



### Key figures of the ANDRITZ GROUP 2005-2009

(According to IFRS)	Unit	2009	2008	2007	2006	2005
Order intake	MEUR	3,349.3	3,705.3	3,749.5	2,891.0	1,974.6
Order backlog as of December 31	MEUR	4,434.5	4,277.4	3,843.3	3,397.1	1,695.6
Sales	MEUR	3,197.5	3,609.8	3,282.5	2,709.7	1,744.3
EBITDA <sup>1)</sup>	MEUR	218.2	278.2	250.7	197.7	130.9
EBITA <sup>2)</sup> (excl. restructuring expenses)	MEUR	193.1	246.8	209.7	166.2	107.0
EBITA (incl. restructuring expenses)	MEUR	164.1	233.2	209.7	166.2	107.0
Earnings Before Interest and Taxes (EBIT)	MEUR	147.1	218.5	200.9	163.3	106.7
Earnings Before Taxes (EBT)	MEUR	149.6	210.5	200.8	165.3	110.0
Net income (incl. non-controlling interests)	MEUR	102.9	147.0	137.8	121.1	80.2
Cash flow from operating activities	MEUR	345.7	255.0	33.1	143.1	237.3
Capital expenditure <sup>3)</sup>	MEUR	70.5	69.7	57.0	45.7	26.7
Employees as of December 31 (excl. apprentices)	-	13,049	13,707	12,016	10,215	5,943
Fixed assets	MEUR	731.4	732.1	632.3	608.6	308.0
Current assets	MEUR	2,577.9	2,354.2	1,877.1	1,777.5	1,083.3
Total shareholders' equity <sup>4)</sup>	MEUR	663.5	577.4	481.6	414.5	328.8
Provisions	MEUR	529.9	477.3	402.4	386.1	189.8
Other liabilities	MEUR	2,115.9	2,031.6	1,625.4	1,585.5	872.7
Total assets	MEUR	3,309.3	3,086.3	2,509.4	2,386.1	1,391.3
Equity ratio <sup>5)</sup>		20.0	18.7	19.2	17.4	23.6
Net liquidity <sup>6)</sup>	MEUR	677.9	408.9	246.5	365.7	383.9
Net debt <sup>7)</sup>	MEUR	-505.3	-242.9	-94.8	-216.9	-316.4
Net working capital <sup>8)</sup>	MEUR	-104.3	22.7	99.1	-93.6	-128.2
Capital employed <sup>9)</sup>	MEUR	285.9	406.8	405.6	194.5	21.1
Gearing <sup>10)</sup>	%	-76.2	-42.1	-19.7	-52.3	-116.8
EBITDA margin		6.8	7.7	7.6	7.3	7.5
EBITA margin (excl. restructuring expenses)	%	6.0	6.8	6.4	6.1	6.1
EBITA margin (incl. restructuring expenses)		5.1	6.5	6.4	6.1	6.1
EBIT margin	%	4.6	6.1	6.1	6.0	6.1
Net income/sales		3.2	4.1	4.2	4.5	4.6
ROE <sup>11)</sup>	%	15.5	25.5	28.6	29.2	24.3
EV <sup>12)</sup> /EBITDA	MEUR	6.5	1.9	7.6	9.1	6.3
Depreciation and amortization/sales	%	2.0	1.5	1.4	1.3	1.4
Impairment resp. amortization goodwill/sales		0.2	0.2	0.1	0.0	0.0

1) Earnings Before Interest, Taxes, Depreciation, and Amortization 2) Earnings Before Interest, Taxes, Amortization of identifiable assets acquired in a business combination and recognized separately from goodwill at the amount of 9,109 TEUR (2008: 7,862 TEUR) and impairment of goodwill at the amount of 7,922 TEUR (2008: 6,783 TEUR) 3) Additions to intangible assets and property, plant, and equipment 4) Total shareholders' equity incl. non-controlling interests 5) Total shareholders' equity/total assets 6) Cash and cash equivalents plus marketable securities plus fair value of interest rate swaps minus financial liabilities 7) Interest bearing liabilities incl. provisions for severance payments, pensions, and jubilee payments minus cash and cash equivalents and marketable securities 8) Non-current receivables plus current assets (excl. cash and cash equivalents as well as marketable securities) minus other non-current liabilities and current liabilities (excl. financial liabilities and provisions) 9) Net working capital plus intangible assets and property, plant, and equipment 10) Net debt/total shareholders' equity 11) ROE (Return On Equity): Net income/total shareholders' equity 12) EV (Enterprise Value): market capitalization based on year-end closing price minus net liquidity

### **Development of the ANDRITZ share since the IPO**



Relative share price performance of the ANDRITZ share versus the ATX since the IPO

### Key figures of the business areas 2005-2009

### HYDRO

	Unit	2009	2008	2007	2006	2005
Order intake	MEUR	1,693.9	1,543.4	1,216.1	585.4	71.5
Order backlog as of December 31		2,894.5	2,590.1	1,954.9	1,659.5	60.5
Sales	MEUR	1,378.0	1,205.9	910.0	467.9	52.7
EBITDA		120.9	105.7	66.3	35.7	4.8
EBITDA margin		8.8%	8.8%	7.3%	7.6%	9.1%
EBITA		100.5	87.9	52.2	27.6	2.6
EBITA margin		7.3%	7.3%	5.7%	5.9%	4.9%
Capital expenditure		44.5	35.0	25.4	13.5	3.4
Employees as of December 31		5,993	5,606	4,390	3,678	474

### **PULP & PAPER**

	Unit	2009	2008	2007	2006	2005
Order intake	MEUR	923.0	1,033.8	1,406.4	1,432.4	1,017.0
Order backlog as of December 31		778.7	752.8	1,060.4	1,124.4	950.4
Sales	MEUR	903.3	1,326.6	1,462.2	1,304.2	1,032.9
EBITDA		42.0	84.5	105.3	89.6	76.1
EBITDA margin		4.6%	6.4%	7.2%	6.9%	7.4%
EBITA		17.5	66.3	87.8	75.9	63.6
EBITA margin		1.9%	5.0%	6.0%	5.8%	6.2%
Capital expenditure		14.9	20.2	21.8	21.7	13.6
Employees as of December 31	-	4,239	5,102	4,843	3,863	3,018

### **METALS**

	Unit	2009	2008	2007	2006	2005
Order intake	MEUR	296.2	611.5	636.4	401.9	444.8
Order backlog as of December 31		564.1	736.2	631.5	403.7	458.9
Sales	MEUR	473.4	566.2	408.0	450.5	275.9
EBITDA		23.2	42.6	33.1	33.4	18.2
EBITDA margin		4.9%	7.5%	8.1%	7.4%	6.6%
EBITA		20.5	40.1	30.6	31.1	15.9
EBITA margin		4.3%	7.1%	7.5%	6.9%	5.8%
Capital expenditure		2.0	4.3	3.2	2.3	2.2
Employees as of December 31	-	971	996	880	819	749

### **ENVIRONMENT & PROCESS**

	Unit	2009	2008	2007	2006	2005
Order intake	MEUR	305.4	361.2	346.9	344.2	340.1
Order backlog as of December 31		139.6	151.8	161.1	179.3	202.2
Sales	MEUR	322.6	366.6	364.4	366.5	289.2
EBITDA		29.3	32.1	30.8	25.9	22.0
EBITDA margin		9.1%	8.8%	8.5%	7.1%	7.6%
EBITA		24.6	27.3	25.7	20.9	17.7
EBITA margin		7.6%	7.4%	7.1%	5.7%	6.1%
Capital expenditure		5.7	7.4	4.9	6.5	6.6
Employees as of December 31		1,329	1,437	1,349	1,324	1,213

### **FEED & BIOFUEL**

	Unit	2009	2008	2007	2006	2005
Order intake	MEUR	130.8	155.4	143.7	127.1	101.2
Order backlog as of December 31		57.6	46.5	35.3	30.2	23.6
Sales	MEUR	120.2	144.5	137.8	120.6	93.6
EBITDA		2.8	13.3	15.2	12.9	9.8
EBITDA margin		2.3%	9.2%	11.0%	10.7%	10.5%
EBITA		1.0	11.6	13.4	10.6	7.2
EBITA margin		0.8%	8.0%	9.7%	8.8%	7.7%
Capital expenditure		3.4	2.9	1.7	1.7	0.9
Employees as of December 31		517	566	553	531	489

# ONTENTS





Company profile, vision, and strategy The day-to-day business challenges for ANDRITZ

### 'We want to keep on growing'

Interview with ANDRITZ President and CEO, Wolfgang Leitner: How strongly has the financial and economic crisis affected the company? How has ANDRITZ dealt with this challenge? And what are the expectations and strategies for 2010?

### 200-ton challenge

7.4 meters in diameter, 200 tons in weight: ANDRITZ HYDRO delivers five gigantic Francis turbine runners to one of the world's largest hydropower stations in Venezuela.

### Growth on the Horizon(te)

Technology for sustainable, environmentally efficient solutions: ANDRITZ PULP & PAPER supplied the world's largest single pulp production line for the Horizonte pulp mill, Brazil.

**Financial year 2009** 

Satisfactory development in a difficult environment: the key financial figures at a glance.

**The ANDRITZ share** Solid performance in spite of the financial and economic crisis

### **Executive and Supervisory Boards**

### The ANDRITZ business areas

PULP & PAPER 30 METALS 40 ENVIRONMENT & PROCESS 48 FEED & BIOFUEL 56

**Manufacturing** How ANDRITZ deals with fluctuations in manufacturing workload.

Human Resources Management Human Resources development for 13,049 employees

> **Automation** The global network of ANDRITZ AUTOMATION.

> > Locations Contact data of all ANDRITZ locations.

Glossary Explanation of technical and financial terms

**Service for shareholders** Benefit from the advantages of the ANDRITZ Shareholders' Club.

### **Global challenges**

Companies all over the world have been confronted with exceptional challenges as a result of the financial and economic crisis. Additionally, such central topics as globalization or climate and environmental protection also present global challenges that have to be answered.

### **ANDRITZ's answers**

This annual report relates how the ANDRITZ GROUP stood its ground and developed in 2009 in the face of these challenges - and how it tackles day-to-day challenges in order to achieve its goals of world market leadership and long-term, profitable growth.







