Number	29	13	22
Time lost due to industrial accidents	%	0.17	0.34	1.48
Time lost due to non-work-related accidents	%	0.60	0.11	0.81

gratifying in terms of both their number and severity (time lost); this shows that the efforts we are making are bearing fruit.

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 risk that that we instil in our staff with our preventative campaigns also has a positive indirect influence on their leisure activities.

6. AUDITS AND LEGAL BASIS

The year under review saw the successful re-certification 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 RWTÜV. The environmental management system was also examined by means of an internal audit.

In addition, a maintenance audit for the FSC-COC standard was performed in April 2005 by the SQS. This authorised Ziegler Paper Mill to continue supplying FSC products that have been subjected to thorough monitoring and come from forests run in compliance with the principles and criteria of the Forest Stewardship Council (FSC).

In autumn, new certification was performed for the FSC-STD-40-004 (1.0) standard which now allows us to supply our customers with paper bearing the FSC label in accordance with the mixed credit system.

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

The ISO 14000:1996 standard has been revised by ISO and republished as ISO 14000:2004. Our re-certification was performed in compliance with the newly revised standard.

ACHIEVEMENT OF GOALS

The immediate objectives planned for the 2005 review year were the following measures:

- Pilot phase with selected employees for the introduction of individual ear protection.

This goal was achieved in full. Evaluation of the pilot phase with individual ear protectors demonstrated a high level of acceptance and very effective protection. It was therefore decided that all employees working in areas affected by troublesome noise should be issued with the new protectors.

- Compilation of basic data for a new paper sludge filter, which is also an initial prerequisite both for the replacement of our mechanical waste treatment plant by a more efficient unit and for the option of our own biological wastewater treatment system.

Pilot trials were performed in collaboration with the University of Applied Sciences in Muttenz with two different types of filter in a section of our wastewater system. While no adequate thickening of the separated solids was achieved with one type of filter, the other filter type produced good to

not-so-good elimination of solid waste, depending on the category of paper manufactured. Examination of results with external experts led to the decision to test the selection and combination of different flocculants in a later pilot trial with the aim of establishing an adequate level of solids elimination over the entire range of paper qualities.

FUTURE OBJECTIVES

- Successful pilot testing and installation of a new system for preliminary mechanical treatment of our industrial wastewater. This goal is the logical consequence of the shortcomings established in the elimination of solids in our wastewater (as described in section 3.1).
- Performing a comprehensive energy study in collaboration with experts to determine the potential for reducing energy usage. This objective is dictated both by the huge increase in energy costs and by our commitment to reducing CO₂ emissions in accordance with the 2010 target agreement entered into with the Federal government. This goal is also an expression of our deep-rooted commitment to the on-going improvement of our energy efficiency.



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