

2011

English

Z-CO₂

ZIEGLER PAPER MILL



ZIEGLER
P A P I E R

www.zieglerpapier.com



Ziegler Paper Mill is the only maker of natural papers for graphic applications in Switzerland and is among the world's leading manufacturers for its specific product lines. We are wholeheartedly committed to the protection and conservation of the environment and to the health and safety of our employees.

The efficient environmental and workplace safety strategies pursued at Ziegler Paper Mill are based on a total quality management system (TQM) that has been in place since 2008:

Quality assurance system: ISO 9001:2008

Environmental quality system: ISO 14001:2004

Work safety system: OHSAS 18001:2007

Certifying agency: Swiss TS Technical Services AG

FACTS 2010

Business	Production of premium-quality, wood-free fine papers and specialties
Product lines	Corporate Design, Natural Design, CAD/Office, Specialties
Plant & equipment	Paper machine PM 3, slitter-winder, large-format sheet cutter, small-format sheet cutter; central power plant with gas turbine / waste heat boiler (combined heat and power plant)
Annual output	64 900 tonnes (sales volume)
Wire width PM 3	331 cm (trimmed)
Weight range	40–400 gms
Quality assurance system	ISO 9001:2008, Registration No. 08-342-047 (03.04.2008–02.04.2011)
Environmental quality system	ISO 14001:2004, Registration No. 08-342-047 (03.04.2008–02.04.2011)
Work safety system	OHSAS 18001:2007, Registration No. 08-342-047 (03.04.2008–02.04.2011)
FSC certificate	FSC-STD-40-004 (1.0), Registration No. SQS-COC-024310 (12.09.2005–11.09.2010) FSC-STD 40-004 (2.0), Registration No. SQS-COC-024310 (12.09.2010–11.09.2015)
Raw stock	Market pulps with FSC certificate and from other internationally recognised wood certification programmes. Transported exclusively by ship and rail.
Water	Own ground water well; high level of closed-loop recirculation
Workforce	180 people working days or shift work
Sales	approx. CHF 105 million.
Investments	approx. CHF 4.1 million.
Legal form	Family-owned corporation (AG) with share capital of CHF 1 million
Year established	1861

CO₂ LEGISLATION IN SWITZERLAND

By means of its CO₂ legislation, the Swiss government aims to effectively meet the requirements of climate protection. It represents a sustainable energy and climate policy. Legislation lays down guidelines for the generation of energy using fossil fuels that are intended to substantially reduce CO₂ emissions (minus 10%) arising from the combustion of fossil energy sources. Swiss CO₂ legislation foresees that this target should be achieved primarily by means of voluntary government-approved target agreements between companies and the authorities. When companies achieve these voluntary targets, they are exempted from paying a CO₂ levy on the use of fossil fuels. By adopting this method, Switzerland is employing a sensible and reasoned approach that has been well received by industry.

CO₂-NEUTRAL PAPER FROM ZIEGLER PAPER MILL

The voluntary targets set by a large number of companies and industrial sectors are frequently not merely achieved, but in many cases far exceed the minimum requirements stipulated by the authorities. This is also true in the case of Ziegler Paper

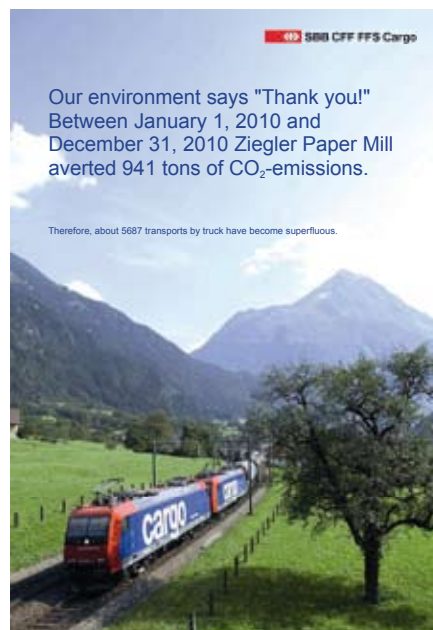
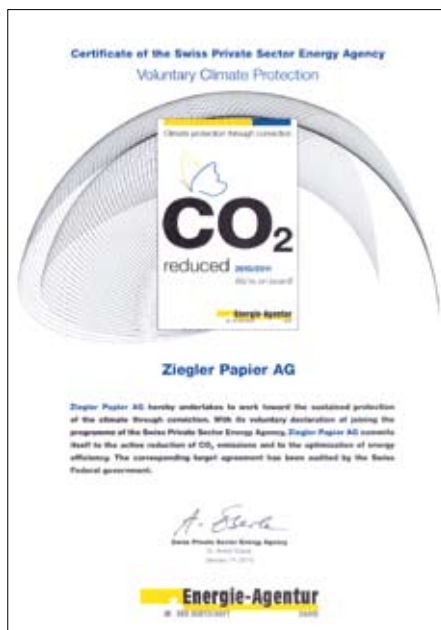
Mill, which entered into an agreement for the period 2008 to 2012 under the overall control of the Energy Agency for Industry (EnAW), which has certified Ziegler Paper Mill.