ANDRITZ supplies its customers with energy-efficient and eco-friendly technologies. More than 50% of Group sales are generated from the sale of systems and process technologies used to generate energy from sustainable resources. Thus, it goes without saying that the ANDRITZ annual report was produced and printed in accordance with the highest requirements in terms of environmental and climate protection. By the way, the paper (Revive paper for the inside pages, and Algro paper for the cover of this annual report) is also produced

on paper machines using technologies by ANDRITZ PULP & PAPER





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## Import acquisitions since 1990 at a glance

### HYDRO

2006	VA TECH HYDRO
2007	Tigép
2008	GE Hydro
2008	GEHI (Joint Venture)

### PULP & PAPER

1990	Sprout-Bauer
1992	Durametal
1994	Kone Wood
1998	Kvaerner Hymac
1999	Winberg
2000	Ahlstrom Machinery
2000	Lamb Baling Line
2002	ABB Drying
2003	IDEAS Simulation
2003	Acutest Oy
2003	Fiedler
2005	Cybermetrics
2005	Universal Dynamics Gr
2006	Küsters
2006	Pilão
2007	Bachofen + Meier
2007	Sindus
2008	Kufferath
2009	Rollteck
2009	Rieter Perfojet*

### METALS

1997	Sundwig
1998	Thermtec
2000	Kohler
	Selas
2004	Kaiser
	Lynson
2008	Maerz

### ENVIRONMENT & PROCESS

1992	TCW Engineering
1996	
	3SYS
2004	Bird Machine
2004	Netzsch Filtration
2004	Fluid Bed Systems from
	VA TECH WABAG
	Lenser Filtration
	Contec Decanter
	Delkor Capital Equipment
2009	Frautech

### FEED & BIOFUEL

1995	Jesma-Matador
	UMT
	Chemes Strojarne

 Subject to approval of anti-trust authorities.

### Growth

All strategic measures are focused on maintaining profitable growth in the long-term. With this in mind, ANDRITZ is pursuing three overall strategic goals:

 Increasing sales by an average of 10% per annum, based on organic expansion, mainly by research and development, as well as acquisitions. ANDRITZ continues to look out for opportunities to acquire companies and businesses that complement its existing range of products, process technologies, and services. The goal is to be a single-source supplier with full-line capabilities in all business areas. In the past decade, sales of the Group have increased by approximately 15% per annum.

2. Achieving profitability (EBITA margin) of 7% on average over the cycle. In the past ten years, the average EBITA margin has seen a steady increase. Whereas the EBITA margin average was 5.3% from 2000 to 2004, this figure increased to 6.3% (excl. restructuring expenses) from 2005 to 2009.

3. Extending the <u>service portfolio</u> in order to help customers achieve their goals in terms of productivity, profitability, and sustainability. **Global presence** 

#### EUROPE

Austria: Graz (headquarters of the ANDRITZ GROUP), Linz, Vienna, Weiz - Czech Republic: Ceske Budejovice, Hradec Králové, Prague - Denmark: Esbjerg - Finland: Helsinki, Hollola, Kotka, Savonlinna, Tampere, Varkaus France: Asnières-sur-Seine, Châteauroux Châtellerault Grenoble Haquenau, Saint Martin Le Beau, Vélizy-Villacoublay - Germany: Bretten-Gölshausen, Cologne, Düren, Düsseldorf, Hemer, Holzmaden, Krefeld, Mettmann, Ravensburg, Regensburg, Selb, Senden - Great Britain: Belper, Doncaster, Hull, Newcastleunder-Lyme - Hungary: Tiszakécske Italy: Schio (Vicenza) - The Netherlands: Den Helder, Geldrop, Rotterdam • Norway: Jevnaker • Poland: Warsaw Romania: Sibiu - Russia: Moscow, St. Petersburg - Slovakia: Humenné, Levice, Spišská Nová Ves • Spain: Barcelona, Madrid • Sweden: Hedemora, Karlstad, Kristinehamn, Nälden, Örnsköldsvik, Stockholm, Växjö, Vallentuna - Switzerland: Bülach, Jonschwil, Kriens, Vevey, Wohlen, Zurich - Turkey: Ankara Ukraine: Kiev

#### NORTH AMERICA

Canada: Brantford, Edmonton, Lachine, Nanaimo, Peterborough, Pointe Claire, Prince George, Richmond, Saskatoon, Stoney Creek, Terrace • Mexico: Morelia, Veracruz • USA: Alpharetta, Arlington, Bellingham, Canonsburg, Charlotte, Decatur, Glens Falls, Janesville, Lakeland, Montoursville, Muncy, Pell City, Roswell, San Leandro, Scott Depot, Spartanburg, Springfield, Tualatin, Walpole

#### SOUTH AMERICA

Brazil: Araraquara, Barueri, Campinas, Curitiba, Pomerode, Porto Alegre, São Paulo, Serra • Chile: Santiago de Chile, Talcahuano • Colombia: Bogotá • Peru: Lima • Uruguay: Fray Bentos, Río Negro • Venezuela: Caracas, Estado Carabobo

#### CHINA

Beijing, Foshan, Hangzhou, Shanghai, Zhejiang

#### ASIA (excl. China)

India: Bangalore, Chennai, Haryana, Mandideep, New Delhi = Indonesia: Jakarta = Iran: Tehran = Japan: Tokyo = Malaysia: Kuala Lumpur, Selangor = Philippines: Makati City, Manila = Singapore: Singapore = Taiwan: Taipei = Thailand: Bangkok = Vietnam: Hanoi, Ho Chi Minh City

#### OTHERS

Australia: Victoria, New South Wales South Africa: Johannesburg

ANDRITZ has set itself the strategic goal of increasing its

sales by an average of 10% p.a.

In the past decade, sales of the ANDRITZ GROUP have grown by approximately 15% p.a. on average

The ANDRITZ GROUP locations, with all contact data, are listed from page 66 onwards of this annual report and in the Internet at <u>www.andritz.com/locations</u>

## ANDRITZ President and CEO Wolfgang Leitner: We want to keep on growing<sup>)</sup>

The global financial and economic crisis triggered in 2008 by speculative bank transactions continued in 2009. After the economy had reached its trough in spring of 2009, the first signs of economic stabilization and improvement were noted in the middle of the year. How did ANDRITZ experience 2009, what were the main challenges from the managerial point of view? And what are the expectations and strategies for 2010? Answers to this and more from ANDRITZ AG's President and CEO, Wolfgang Leitner.

## What effect did the continuing economic crisis have on ANDRITZ in 2009? What were the challenges and how were they dealt with?

As expected, 2009 was not an easy year for ANDRITZ. All in all, however, I believe we have mastered the crisis well because, on the one hand, we implemented appropriate operative measures in good time, and on the other hand, we were able to limit the overall impact on the ANDRITZ GROUP significantly due to our broad basis of different end customer industries. The HYDRO business area proved to be very stable, with its hydropower plant equipment practically not suffering from the global economic crisis, thus reaching a very favorable development of order intake. As expected, the PULP & PAPER and METALS business areas recorded a substantial decline in order intake as a result of the significant decline of project and investment activity worldwide. However, due to the broad basis of our business with a wide range of customer groups, our substantial cash reserves, and our sound balance sheet, we were able to keep ANDRITZ on a stable financial course.

(As expected, 2009 was not an easy year for ANDRITZ.)

(All in all, however, I believe we have mastered the crisis well.) We have made capacity adjustments and implemented restructuring measures to adjust our cost and organizational structures to the difficult economic environment. These measures will also make the Group more competitive after the crisis; that is why it was particularly important for us to continue our investment activities – above all in modernization of manufacturing locations and optimization of process solutions – and to forge ahead with our research and development activities, particularly in the renewable energies sector.

On the subject of challenges, I would also like to mention two very important customer projects that we completed successfully in 2009 thanks to the good cooperation between various ANDRITZ business areas. In Brazil, we started up the world's largest single-line pulp production plant for Fibria, the worldwide leader for market pulp. And in China, the first complete packaging paper line that ANDRITZ has supplied since reentering the paper and board machines market was commissioned successfully for Hebei Yongxin Paper. These important achievements and references strengthen our market position in the continuing difficult competitive environment.

### The world's economy is showing clear signs of recovery. Does this mean that ANDRITZ has weathered the storm? What developments do you expect for 2010?

Personally, I feel that the change of mood has come too soon in the wake of the lows recorded in the spring of 2009. I fear that the developments on the international stock exchanges have rushed much ahead of the real economy and that we can still expect setbacks. In addition, I have my doubts as to whether the finance sector has learned anything from the crisis. Renewed speculative financial transactions could once again rock the still fragile financial and economic system. And although there are signs of the situation stabilizing in some segments of industry, I do not expect a sustained upswing in business development yet, particularly in our PULP & PAPER and METALS business areas, for 2010 - possibly towards the end of the year, if at all. Only when our customers see a clear rise in demand and thus can expect adequate utilization of capacity will they again embark more frequently on larger investments in modernization and capacity expansion projects.

### What targets and strategies is ANDRITZ pursuing in 2010? What are the challenges?

The challenge is to come through these difficult times by implementing appropriate operative measures and at the same time preparing ourselves as best possible for a sustained economic upswing. That is the reason why we certainly will not be taking any actions that limit our business opportunities in the long term.

In view of the unchanging difficult economic environment and the lack of economic visibility in many of our end-user industries, it is essential that we continue with the structural improvement



ANDRITZ's President and CEO Wolfgang Leitner:

(All measures set in the face of the global financial and economic crisis will help us to enhance our competitiveness so that ANDRITZ emerges from the present crisis stronger.)

measures in 2010. At the same time, however, we will continue to seek out opportunities for further growth – we want to keep on growing. On the one hand, we will forge ahead with our research and development activities so that we can offer our customers more powerful plants with greater energy efficiency. On the other hand, we will also continue to look out for potential acquisitions in 2010 that will further complement our product portfolio. Not least, we will make targeted investments to further modernize our manufacturing facilities and make our internal processes even

more efficient. All of these measures will help us to enhance our competitiveness so that ANDRITZ emerges from the present crisis stronger.

At this point, I would like to thank our employees for their excellent commitment. My thanks go also to our customers, business partners, and shareholders for the trust they placed in ANDRITZ in 2009. We will continue to direct all our efforts towards ensuring the best possible development for the ANDRITZ GROUP.

## **200-ton challenge**

Modernization of the Guri II hydropower plant in Venezuela – ranked among the largest worldwide – is one of the greatest technological and logistic challenges in the 170-year history of ANDRITZ HYDRO. At the end of 2009, the first of a total of five new Francis turbine runners was supplied from Germany to Venezuela. Weighing 200 tons each and with a diameter of 7.4 meters, these are the most powerful and largest runners ever to be manufactured by ANDRITZ HYDRO.



Venezuela, Guri dam

Caracas



### The customer

The state-owned Venezuelan utility company, Electricidad del Caroní (EDELCA) operates three large hydropower plants with an overall output of some 15,500 MW and accounts for 70% of Venezuela's electricity production.

The project Plant: Guri II – Central hidroeléctrica Simón Bolívar, Venezuela Construction: 1963-1969, 1976-1986 (expansion) Output: 10,300 MW ANDRITZ HYDRO's scope of supply: modernization of five Francis turbine runners by 2013

8 ANDRITZ

Caracas

Venezuela, Guri dam

Five of these enormous Francis turbine runners are manufactured in Germany.

he Guri power plant (with a total output of 10,300 MW) will cover over 50% of Venezuela's entire power demand. On behalf of the Venezuelan utility company Electricidad del Caroní (EDELCA), ANDRITZ HYDRO is to modernize five machines in the Guri II project by 2013 and thus increases the plant's output by around 10%.

### 200 people from eight different countries involved in turbine disassembly

At the beginning of the project, all plant components were disassembled and thoroughly checked. Those parts that can be reused were refurbished on site together with local partners, while parts in need of replacement were manufactured new, complying with the most stringent international quality standards. Over 200 people from eight different countries were involved on the construction site in disassembly and refurbishing work alone.

The comprehensive project documentation also had to be compiled when the project began – it currently comprises more than 500 technical drawings and documents, each in English and Spanish, and provides the basic information for the complex approval process.

### Manufacture of a giant: 3.7 meters high – 7.4 meters in diameter – weighing 200 tons

In 2009, the first of a total of five new turbine runners for Guri II was produced in a three-shift operation in Ravensburg, Germany – an enormous challenge, even for one of the world's leading manufacturing locations in the hydropower sector. Due to the exceptional dimensions of the runners, a new, high load-bearing, articulated in-

spection system was also installed so that the runners could be ideally positioned for welding work. With this equipment, the 200-ton runner can be turned through its own axis and also tilted in the horizontal plane at the same time.

#### Top quality combined with cost efficiency

A high-performance welding process (electroslag welding) is used to weld the runner blades to the crown and band. This high-quality welding process can handle extremely large welding volumes while maintaining cost efficiency – around 4.5 tons of high-alloyed welding filler will be needed for each of the Guri II runners.

### 11,000 kilometer journey from Germany to Venezuela

After a two-month journey, the first of the turbine runners to be manufactured finally arrived from Ravensburg at the Guri II power plant near Puerto Ordaz in the autumn of 2009. Weeks were spent on preparing the extensive customs formalities and frequently difficult transport stages:

- A 32-axle articulated truck with 1,400 horsepower carries the runner over a defined heavyload route through southern Germany in several night runs; a highway has to be partly closed for several hours.
- The journey continues by inland waterway on the Neckar and Rhine rivers up to the port of Rotterdam, Netherlands.
- After crossing the Atlantic, the route continues for some 350 kilometers along the inland waterway leading up the Orinoco River towards the Guri reservoir.
- For the final stretch to the power plant, two bridges have to be reinforced in order to guarantee safe onward transport by road.

The two-month long journey by the turbine runner from Germany to Venezuela started on a 32-axle articulated truck.

### Hydropower is the main source of renewable energy

Around one-fifth of electricity production worldwide comes from renewable energy sources, approximately 90% thereof from hydropower. Thus, hydropower accounts for approximately 18% of overall electricity production, making it by far the most important source of renewable energy (wind and solar: approximately 2%; Source: IHA/IEA).

### More than 50% of Venezuela's energy consumption are generated at the Guri hydropower plant

Modernization of the power plant taps previously unused energy reserves in an eco-friendly project, thus making an effective contribution towards reducing global warming and to worldwide environmental protection. The modernization will increase the plant's output by around 10%.

## **Growth on the Horizon(te)**

By combining the organizations of the former Aracruz Celulose and Votorantim Celulose e Papel, the new company Fibria has become the world's largest market pulp producer (nearly six million tons per year). The company has a strong tradition and a reputation for maintaining technically modern and environmentally sound mills. Fibria's Horizonte mill in Brazil – a greenfield 1.3 million tonper-year bleached market pulp mill near Três Lagoas – is the world's largest single pulp production line, which was delivered by ANDRITZ PULP & PAPER.



Brazil, Três Lagoas

Brasilia

### The customer

With an annual production capacity of six million tons per year, Fibria is the world's largest market pulp producer. Its operations are entirely based on renewable forests: Fibria has a forest base totaling 1.3 million hectares, of which 461,000 hectares are set aside for permanent preservation.

Fibria has been included in the Dow Jones Sustainability Index (DJSI World) in 2009, a selection of the world's companies with the best corporate sustainability practices. In this index, Brazil is represented by seven companies, with Fibria being the only one from the forestry and paper sector.

### The project

Plant: Horizonte mill in Três Lagoas, Mato Grosso do Sul, Brazil. <u>Capacity:</u> 1.3 million ton per year greenfield market pulp mill – the world's largest single pulp line. <u>ANDRITZ PULP & PAPER's scope</u> <u>of supply:</u> technologies for cooking, washing, screening, and bleaching; pulp drying and baling; cooking liquor production; dynamic process simulation. ANDRITZ

Brasilia

ibria continuously looks out for growth opportunities and is making investments in additional capacity to feed the growing global demand for eucalyptus pulp. 'Initially, the Horizonte project was conceived as a 900,000 ton-per-year mill,' savs Francisco Valerio. Director of Industrial Operations and Engineering of Fibria.

### Increasing capacity without much additional investment

Brazil, Três Lagoas

During initial discussions with Fibria, ANDRITZ put forth a proposal to increase production capacity to a level of 1.3 million tons without much additional capital investment by the customer. This solution significantly lowered investment cost per ton of pulp. Because of this, all the equipment is among the largest ANDRITZ has ever built. 'We had not installed a continuous cooking system this size before, but the technology was well proven in other installations,' says Karl Hornhofer, Head of ANDRITZ PULP & PAPER's Capital Systems unit and member of ANDRITZ's Executive Board. 'It was only a matter of scaling up to this world-record size.'

### Best available technology for sustainable, eco-efficient solutions

'It's a different industry than when I started 40 years ago,' Francisco Valerio says. 'Stable production is still a main goal, but equally important are the aspects of sustainable production. We have to do a very sophisticated analysis to determine if we have the right technology to support an eco-optimized, sustainable project.'



Fibria's selection of ANDRITZ PULP & PAPER technologies followed a sophisticated review of the world's best available technologies - and their own experiences in their other mills. 'We knew from the first week of operation that this mill can achieve its design capacity,' says Valerio.

#### Fast start-up for faster return on investment

Time is money. This is certainly true for large capital investments. The sooner a mill can be ramped up, the faster sales revenues can be generated to create cash flow. Fibria signed the contract with ANDRITZ in April 2007. 'Twenty-three months later, we started up this plant and the ramp-up was fantastic,' Valerio explains. 'In August 2009, we produced 99.5 percent prime pulp. In September it was 100 percent. I've been working in this industry for 40 years, thus I know: to reach 100 percent is an outstanding achievement. In October, the performance test run for the ANDRITZ drying and baling plant was successfully completed and a new production record was set.'

The IDEAS simulator from ANDRITZ was an important tool to train Fibria employees, according to Edevar Lopes, Fibria's automation specialist. 'The simulator has two main tasks: First to check out the distributed control system before startup, and second as a tool for operator training.' One thing that impresses Lopes is that the simulator's screens look exactly like the screens on the actual control system. 'There is basically no difference to the operators between operating virtual equipment and the real equipment.'

What once was the equipment lay-down for the construction crews at the mill stands empty today, but not for too long. Fibria has already announced its intent to build a second line at Três Lagoas, in less than five years if the markets hold. 'Over the next decade, we are planning three big projects,' Valerio says. 'After this, I expect our production to be around ten million tons per year. We are learning all the time; we can improve all the time.'

### Complicated project logistics and a strike

The mill is about 700 kilometers from the ocean port where the shipments came in to the mill's location in the interior State of Mato Grosso do Sul. In the middle of the supply, there was a strike by federal customs employees. Locally, the State's customs officials had not dealt with pulp and paper components before and held shipments at the border to be certain about the import/tax clas-

The control systems, used to operate the plant.



sifications for components coming from China, Sweden, Finland, Germany, Austria, and the USA.

Newton Kozak, ANDRITZ's project manager from Curitiba, Brazil, and his team had their hands full. Considerable effort was expended to expedite equipment deliveries by educating local officials about the various components and technologies so that the right import duties could be assessed. 'I can honestly say that both the customer and ANDRITZ worked as one team on this project,' Kozak says. Valerio agrees: 'It was like everyone worked in the same company. The same level of teamwork and commitment remained from engineering, to checkout, to commissioning, to start-up.'

#### **Chances for local communities**

'It's exciting to create something where there was practically nothing before,' says Daniel Rubega, Fibria's maintenance and commissioning engineer. 'Before 2006, there was nothing here but eucalyptus trees – no other big industry or infrastructure.' Most of the employees are from the local region and had never seen a pulp mill before. As Valerio says, 'We can't just think inside the mill walls. It is not desirable to have a nice forest and mill surrounded by communities where the people are very poor. The communities must have a possibility to grow – a place where children can receive a good education, and where everyone can have a better life.'



Francisco Valerio, Fibria:

(Twenty-three months after signing the contract, we started up the plant and the ramp-up was fantastic. In August 2009, we produced 99.5 percent prime pulp. In September it was 100 percent. I've been working in this industry for 40 years and to reach 100 percent is an outstanding achievement. In October, the performance test run for the ANDRITZ drying and baling plant was successfully completed – and a new production record was set.)

With ANDRITZ PULP & PAPER's technical solutions, Fibria was able to lower investment cost per ton produced pulp. One was a digester which eliminated a costly separate impregnation vessel. ANDRITZ used its global network to source from China, India, Sweden, Finland, Canada, Austria, and Brazil to reduce manufacturing costs. A global ANDRITZ team completed the project successfully in terms of production requirements, budget, and time schedule.

Technology of world-record size: the wet end of the dewatering machine – part of ANDRITZ's scope of supply for Fibria.

## Financial year 2009: Satisfactory business development

ANDRITZ showed a solid business development in 2009 in spite of the global financial and economic crisis. As expected, sales and earnings were below the historic highs of the preceding year. In the face of the difficult economic environment, order intake was satisfactory, and the order backlog at the end of 2009 was higher than the record figure achieved in 2008. The Group's net liquidity was increased substantially compared to the previous year.



### Sales below record level of the previous year, HYDRO business area remains strong

Sales of the ANDRITZ GROUP amounted to 3,197.5 MEUR in 2009, thus 11.4% below the record figure for the previous year (2008: 3,609.8 MEUR). While the HYDRO business area achieved a significant increase in sales, sales in the other business areas declined compared to 2008 – particularly in PULP & PAPER.

### Solid order intake in the face of a difficult economic environment

Despite the difficult global economic conditions, <u>order intake</u> of the Group in 2009, at 3,349.3 MEUR, was only 9.6% below the high level of the previous year (2008: 3,705.3 MEUR). This is mainly due to the very positive development of the HYDRO business area, where order intake rose by 9.8% to a new record level of 1,693.9 MEUR (2008: 1,543.4 MEUR). In contrast, the other business areas – particularly METALS – saw a decline in order intake compared to the previous year.

### Order backlog exceeds historic high of the previous year

The <u>order backlog</u> of the ANDRITZ GROUP as of December 31, 2009 amounted to 4,434.5 MEUR, an increase of 3.7% compared to the previous year's high level (December 31, 2008: 4,277.4 MEUR). While the order backlog of the HYDRO business area showed a strong increase, particularly the METALS business area recorded a decline.