On the basis of its target agreement, Ziegler Paper has been awarded emission credits by the government every year since 2008; from these credits is deducted the volume of CO₂ actually produced by Ziegler Paper. In order to obtain exemption from the CO₂ levy, it is important for the company not to have a negative balance on its CO₂ account. Any excess emission credits can be sold, offset or carried over into the following year, while it is also possible to purchase emission credits should a company not have sufficient.

Heat and electricity are generated at Ziegler Paper Mill by burning natural gas. This produces CO₂, a gas which has a major impact on the environment. As alternative technologies that do not depend on fossil fuels are not likely to be available in the near future, Ziegler Paper relies on the solution that is best for the environment at the present time: a natural-gas-based combined heat and power plant with a gas turbine for generating electricity and a waste heat boiler for producing steam with emphasis on the best possible energy efficiency.

ZIEGLER PAPER MILL WAS CERTIFIED BY THE ENAW FOR ITS CO₂ REDUCTION TARGETS IN 2010. THE MEASURES IMPLEMENTED HAVE BEEN SO SUCCESSFUL THAT ZIEGLER PAPER MILL IS ABLE TO OFFER CO₂-NEUTRAL PAPER FROM THE QUOTA OF SURPLUS CO₂ CREDITS IT HAS BUILT UP.

RELEVANT CERTIFICATES:



REDUCTION TARGETS FOR ZIEGLER PAPER MILL [AS PER ENAW CALCULATION MODEL WITHOUT CORRECTION FOR COMBINED HEAT AND POWER GENERATION]

	STATUS 2000	ACTUAL 2008	ACTUAL 2009	TARGET 2010	ACTUAL 2010
CO ₂ output in t/a	27 992	30 559	29 184	26 184	29 828
CO ₂ intensity ¹ in %	100.0	83.2	87.8	98.0	86.5
Energy efficiency ² in %	100.0	118.4	113.0	104.0	114.3
CO ₂ quota in tonnes pa		36 144	32 541		33 789

¹) $100 \times \text{CO}_2 \text{ output} / (\text{CO}_2 \text{ output} + \text{reduction in CO}_2 \text{ output})$ ²) $100 \times (\text{TEC} + \text{reduction in TEC}) / \text{TEC}$; TEC = total energy consumption

As can be seen from the table above, since quotas began being allocated in 2008 Ziegler Paper has always had a significant positive balance resulting from the difference between our CO₂ quota and the volume of CO₂ actually produced, with our actual CO₂ intensity clearly lower than that targeted. To date, no CO₂ certificates have been sold from the CO₂ account. Instead, Ziegler Paper uses its very positive CO₂ balance to give customers the opportunity of obtaining some of our pro-

duction volume as CO₂-neutral paper. At the end of 2010, Ziegler Paper's CO₂ account showed a positive balance resulting from the measures it had implemented itself - that is to say: without the purchase of any emission credits. This makes it possible for Ziegler Paper to offer its customers papers manufactured in a CO₂-neutral manner and is good reason to enumerate below some of the CO₂ milestones that have marked paper production at Ziegler Paper Mill.

YEAR	MEASURE	REASON FOR CO₂ REDUCTION	CO₂ REDUCTION IN TONNES P.A. (BASIS: 2010 FIGURES)
1992	Replacement of 2 heavy oil boilers with a gas turbine + waste heat boiler	Change from heavy oil to gas	11'700
1995	Renovation of the press section with shoe press	Reduction in web moisture before drying of 2%	1'700
2003	Renovation of the waste heat boiler	Improved efficiency of the waste heat boiler	1'500
2004	Replacement of ventilation equipment and steam/condensate system	Improved efficiency of the drying section	1'240
1990-2009	Various measures to ensure closed-loop recirculation of water: reduction in wastewater of approx. 40%	Reduction in heat lost via wastewater	1'100
2009	Heat recovery from waste air from the central power plant (generation of warm water for conditioning felts)	Warm water for conditioning press felts increases the efficiency of the wet presses	460
2010	Channelling of condensate direct to the boiler house	Lower utilisation of energy for heating condensate	140

The table provides an overview of the most important measures introduced by Ziegler Paper that have led to reductions in CO₂ output since 1990 (base year of CO₂ legislation).

Without these measures, which have involved a considerable level of investment on the part of Ziegler Paper, CO₂ emissions in 2010 would have been approximately 60% higher. The success achieved with our investments in these measures is due in very large part to our compliance with new environmental requirements (the government's clean air ordinance), the re-

placement of heavy oil, the increase in our production capacity and the reduction in energy consumption (energy costs).

WHAT THE FUTURE HOLDS

In addition to the measures listed above, numerous smaller steps have also been taken in order to reduce the loss of energy and to minimise the use of primary energy. Upcoming investments in replacing equipment and machinery offer considerable potential for improving CO₂ output still further, especially the recovery of heat from waste air from the paper machine.

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