### Earnings significantly lower, mainly due to one-off restructuring expenses – positive cost savings impact expected for 2010

The Group's <u>EBITA</u> amounted to 164.1 MEUR in the period under review, significantly below the reference figure for the previous year (2008: 233.2 MEUR). The <u>profitability</u> (EBITA margin) amounted to 5.1% (2008: 6.5%). This decrease is largely due to expenses for capacity adjustments and operational restructuring – particularly in the PULP & PAPER business area – that were necessary due to the economic situation and amounted to approximately 29 MEUR, as well as to the decline in sales. Excluding these one-off expenses, the EBITA in 2009 amounts to 193.1 MEUR, equivalent to an EBITA margin of 6.0%. The adjustments and restructuring measures are expected to yield substantial cost savings in the future, which should have a positive impact on 2010 earnings and the years that follow.

<u>Net income</u> excluding non-controlling interests amounted to 96.8 MEUR (2008: 139.7 MEUR).

### Solid balance sheet structure, substantially higher liquidity

Total assets of the ANDRITZ GROUP as of December 31, 2009 increased to 3,309.3 MEUR (December 31, 2008: 3,086.3 MEUR). The <u>equity ratio</u> as of December 31, 2009 amounted to 20.0% (December 31, 2008: 18.7%).

Liquid funds (cash and cash equivalents plus marketable securities) amounted to 1,082.1 MEUR as of December 31, 2009 (December 31, 2008: 821.8 MEUR). <u>Net liquidity</u> (liquid funds plus fair value of interest rate swaps minus financial liabilities) increased to 677.9 MEUR, thus well above the value at the end of last year (December 31, 2008: 408.9 MEUR).

### Capex and cash flow

<u>Investments</u> in tangible and intangible assets amounted to 70.5 MEUR in 2009 (2008: 69.7 MEUR) and related largely to workshop modernizations.

<u>Cash flow</u> from operating activities amounted to 345.7 MEUR and was thus significantly higher than the previous year's value (2008: 255.0 MEUR).

### Important acquisitions complement the ANDRITZ product and service portfolio

In the third quarter of 2009, ANDRITZ acquired <u>Rollteck</u>, Germany, a specialist in the design and manufacture of winders for the paper industry, thus further complementing the product offerings for the pulp and paper industries. In addition to complete service, Rollteck produces core cutters and components for winders.

In the fourth quarter of 2009, ANDRITZ acquired <u>Delkor Capital Equipment</u>, a South African manufacturer of dewatering equipment (vacuum belt filters, thickeners, filter presses, and screens), predominantly for the mining industry. The products of Delkor further extend the ANDRITZ product range for the mining industry and strengthen ANDRITZ's market position in South Africa.

In addition, ANDRITZ acquired major assets of the Italian company <u>Frautech</u>, a producer

of separators for applications in the dairy and olive oil industries. Based on the know-how acquired, ANDRITZ seeks to develop equipment for additional applications, which will open up interesting growth opportunities for the ENVIRONMENT & PROCESS business area.

Another acquisition in the fourth quarter of 2009 was <u>Rieter Perfojet</u>, a French company that manufactures machinery and systems for the production of nonwovens. Rieter Perfojet's products and technologies are used successfully all over the world for hydroentanglement of nonwovens. With ANDRITZ Küsters in Krefeld, Germany, ANDRITZ already has operations in the nonwovens sector.

#### Note:

Delkor Capital Equipment, Frautech, and Rieter Perfojet are not included in the consolidated financial statements 2009 of the ANDRITZ GROUP because official closing of these transactions was still pending as of the key date December 31, 2009.

### Key financial figures

(MEUR)	2009	2008	+/-
Sales	3,197.5	3,609.8	-11.4%
EBITA <sup>1)</sup> (excl. restructuring expenses)	193.1	246.8	-21.8%
EBITA (incl. restructuring expenses)	164.1	233.2	-29.6%
Earnings Before Interest and Taxes (EBIT)	147.1	218.5	-32.7%
Earnings Before Taxes (EBT)	149.6	210.5	-28.9%
Net income	102.9	147.0	-30.0%

#### Key balance sheet ratios

	Unit	2009	2008
Equity ratio	%	20.0	18.7
Net liquidity <sup>2)</sup>	MEUR	677.9	408.9
Net debt <sup>3)</sup>	MEUR	-505.3	-242.9
Net working capital4)	MEUR	-104.3	22.7
Capital employed <sup>5)</sup>	MEUR	285.9	406.8
Gearing <sup>6)</sup>	%	-76.2	-42.1

### Key cash flow ratios

	Unit	2009	2008
Cash flow from operating activities	MEUR	345.7	255.0
Capital expenditure <sup>7)</sup>	MEUR	70.5	69.7
Free cash flow <sup>8)</sup>	MEUR	285.6	187.5
Free cash flow per share <sup>9)</sup>	EUR	5.5	3.6

1) Earnings Before Interest, Taxes, Amortization of identifiable assets acquired in a business combination and recognized separately from goodwill at the amount of 9,109 TEUR (2008: 7,862 TEUR) and impairment of goodwill at the amount of 7,922 TEUR (2008: 6,783 TEUR) 2) Cash and cash equivalents plus marketable securities plus fair value of interest rate swaps minus financial liabilities 3) Interest bearing liabilities incl. provisions for severance payments, pensions, and jubilee payments minus cash and cash equivalents and marketable securities 4) Non-current receivables plus current assets (excl. cash and cash equivalents as well as marketable securities) minus other non-current liabilities and current liabilities (excl. financial liabilities in d provisions) 5) Net working capital plus intangible assets and property, plant, and equipment 6) Net debt/total shareholders' equity 7) Additions to intangible assets and property, plant, and equipment 6) Cash flow from operating activities minus cash flow/total number of ANDRITZ shares

Further data, facts, and figures relating to the 2009 financial year are available in the annual financial report and in the Internet: reports.andritz.com/2009



### **ANDRITZ** share: Solid performance

Despite the global financial and economic crisis, the ANDRITZ share saw very satisfactory development in 2009, far outperforming the ATX, the leading index of the Vienna Stock Exchange.



TRADING

SHARF

### Significant rise in the ANDRITZ share price

The ANDRITZ share price rose by 111% in the period under review, thus once again outperforming the ATX (leading share index of the Vienna Stock Exchange), which rose by approximately 38% over the same period. Since the Initial Public Offering in June 2001, the ANDRITZ share price has increased almost eightfold, thus clearly outperforming the ATX.

The highest closing price for the ANDRITZ share was 41.94 Euro (November 16, 2009), while the lowest was 17.50 Euro (March 9, 2009).

### Continuing good trading volume

The average daily trading volume of the ANDRITZ share (double count, as published by the Vienna Stock Exchange) was 307,029 shares in the period under review (2008: 488,638 shares). The highest daily trading volume was noted on October 23, 2009 (935, 284 shares), the lowest trading volume on December 30, 2009 (69,320 shares).

#### Stable, well-balanced shareholder structure

ANDRITZ has a very stable and well-balanced shareholder structure. Approximately 29% of the shares are owned by Certus Beteiligungs-GmbH, whose Managing Director is Wolfgang Leitner, President and CEO of ANDRITZ AG. With over 70% free float, ANDRITZ has a widely diversified shareholder structure consisting of institutional investors and retail shareholders. The majority of institutional investors come from the Anglo-Saxon countries (particularly the UK and the USA), but also from Austria and Germany. Retail inves-

tors are mainly based in Austria and Germany.

### The financial calendar with updates, as well as information on the ANDRITZ share, can be found on the Investor Relations page at the ANDRITZ website: www.andritz.com/share

Financial calenda	r (preliminary)
March 26, 2010	Annual General
	Meeting in Graz, Austria
March 30, 2010	Ex-dividend
April 1, 2010	Dividend payment
May 7, 2010	Results for the
	first quarter of 2010
August 9, 2010	Results for the
	first half of 2010
November 8, 2010	Results for the first
	three quarters of 2010

Characteristic and an element of the second

### Free float by region (as of December 31, 2009)



Source: ANDRITZ estimate

### Shareholder structure (as of December 31, 2009)



### Basic data of the ANDRITZ share

ISIN code	AT0000730007
First listing day	June 25, 2001
Types of shares	no-par value shares,
	bearer shares
Total number of shares	52 million
Authorized capital	none
Free float	approximately 71%
Stock exchange	Vienna (Prime Market)
Ticker symbols	Reuters: ANDR.VI;
	Bloomberg: ANDR, AV
Stock exchange indices	ATX, ATXPrime, WBI

### High level of interest by investors

In 2009, around 320 one-on-one meetings with institutional investors and financial analysts were held in Amsterdam, Boston, Brussels, Chicago, Denver, Dublin, Dusseldorf, Edinburgh, Frankfurt, Cologne, London, Luxembourg, Milan, Munich, New York, Paris, Philadelphia, San Francisco, Stockholm, Tokyo, Toronto, and Zurich.

In addition, ANDRITZ presented at several investor conferences, such as Cheuvreux's German Corporate Conference in Frankfurt, UniCredit's International Investors Conference in Kitzbühel. Deutsche Bank's Annual Pan European Small & Mid Conference in London, RCB's Institutional Investors Conference in Zürs, Goldman Sachs' Small Mid Cap Symposium in London, Sal. Oppenheim's European Midcap Forum in New York, JPMorgan's Capital Goods Conference in London, HSBC's Austrian Companies Conference in London, Deutsche Bank's German & Austrian Corporate Conference in Frankfurt and Tokyo, Erste Bank Group's Investor Conference in Stegersbach, RCB's Austrian Day in Frankfurt, Berenberg Bank's European Conference in London, and Cheuvreux's Pan-European Management Conference in New York.

ANDRITZ gave a presentation for private investors at the international Gewinn fair in Vienna. In addition, guided company site visits were arranged for investment clubs.

The focus of this year's ANDRITZ Capital Market Days – held in October 2009 in Spain – was ANDRITZ's 'Expertise, technologies, and products for the use of biomass in the pulp industry'. Participants also visited the pulp mill of ENCE in Navia, where ANDRITZ PULP & PAPER very successfully started up a new recovery boiler and a new biomass boiler.

### ANDRITZ again receives awards for Investor Relations activities

The ANDRITZ GROUP has already received several awards for its Investor Relations activities since the Initial Public Offering in 2001, also for special achievements in Corporate Governance and Investor Relations online activities.

As part of the Vienna Stock Exchange Award 2009, ANDRITZ once again received an award. ANDRITZ took second place in the main category, the ATX Prize, which is awarded to companies in the leading index of the Vienna Stock Exchange for the quality of their work in terms of transparency and communication policy in the Austrian capital market. ANDRITZ took first place in this category last year.

As part of an annual survey of around 600 international investment fund managers, ANDRITZ Investor Relations was voted once again among the top three companies in the mechanical engineering sector – just as in 2008.

### Broad analyst coverage

As of the end of 2009, eleven national and international banks and investment houses published research reports on ANDRITZ at regular intervals (in alphabetical order): Berenberg Bank, Crédit Agricole Cheuvreux, Deutsche Bank, Erste Bank, Goldman Sachs, HSBC, JPMorgan, Sal. Oppenheim, Raffeisen Centrobank, UBS, and UniCredit.



#### **Corporate Governance**

ANDRITZ complies with the rules of the Austrian Corporate Governance Code. The Corporate Governance report and all other information on the subject are contained in the annual financial report 2009 and also at: <u>www.andritz.com/en/corporategovernance</u>

### For further information please contact: ANDRITZ Investor Relations Petra Wolf Phone: +43 (316) 6902 2722 investors@andritz.com

#### Key figures of the ANDRITZ share

	Unit	2009	2008	2007	2006	2005
Earnings per share	EUR	1.89	2.73	2.61	2.30	1.53
Dividend per share	EUR	1.001)	1.10	1.00	0.75	0.50
Payout ratio	%	52.9	40.3	38.3	32.6	32.6
Equity attributable to shareholders						
per share	EUR	12.28	10.59	9.07	7.86	6.25
Highest closing price	EUR	41.94	43.53	54.00	41.08	23.21
Lowest closing price	EUR	17.50	15.96	35.80	23.13	14.15
Closing price at year-end	EUR	40.52	18.16	41.45	41.08	23.21
Market capitalization at year-end	MEUR	2,107.0	944.3	2,155.6	2,135.9	1,207.1
Performance	%	+111.0	-54.4	+2.6	+74.9	+62.8
ATX weighting at year-end	%	4.3701	2.9209	2.3950	2.4080	1.8200
Average daily number of shares traded	Share unit	307,029	488,638	452,909	355,580	335,972

Note: On May 3, 2007, the ANDRITZ share was split in a ratio of 1:4. Historical share price data were adjusted accordingly. <sup>1)</sup> Proposal to the Annual General Meeting. Source: Vienna Stock Exchange



### **Executive Board**

**PULP & PAPER** (Capital Systems)

### **2** Karl Hornhofer

Joined ANDRITZ in 1996 and held managerial positions in the PULP & PAPER business area. He was appointed as member of the Executive Board in 2007 and is responsible for the Capital Systems segment of the PULP & PAPER business area and Group-wide for Quality Management.

Professional career: Head of the Pulp and Paper Machines division at ANDRITZ AG, Head of the Pulp Drying Systems division at ANDRITZ AG, design engineer at Austrian Energy.

PULP & PAPER (Service & Units)

### **3 Humbert Köfler**

Joined ANDRITZ in 1987 and held managerial positions in the PULP & PAPER business area. He was appointed as member of the Executive Board in 2007 and is responsible for the Service & Units segment of the PULP & PAPER business area and Groupwide for Procurement.

Professional career: Head of the Paper Mill Services division at ANDRITZ AG, Head of the Mechanical Pulping Systems division at ANDRITZ AG, regional sales manager at ANDRITZ Sprout-Bauer GmbH, export marketing manager at Biochemie GmbH. President and CEO

### 1 Wolfgang Leitner

Joined ANDRITZ in 1987 as CFO and has served as President and CEO since 1994. His responsibilities encompass central Group functions such as Human Resources Management, Controlling and Finance, Treasury, Corporate Communications, Investor Relations, Internal Auditing, Information Technology, as well as Organization and Business

Professional career: member of the Managing Board of AGIV AG, founder and President of GENERICON Pharma GmbH, management consultant at McKinsey & Company, research chemist at Vianova/HOECHST. HYDRO, FEED & BIOFUEL

### **4** Friedrich Papst

Joined ANDRITZ in 1979 and held leading positions in manufacturing and logistics. He has been a member of the Executive Board since 1998 and is responsible for the HYDRO and the FEED & BIOFUEL business areas, as well as Group-wide for Manufacturing.

Professional career: Vice President of ANDRITZ Sprout-Bauer Inc., Director of Manufacturing at ANDRITZ AG, Director of Production Planning at ANDRITZ AG. METALS, ENVIRONMENT & PROCESS

### 5 Franz Hofmann

Joined ANDRITZ in 1999 as member of the Executive Board. He is responsible for the METALS and the ENVIRONMENT & PROCESS business areas, as well as Group-wide for Automation.

Professional career: Divisional Director at SMS Schloemann-Siemag AG, management consultant at A.T. Kearney, researcher at Vereinigte Deutsche Metallwerke.



### **Supervisory Board**

Appointed members

### 1 Kurt Stiassny

(Chairman of the Supervisory Board) CEO of Buy-Out Central Europe II Beteiligungs-Invest AG; Chairman of the Supervisory Board of ANDRITZ AG since 1999 and elected until the Annual General Meeting of ANDRITZ AG in 2010. Other Supervisory Board functions: member of the Supervisory Board of Palfinger AG (until November 30, 2009), Chairman of the Supervisory Board of Tiroler Röhren- und Metallwerke AG, and Chairman of the Supervisory Board of Chemson Polymer-Additive AG.

## Hellwig Torggler (Deputy Chairman of the Supervisory Board)

Attorney-at-law; Deputy Chairman of the Supervisory Board of ANDRITZ AG since 2004; member of the Supervisory Board of ANDRITZ AG since 2000 and elected until the Annual General Meeting of ANDRITZ AG in 2014. Other Supervisory Board functions; member of the Supervisory Boards of Mondi AG, Mondi Services AG, A.S.A Abfall Service AG, and FIMBAG Finanzmarktbeteiligung Aktiengesellschaft des Bundes; Deputy Chairman of the Supervisory Board of Theater in der Josefstadt Betriebsges.m.b.H.

#### **B** Peter Mitterbauer

Chairman of the Managing Board of MIBA AG; member of the Supervisory Board of ANDRITZ AG since 2003 and elected until the Annual General Meeting of ANDRITZ AG in 2014. Other Supervisory Board functions: Chairman of the Supervisory Boards of ÖIAG (Österreichische Industrieholding AG) and FFG (Österreichische Forschungsförderungsgesellschaft m.b.H.); member of the Supervisory Boards of Oberbank AG and Rheinmetall AG.

### **4** Christian Nowotny

Full-time professor at the University of Economics in Vienna; member of the Supervisory Board of ANDRITZ AG since 1999 and elected until the Annual General Meeting of ANDRITZ AG in 2013. <u>Other Supervisory Board functions:</u> member of the Supervisory Boards of CA Immo AG (until May 13, 2009), Allianz KAG, and Generali Drei Banken Holding AG.

#### **5** Fritz Oberlerchner

Deputy Chairman of the Managing Board of STRABAG SE; member of the Supervisory Board of ANDRITZ AG since 2006 and elected until the Annual General Meeting of ANDRITZ AG in 2011. Other Supervisory Board functions: member of the Supervisory Boards of Chemson Polymer-Additive AG, STRABAG AG Austria, STRABAG AG Germany, and STRABAG Zrt.; Chairman of the Supervisory Boards of STRABAG A.S. and STRABAG Sp.z.o..

### **6** Klaus Ritter

President and CEO of AVI Alpenländische Veredelungs-Industrie Ges.m.b.H, EVG Entwicklungs- und Verwertungs-Gesellschaft m.b.H., and Stahl- und Walzwerk Marienhütte Ges.m.b.H.; member of the Supervisory Board of ANDRITZ AG since 2004 and elected until the Annual General Meeting of ANDRITZ AG in 2012. Other Supervisory Board functions: none. Delegated members

Andreas Martiner Member of the Supervisory Board of ANDRITZ AG since 2001.

#### 8 Martha Unger

Member of the Supervisory Board of ANDRITZ AG since 2007.

### Brigitta Wasserbauer

Member of the Supervisory Board of ANDRITZ AG since 2000.

Statement of the management

### 2009 was a very successful year for us. A new record in order intake shows that we rank among the top suppliers worldwide for hydropower equipment.

The market for hydropower equipment developed very favorably in 2009, practically unaffected by the overall economic environment. The rising demand for electric power, particularly in the emerging countries, and the need to modernize existing power stations in Europe and North America were – and still are – the main driving forces in this growth market. By constantly developing our technologies, we want to, and will, participate in this growth.

> Managers of the HYDRO business area (left to right): Manfred Wörgötter • Pumps Michael Komböck • Compact Hydro, Service & Rehab Harald Heber • Turbo Generator, Finance, Supply Chain Wolfgang Semper • Large Hydro





## Power

ANDRITZ HYDRO is a leading global supplier of turnkey electromechanical systems and services for new hydropower stations. In addition, rehabilitation and upgrading of existing plants are offered.

Further fields of activity are development, design, and manufacture of pumps for selected applications (e.g. for water transport, in the energy sector, and in the pulp and paper industry) and of turbo generators for gas and steam power plants.

### MARKET DEVELOPMENT

Project activity in the hydropower sector during 2009 remained very high worldwide.

Investment activity in Europe and North America focused on modernization, rehabilitation, and capacity increases for existing hydropower plants. Due to the high average age of the installed base in these regions, there is an increasing demand for refurbishment of installed equipment. In addition, the rising demand for peak electricity and the capacity increases in wind energy in Europe have led to additional investments in pumped storage power stations in order to ensure stability of the European electric grid. In North America, there was a marked increase in  $CO_2$  certificates.

As a result of the rapid economic growth and sharp rise in energy demand, there are numerous new hydropower projects in the development and realization phases in South America (particularly in Brazil) and in Asia (mainly in India and China).

In the cooling water pumps sector, increasing investments in new plants by the power generating industry led to a rise in project activity. In Asia, particularly in India, project activity for irrigation and drinking water pumps continued to be strong. Project activity was very favorable worldwide in the centrifugal pumps sector, except for supplies to the pulp and paper industry as a result of the generally difficult economic environment.

# MAJOR

To further strengthen its local market position in China, ANDRITZ HYDRO and Chengdu Tianbao Heavy Industry Corporation Ltd., China established a joint venture concentrating on the manufacture of heavy machinery at the Chengdu location. ANDRITZ HYDRO now has four locations in China and can thus offer the entire product and service portfolio for the rapidly expanding hydropower market in China.

At the Guri II power station in Venezuela, the first of a total of five Francis turbines to be supplied successfully passed works inspection and was shipped to the site. Due to its exceptional size (7.4 m in diameter) and weight of approximately 200 t, transport of the turbine 11,000 km from the ANDRITZ HYDRO manufacturing facilities in Ravensburg, Germany, to Venezuela in only two months presented a special challenge (see report on page 6).

The Glendoe 100 MW power station, run by the Scottish utility company Scottish and Southern Energy (SSE), was officially handed over to the customer. Glendoe is the first large-scale hydropower station to be built in Scotland for 50 years.



Mechanical energy becomes electric power: the inside of a generator.



Another project completed successfully was the general overhaul of Rouna 2 cavern power station in Papua New Guinea. Refurbishing was intended also to prolong the useful life of the plant by another 20 to 30 years. The output of the machines was increased by approximately 30%.

The hydropower stations in the Dolna Arda cascade are being modernized for the national Bulgarian energy company NEK. In March 2009, machine No. 5 of the Studen Kladenets station was successfully handed over. A vertical Francis turbine with an output of 20 MW was added.

The project to extend the output of the Hintermuhr power station, operated by the Austrian utility company Salzburg AG, to more than 100 MW was successfully completed. The hydropower station, built underground in the Hohe Tauern National Park, is now the largest operated by Salzburg AG.

Eighty pumps were successfully started up for a paper mill in Hungary and around 160 pumps for a paper mill in the UK – mainly stock pumps in both cases.

During the reporting period, more than 80 turbo generators with an overall capacity of more than 10,000 MVA were supplied to customers all over the world by the manufacturing locations for turbo generators in Austria and India.

### The challenge: modernization and increased output

In Europe, as well as in North and Central America, there is a large number of existing hydropower stations that have been in operation for well over 20 years. As a result, efficiency and availability of these installations are significantly below the levels that are possible today. Many of these installations also have potential output that is not utilized and can only be tapped by means of the calculation and manufacturing processes available today. As a result, customers demand an increase in output of 20% and more in their modernization projects.

### The solution from ANDRITZ HYDRO

In 2006, the Mexican utility company CFE awarded the business area a contract to modernize four Francis turbines at the Infernillo power station, the third largest hydropower station in Mexico. In this modernization project, the goal was a 25% increase in output. The performance tests following installation in February 2009 demonstrated that the increase in output is well beyond this figure and also that the efficiency was improved. Confirmed by these excellent results, ANDRITZ HYDRO received several follow-up orders for modernization and rehabilitation. Gentle hydropower: Oymapinar pumped storage power station, Turkey.



### **Europe and North America**

ANDRITZ HYDRO received an order to equip the Ashta hydropower station in <u>Albania</u> from Energji Ashta Shpk, an affiliate of Austria's largest electricity company, Verbund. Both stages of the power station were fitted with 45 steel modules, each with one turbine generator unit based on ANDRITZ HYDRO's Hydromatrix<sup>®</sup> technology. The plant has a total output of over 50 MW.

Electricidade de Portugal (EDP) placed an order with the ANDRITZ HYDRO/ENSULMECI consortium for supply and installation of the entire electromechanical equipment for two pumped storage plants as part of the Baixo Sabor power station project, <u>Portugal</u>. Model tests are being conducted in the ANDRITZ HYDRO research and development laboratories in order to optimize the hydraulics of the two plants.

Energie Steiermark AG, Austria contracted ANDRITZ HYDRO to supply, erect, and commission four bulb turbines, each with a runner diameter of 3,600 mm, including speed governors, generators, and exciter systems for the Gössendorf and Kalsdorf hydropower stations in <u>Austria</u>.

The SaskPower utility company, <u>Canada</u>, entrusted ANDRITZ with the rehabilitation work on the E.B. Campbell hydropower station. This order includes the supply of advanced Francis turbine runners and general overhaul of the turbines and generators for two existing machine sets.



ANDRITZ HYDRO will supply cooling water pumps for a power station in the <u>Netherlands</u>. The six pumps, made of stainless steel, will transport sea water.

As part of two large projects for the pulp and paper industry in <u>Germany</u> and <u>Russia</u>, the business area will supply standard centrifugal pumps. The scope of supply covers 268 process pumps, five fan pumps, and two medium-consistency pumps.

### **South America**

The business area received a contract from Energia Sustentável do Brasil (ENERSUS) for the supply, installation, supervision, and commissioning of the equipment for the Jirau hydropower station, <u>Brazil</u>. ANDRITZ HYDRO Brasil will supply eight bulb turbines (the most powerful in the world, each with an output of 76.55 MW), generators, and voltage regulators.

Astaldi, Italy, has commissioned the business area to supply the complete electromechanical equipment for the Chacayes hydropower station, <u>Chile</u>, including two Francis turbines with an output of 55 MW each, two generators, the switchgear, and the complete plant automation.

The consortium formed by ANDRITZ HYDRO Brasil, ANDRITZ HYDRO Inepar, and IESA Projetos received a contract from the utility company Furnas Centrais Elétricas, <u>Brazil</u> to supply and install the electromechanical equipment for the Batalha hydropower station. The scope of supply comprises two Kaplan turbines (each with an output of 26.87 MW), generators, speed governors, digital exciter equipment, hydromechanical and electromechanical equipment, cranes, erection work, and commissioning. The Batalha hydropower station will supply electricity to a population of over 130,000, thus helping to cover the growing electricity demand in Brazil.

ANDRITZ HYDRO received a contract from EDELCA, <u>Venezuela</u> to supply, install, and commission the complete excitation equipment for the Guri II hydropower station. This follow-up order to the five 770 MW Francis turbines for Guri II already being manufactured is the largest single order for excitation equipment in the history of ANDRITZ HYDRO.

Detailed view of a Francis turbine: this type of turbine is the most frequently used in hydropower stations.



Vertical line shaft pumps made of stainless duplex steel for a power station in Belgium. These cooling water pumps will transport sea water.

ANDRITZ HYDRO Inepar received two major orders from Brazil: one contract was awarded by Construtora Triunfo S/A for supply of the hydraulic equipment for Salto and Salto do Rio Verdinho power stations, while the second came from the Copel and Eletrosul consortium, two of the most From Himachal Pradesh Power Corporation Ltd. important national energy companies in Brazil, and related to the supply of the electromechanical equipment for Maua power station.

### Asia

ANDRITZ HYDRO received an order from SN Aboitiz Power Magat Inc. for refurbishment of the entire Ambuklao power station, Philippines.

(HPPCL), the business area received a contract to upgrade the Sawra Kuddu hydropower station, India. The scope of supply comprises design,

supply, erection, and start-up of three turbine generator sets, each with an output of 37 KW, including transformers, switchgear, and electrical powerhouse equipment. This contract confirms the business area's excellent position in the rapidly growing hydropower market in India, where ANDRITZ HYDRO has been active for more than 100 years and has equipped more than 150 power stations with a total output of approximately 11,000 MW.

The business area received an order as part of a consortium to supply equipment for the Dagachhu hydropower station, <u>Bhutan</u> from Dagachhu Hydro Power Corporation Limited (DHPC). The ANDRITZ HYDRO scope of supply includes design engineering, installation, and commissioning of two Pelton turbines each with an output of 62.2 MW, two spherical valves, as well as the hydromechanical equipment for the dam, sedimentation basin, and power house. Hydropower exports are one of the main sources of income for the Kingdom of Bhutan.

For a water supply project in <u>China</u>, a major order was booked for the supply of twelve doublesuction split case pumps.

The business area received a planning and engineering order for four large pumping stations for agricultural irrigation in <u>India</u> during the reporting period.

#### Further major orders at a glance

O a combine d	Quetemen	Coope of sumply/Drainet description
Country	Customer	Scope of supply/Project description
Austria	Verbund Austrian	General overhaul of machine 3
	Hydro Power	at the Hieflau plant
Brazil	DM Construtora	Supply of two 70 MW Francis turbines for the
	de Obras Ltda.	São Francisco hydropower station
Finland	Savon Voima	Refurbishment of the Kaplan turbines at
		Karjalankoski hydropower station
Germany	EnBW	Axial bevel gear bulb (2 MW) for the Karlsruhe plant
Germany	RWE	Turbine maintenance and repairs at Waldeck II hydropower station
India	Meghalaya State	Two 20 MW Francis turbines for the
	Electricity Board	Umtru plant
Kazakhstan	Confidential	Supply including three Pelton runners for the Moinak
		hydropower station, ranking among the largest Pelton
		runners ever produced
Mexico	Power Machines Mexico	Francis turbine (2 MW) for the La Yesca
	de Mexico S.A. de C.V.	hydropower station
Norway	SKS Produksjon AS	Turbine upgrade in the Sjonsta plant
Panama	Hidraulica Pedregalito	Small hydropower plant, Pedregalito
	(Cobra)	power station
Peru	Electroandes	Follow-up order for supply of an additional Pelton runner in
		MicroGuss <sup>™</sup> technology for Yaupi hydropower station
Peru	EGASE	Two orders for design, supply, installation, and start-up
		of Francis runners for the Charcani III and Charcani IV
		hydropower stations
Sweden	Vattenfall AB	Modernization of a Kaplan turbine at Lasele
	Vattenkraft	hydropower station
Switzerland	AG Kraftwerk	Refurbishing of four Francis turbines for the
	Wägital	Rempen power station
Switzerland	Mattmark AG	Refurbishing of two Francis turbines
		at the Zermeiggern plant
Turkey	Limak Energy	Supply of the complete electromechanical equipment
		for the Alkumru hydropower station
Turkey	Girisim Elektrik	Supply of two Pelton Vertical 5 Jets (10 MW each)
		for Bilav hydropower station
Turkey	Akkanat Holding	Supply of two Pelton Vertical 6 Jets (15 MW each)
		for Gunder hydropower station
Vietnam	Traxom Hydropower JSC	Small hydropower plant, Traxom power station



### The challenge: lifetime extension for turbines in the Himalayan region

Due to the large delivery heads and the extremely high content of highly abrasive quartz sand, the turbine material in the hydropower stations located at the foot of the Himalayas is subject to extreme abrasive wear. Many conventionally manufactured runners suffer such extreme wear damage after only one monsoon season that they have to be renewed. The challenge for ANDRITZ HYDRO: substantial extension of lifetime for components suffering extreme wear.

### The solution from ANDRITZ HYDRO

Following intensive research work and development of a new coating technology to minimize sand abrasion, the business area was able to test this success in practice: The Francis runner coated by ANDRITZ HYDRO and newly developed using the latest CFD methods in Naptha Jhakri hydropower station, India, is in excellent condition after a monsoon season during which thousands of tons of highly abrasive quartz sand passed through the turbine. Thus, the lifetime can be doubled at the very least. In the wake of this success and numerous project enquiries, the business area has installed a robotcontrolled coating plant at its Faridabad factory in India.



A major focus of the business area's research and development in 2009 was the optimization of hydraulic and electrical equipment for the worldwide highest performing bulb turbines and generators running in large hydropower stations.

In addition, the business area is active in improving the smooth running properties of turbine runners, both at low partial load and at overload. Due to the know-how on the simulation of dynamic processes and practical experience with numerous maximum-capacity generators, substantial progress was made that was also put to the test successfully in practice.

In the large pumps sector, activities focused on project-related, further hydraulic development of existing runners and distributors. This resulted in significant improvements in efficiency and cavitation behavior. A new generation of process pumps was developed in standard centrifugal pumps and the medium-consistency pumps were optimized successfully. Simulation of a Francis turbine (photo above) and a Pelton turbine (photo below): The objective of this research and development work is to improve the smooth running properties of turbine runners, both at low partial load and at overload.

# RESEARCH & DEVELOPMENT

### Statement of the management

2009 posed many challenges, for our customers and for ourselves. Nevertheless, the measures implemented and the intact long-term growth drivers of the pulp and paper markets give us every reason to look towards the future with confidence.

The biggest challenge to our business area in 2009 was adapting to the changed general environment in which our customers are operating. We reacted by implementing restructuring and capacity adjustment measures very quickly – before the end of 2008. And we are optimistic that we will emerge from this crisis stronger than before. After all, we have continued to invest in research and development in spite of the difficult environment – in biomass boiler technology, for example, which pulp mills can use to produce green electricity, or in technologies for second-generation bioethanol plants using cellulosic raw materials.

It is our firm conviction that the investment potential of the pulp and paper industry in the long run is very high. The shift of pulp production capacities from the northern to the southern hemisphere and the investments made in environmental technologies that contribute towards climate protection and enhanced efficiency in customers' plants are the principal driving forces.



## Performance

ANDRITZ PULP & PAPER is a leading global supplier of turnkey systems and services for the production of all types of pulp, paper, tissue paper, board, fiber-board (MDF), nonwovens, as well as of biomass boilers and gasifiers for energy production.

The technologies available are employed for the processing of logs and annual fibers, the production of chemical and mechanical pulps as well as recycled paper fibers, recovery and reuse of chemicals, generation of energy from biomass, preparation of paper machine furnish from virgin or recycled fibers, production of paper, tissue paper and board, calendering and coating of paper, and the handling of reject materials and sludges.

Services include complete mill maintenance, equipment upgrades and rebuilds, engineered wear products, and spare parts.


The market for pulp production plants and systems showed a varied development during the reporting period. As a result of the global financial and economic crisis, project activity for both modernizations and greenfield projects was very low during the first half of 2009. The main reasons for this were low pulp demand and the lack of financing opportunities for projects. The situation stabilized from the third quarter of 2009 on, particularly in Asia and South America, where individual project decisions were made.

This environment was also reflected in the development of the pulp price. Starting at a level of around 650 USD per ton at the beginning of January 2009, the price for NBSK (Northern Bleached Softwood Kraft) pulp dropped to below 600 USD per ton in mid-2009, but rose again substantially towards the end of 2009 to approximately 800 USD. This price rise was driven largely by the strong demand from Asia (particularly from China) and by restocking in Europe and North America in the wake of the low inventory levels reached in mid-2009.

The price for hardwood pulp (birch and eucalyptus) developed similarly to the NBSK price. From a level of around 590 USD in January 2009, the price for hardwood pulp dropped to approximately 500 USD in mid-2009, but rose again to around 700 USD by the end of 2009. Due to solid demand from China, market pulp producers, particularly in South America, were able to achieve price increases towards the end of the reporting period.



The world's largest LC Refiner was successfully commissioned in the Braviken pulp mill, Sweden. This refiner significantly reduces energy consumption.



In 2009, ANDRITZ successfully commissioned its first large packaging paper line for Hebei Yongxin Paper, China.



Control and monitoring systems for Hebei Yongxin Paper's packaging paper machine.

ANDRITZ PULP & PAPER started up its first large packing paper line – from the stock preparation plant to the paper machine to the winder, including all automation systems – for Hebei Yongxin Paper Co. Ltd., China in 2009.

Fibria's Horizonte pulp mill in Três Lagoas, Brazil, which showcases the world's largest single fiberline, started up very successfully. The business area provided the fiberline, pulp drying/baling plant, and white liquor plant (see report on page 10).

The first ANDRITZ biomass boiler, a new recovery boiler, a major upgrade to the evaporation plant, and the rebuild of a drying plant have been started up at ENCE's Navia mill, Spain.

Portucel (Empresa Produtora de Pasta e Papel, S.A.) started up two biomass power boilers at the Setúbal and Cacia pulp mills in Portugal.

Visy Pulp and Paper's Tumut mill in Australia started up after ANDRITZ upgraded equipment in the fiberline and evaporation plant, and delivered a new recovery boiler, white liquor plant, 540 t/d OCC processing line, and approach flow system. A new evaporation plant and a recovery boiler upgrade have been started up for Södra Cell, Värö, Sweden.

In Brazil, the highest capacity single chipping line in the world was started up for Veracel Celulose S.A.

The complete pulp drying system and a new LimeKiln<sup>™</sup> were started up for Celulose Beira Industrial (Celbi) S.A. of Portugal. This is the first EPC delivery of this kind in Europe.

The first two AWP wash presses, a new design washing system from ANDRITZ PULP & PAPER, started up successfully – the first for Stora Enso's Skutskär mill and the second for Södra Cell's Värö mill, both in Sweden.

Several pressurized refining systems and complete fiber preparation plants for MDF production were started up during the year: seven in China, one in Nigeria, and two in Brazil. The plant delivered to Duratex S.A., Brazil, is the world's largest single-stage pressurized refining system for MDF.





Asia

Zhanjiang Chenming Pulp & Paper Co., Ltd., China – an affiliate of Shandong Chenming Paper – selected ANDRITZ PULP & PAPER to supply the complete process technologies for a new mill to produce bleached kraft pulp from hardwood (capacity: 700,000 t/a), as well as the complete stock preparation and approach flow system for a fine paper machine at this mill. To Shouguang Meilun Paper Co., Ltd., a company of the Chenming Group, the business area will deliver a 5.6 m wide PrimeLine tissue machine, stock preparation and approach flow systems, and automation.

A new 500 t/d OCC processing line and a new 100 t/d DIP line, including a paper machine approach system, have been ordered by Taiyuan Qixing Weiye Paper Taiyuan City, China.

Zhejiang JingXing of Pinhu, China ordered a new 250 t/d recycled fiber processing line using mixed office waste. The delivery will include fiber processing, stock approach, thickening, and refining equipment.



A mechanical pulping system (RT-RTS™ TMP technology) has been ordered by Fujian Nanping Paper Co., Ltd., China. The new plant will produce up to 500 t/d of newsprint, culture paper, and lightweight grades.

Eight pressurized refining systems for MDF were ordered during the year, including three to be supplied to the Guodong Group, China. The Luyuan Group ordered the sixth ANDRITZ system, the Yingang and the Yongan Group each ordered their third ANDRITZ system. These orders bring the total to 100 refining systems for MDF sold by ANDRITZ to customers in China.

#### **North and South America**

CMPC, Chile ordered a new High Energy Recovery Boiler (HERB) and an evaporation plant on EPC basis, including automation, for their Laja mill.

Georgia Biomass LLC, USA, a subsidiary of Europe's leading electricity and gas company RWE, ordered a woodyard system for a pelleting plant with an annual production capacity of approximately 750,000 t. This order also features the complete pelleting plant delivered by the FEED & BIOFUEL business area.

Packaging Corporation of America ordered a new High Energy Recovery Boiler (HERB), including chloride and potassium removal system, for their Valdosta mill, USA. The business area will also provide a new economizer for a recovery boiler at the company's Counce mill in the US.

#### Europe

Fortum Termest, Estonia awarded the business area with the supply of a newly designed feeding system and ash-handling for an ANDRITZ biomass boiler, ordered in 2008.

Mondi Steti a.s., Czech Republic ordered a new debarking drum to replace an existing unit.

VPK Packaging Group Oudegem Papier N. V., Belgium ordered modernization and rebuilding of a paper machine with the first triple press Prime-Press Trix.

Successfully commissioned: the sheet drying plant for Celbi, Portugal – the first EPC delivery of this kind in Europe.



#### Further major orders at a glance

Country	Customer	Scope of supply/Project description
Austria	UPM-Kymmene Austria GmbH	Mechanical pulping system (RT-RTS™ TMP technology) with a capacity of 420 t/d
Canada	Domtar	Recovery boiler upgrade
Chile	Arauco	Debarking drum shell replacement
China	Zhumadianshi Baiyun Paper	Supply of a 450 t/d stock preparation system
China	MCC Meili Paper Industry Co. Ltd.	Oxygen delignification and bleaching equipment
China	Changle Xinmai Paper Industry Co. Ltd.	Paper machine approach system; equipment for processing industrial grades and deinking pulp
China	Shandong Huatai Paper Group Co., Ltd.	Stock preparation and paper machine approach system
Finland	Stora Enso	PrimePress X press
Finland	Metsä Botnia	DD washer upgrade
Indonesia	Pelita Cengkaeng	1,150 t/d OCC line with fractionation
Japan	National Printing Bureau	Refiner system and stock feeding system
Malaysia	Muda Paper Mill Sdn. Bhd.	Stock preparation line for industrial grades
Norway	Norske Skogindustrier	TMP heat recovery system
Portugal	Celbi	Debarking drum shell replacement
Russia	JTI Yelets	Rebuild of machine press section
Slovenia	Vipap Videm Krsko	DIP line upgrade
South Africa	Mondi Ltd.	Foul condensate stripping system
Sweden	Södra Cell Mönsterås	Heat recovery system rebuild

Pulp producers are becoming electricity suppliers: The first biomass boiler and a new recovery boiler supplied by ANDRITZ were commissioned successfully at Navia pulp mill, Spain.



# RESEARCH & DEVELOPMENT

A major focus of the PULP & PAPER business area's research and development activities in 2009 was on supporting customers to achieve sustainable production with higher capacities as well as higher energy-efficiency. The business area is also developing new technologies to generate green energy and for the production of biofuels which will further reduce/minimize greenhouse gas emissions.

The enhancement of low-effluent and chemical recovery systems to lower environmental impact continued. Technology development in evaporation focused on producing highly efficient, effluent minimizing evaporation systems. White liquor plant development is further reducing gaseous emissions and cleaning solid wastes to reduce their pollutant portion.

R&D activities in the area of fiberlines continued to concentrate on lowering the investment cost per ton of pulp produced as well as further increasing the capacities to more than 5,000 t/d.

Electricity generation in pulp mills has become a very important issue for the entire pulping industry due to the rising energy costs. With ANDRITZ High Energy Recovery Boilers (HERB), pulp mills can maximize electricity generation from black liquor. Research and development focused mainly on the further enhancement of electricity output. Over the last few years, ANDRITZ has successfully put into operation several HERB, thus proving the success of this outstanding technology.

The business area's R&D activities also continued to focus on new products for biomass handling and biomass power generation, especially on combustion and emission behaviors of different biomass feedstocks.

Waste-To-Power systems (WTP) is a newly created unit within ANDRITZ PULP & PAPER to develop technologies to produce energy out of paper mill residuals (mainly sludge and rejects from wastepaper recycling processes). The main benefits of WTP are derived from reduced volume of waste going to landfills and an increase in the amount of energy generated by the mill.

The business area is also developing technologies for bioethanol production from non-food based raw materials such as wood and agricultural waste. The first two commercial pilot plants using ANDRITZ technology started up this year.

Development of pressurized oxygen-blown gasifiers, which are applicable for liquid biofuel production, continued. The business area successfully completed a comprehensive pilot plant testing program in cooperation with a major customer. A gasification process for biodiesel production is currently under development and the site selection process of the first production plant ongoing.

#### **The challenge** in MDF production

Reduction of energy consumption, improvement of fiber quality, and capacity increase in the refining process.

#### **ANDRITZ's solution**

The MDF Spiral<sup>™</sup> technology (photo: refiner plate segments), which can be installed in new pressure refiners and retrofitted to existing MDF refiners, increases capacity, reduces energy consumption up to 20%, and improves fiber geometry and distribution.



New ANDRITZ technologies enable pulp and paper manufacurers to produce green energy from biomass that can not be used in the production process (e.g. bark or branches) or that occurs as a waste product from the production process. Photo: part of the recovery boiler at the ENCE pulp mill, Spain.

#### Statement of the management

In spite of the difficult environment, we succeeded in securing some very important orders in 2009 and have been able to stand our ground well, with solid business results.

The steel industry faced a distinct drop in demand and prices in 2009. This led to a significant decrease in investment activity by international steel producers. Nevertheless, our business area continued to develop solidly and was able to book some major orders. This shows that the products and processes we offer reflect the latest state-of-the-art technology and perfectly match the needs of our customers.

We are optimistic that the continuously rising demand for steel and stainless steel worldwide, particularly in the emerging countries, will continue to be one of the main growth drivers in our market after the current difficult phase. Similarly, the constantly increasing quality demand of the end-user industries will require our customers to invest in modernization projects.



# Experience

ANDRITZ METALS is one of the leading global suppliers of complete lines for the production and further processing of cold-rolled carbon steel, stainless steel, and non-ferrous metal strip. These lines consist of equipment for cold rolling, heat treatment, surface finishing, strip coating and finishing, punching and deep drawing, and for pickling acid regeneration. The business area also supplies turnkey industrial furnace systems for thermal processes, such as heat treatment of slabs and forged pieces, as well as refining furnaces for the copper industry.

Two stainless steel strip processing lines were handed over successfully to the largest Indian stainless steel producer, JSL Limited, in 2009. Photo: pickling line at the Hisar plant.



The market for plants and equipment for the production of stainless steel, carbon steel, and non-ferrous metal strip developed very weakly in 2009. The decline in demand for steel products as a consequence of the global financial and economic crisis made substantial production cuts and capacity shutdowns necessary in the steel industry. According to the World Steel Association, global production of crude steel dropped by approximately 8% in 2009 compared to the previous year.

Towards the end of the reporting period, however, first signs of project activity stabilizing became evident. The increased demand from end-user industries (particularly automobile and household appliances industries) as a result of re-stocking of inventories, as well as government-backed investments in infrastructure, led to increasing capacity utilization at most steel and stainless steel manufacturers (particularly in China) and to a slight rise in steel prices.



ANDRITZ METALS successfully concluded a number of contracts during the reporting period. For example, two stainless steel strip processing lines were handed over to India's largest stainless steel producer, JSL Limited. This contract includ-

#### The challenge: railway wheels

The Russian ironworks combine Nizhniy Tagil Iron & Steel Works (NTMK) commissioned ANDRITZ METALS to build a heat treatment plant for the production of rolled railway wheels. The special challenge here is to supply a technologically superior heat treatment system for hardening and tempering railway wheels with high running surface hardness – all within an extremely short project term.

#### The solution from ANDRITZ METALS

The project term from signing the contract to production hand-over was only one year, thus exactly meeting the extremely tight schedule. In 2009, the plant was handed over successfully to the customer after all requirements were met, and some even surpassed: higher production performance and wheel quality, as well as increased plant availability, combined with reduced energy consumption. On the basis of this performance, the customer awarded ANDRITZ METALS the contract for the second expansion stage of the plant, which is to be completed in the summer of 2010.

ed construction of a new annealing, pickling and rolling mill line for coldrolled strip with an annual capacity of approximately 250,000 t and modernization of an existing annealing and pickling line in the Hisar plant.

To ThyssenKrupp in Krefeld, the first Pyromars plant in Germany was successfully handed over. This mixed acid regeneration plant is the most modern of its kind worldwide and makes a substantial contribution towards protecting the environment with its reduced effluent and fresh acid quantities.

An acid regeneration plant (capacity 3,600 l/h) was successfully handed over to Zong Cheng Steel, China. The WAPUR (Waste Acid Purification) plant preceding the regeneration stage guarantees the highest oxide quality.

The largest eccentric press ever built by ANDRITZ METALS, with a pressing force of 26,000 kN, was successfully supplied to Gutbrod, an affiliate of voestalpine in Germany. Another newly developed eccentric press (pressing force 10,000 kN) was handed over to Tower Automotiv, Poland.

Breitenfeld Edelstahl AG, Austria started production at its extended steel works with three additional car bottom annealing furnaces supplied by the business area. Also, the expansion of the heat treatment capacity at Metal Ravne D.O.O., Slovenia, was successfully concluded. And Cogne Acciai Speciali Spa, Italy, ordered another furnace plant after the supply of a car bottom forging furnace to the same customer.



Car bottom annealing furnaces are used for heat treatment in forging mills, foundries, heat treatment-only plants in the steel industry, as well as in the non-ferrous metal industry.



#### Asia

Bahru Stainless SHN BHD in <u>Malaysia</u> (a joint venture between Acerinox S.A., Spain, and Nisshin Steel, Japan) awarded the business area the contract to supply a continuous annealing and pickling line for hot-rolled and cold-rolled stainless steel strip (annual capacity approximately 540,000 t) and a skin-pass mill, three-roll grinding machines, and a mixed acid regeneration system. This is the second large order that ANDRITZ METALS has received from the Acerinox Group in the past three years.

Baoji Titanium Industry Co. Ltd., the largest titanium producer in <u>China</u>, commissioned the business area to supply a continuous pickling line for hot-rolled and cold-rolled titanium strip for the automobile and aircraft industries (annual capacity approximately 20,000 t), and a 20-high rolling mill for processing titanium and stainless steel strip.

Taiyuan Iron and Steel (Group) Co., Ltd., the largest stainless steel producer in <u>China</u>, ordered two 20-high rolling mills for its plant in Taiyuan. Both mills are specially designed for rolling precision stainless steel strip and have an annual capacity of 22,000 t.

The business area received an order from Baoshan Iron & Steel (Baosteel), <u>China</u>, for reconstruction of the existing cut-to-length line for thick strip, including the complete electronic drive and control system. A regeneration plant for hydrochloric acid, including a waste pickle cleaning plant and three presedimentation plants, will be supplied to Hebei Shougang Qian'an Steel Co., <u>China</u>.

Benxi Iron & Steel Co., Ltd., <u>China</u>, commissioned the business area to install an electrolytic galvanizing plant for steel strip (annual capacity 309,000 t). This plant is based on the Gravitel technology developed by ANDRITZ and used worldwide in the production of electrolytically galvanized steel strip of highest quality for the automobile and household appliances industries.

For Tongling Nonferrous Metals Group Co. Ltd., <u>China</u>, the business area will install a 20-high mill stand to produce strip material for the electronics industry (annual capacity 40,000 t). The scope of supply includes the electrical equipment, technological control system, and a roll grinding machine.

#### North and South America

Unigal, <u>Brazil</u>, a joint venture by Usiminas and Nippon Steel, ordered a recoiling and inspection line for hot-dip galvanized steel strip for the automobile industry, to be delivered to its lpatinga plant (annual capacity 240,000 t).

#### Europe

For Acciaieria Arvedi, <u>Italy</u>, ANDRITZ METALS will install a regeneration plant for hydrochloric acid based on fluidized bed technology. The products of this plant – regenerated hydrochloric acid and iron oxide pellets – are reused in the steel production process.



#### The challenge: maximize local supply

In addition to supplying a state-of-the-art continuous pickling line with acid regeneration for hot-rolled carbon steel (see graphics below) with a capacity of 1.7 million t/a at the Cubatão works that minimizes consumption, the Usinas Siderurgicas de Minas Gerais SA (Usiminas) steel group of Brazil presented the business area with a special challenge in this large order: In view of the import duties and the request for local after-sales service, the scope of local supply had to be as large as possible.

## The solution from ANDRITZ

Thanks to its strong presence in the Brazilian market, ANDRITZ was able to access time-tested and long-standing suppliers quickly. All major supplies and services of these suppliers are handled by the Brazilian affiliate ANDRITZ Brasil Ltda., headquartered in Curitiba.

#### Further major orders at a glance

Country	Customer	Scope of supply/Project description
Austria	Böhler-Uddeholm	Supply of two roll
	Precision Strip	grinding machines
China	Baoshan Iron & Steel (Baosteel)	Follow-up order to the supply of a neolyte pickling section for the Baosteel works Shanghai No. 1
Germany	Dirostahl	Rotary table furnace for heating steel ingots
Italy	Fomas S.p.A.	Two chamber furnaces
Korea	Posco	Roll grinding machine
Pakistan	International Industries Ltd.	Regeneration plant for hydrochloric acid

Research and development of the METALS business area concentrated on improvement and further development of products. A new roller seal was developed, e.g., for the stainless steel annealing furnace sector. This allows a very economical process management, particularly with the increasing demand nowadays for longer length furnaces. In addition, the process for regeneration of used mixed acid from stainless steel pickles was optimized. The target is a totally effluent-free pickling system and regeneration process by using an evaporator for the rinsing water. In the batch-type furnaces with circulating heating system, the flow pattern was improved so that the material being treated is heated through very evenly.





In car manufacturing, an ever increasing volume of galvanized sheet metal is being used in order to improve corrosion protection. Large quantities of new galvanized scrap are produced in the manufacturing process. Although this scrap is highgrade material, the zinc coating on the surface means that it can only be further processed at the expense of the quality, thus resulting in markdowns in price.

## ANDRITZ's solution

As from February 2010, scrap from the production facilities of a large German car manufacturer will be dezinctified in a pilot plant developed by the business area. In this process, the scrap comes into contact with a liquid from zinc production. The zinc content in the liquid thus increases, and the enriched liquid is eventually delivered back to the zinc manufacturer. After cleaning and drying, the dezinctified scrap can be used for more sophisticated applications, for example in the foundry industry.

Statement of the management

## We are well-positioned for the future.

The financial and economic crisis has also impacted the markets of our business area. In particular, a decline was noted in industrial and municipal process applications; however, the impact of this decline was offset by solid developments in sludge drying and dewatering, as well as biomass drying plants. All in all, we succeeded in holding our ground well in spite of the difficult overall economic environment.

Research and development will continue to be a focus of our business area in the future. With new technologies and products, we will continue to be successful in the market for environment and process technology, which will see substantial growth in the long-term. Increasing environmental protection measures and continuously rising environmental regulations give us reason to expect substantial growth potential.



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# Passion

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ANDRITZ ENVIRONMENT & PROCESS is one of the leading global suppliers of plants, equipment, and services for mechanical and thermal solid/liquid separation of municipal and industrial sludges and suspensions (coal, ore and mineral processing, chemical, petrochemical, and food industries).

The business area's field of activity covers design and manufacture of key components (centrifuges, filter presses, rotating filters, and plants for dewatering, drying, and sludge incineration), as well as erection and start-up of turnkey plants, including automation, safety engineering, and services.

![](_page_54_Picture_1.jpeg)

Project activity for municipal sludge dewatering plants for sewage and drinking water remained at a moderate level worldwide in 2009, with satisfactory demand in China only.

Also in the industrial process applications sector – particularly in the petrochemical industry, as well as in the minerals and mining industries – investment activity was low, with the exception of China, Russia, and Canada.

Development of the market for sludge drying plants was subdued, with many investment deci-

sions being postponed or put on hold. Towards the end of the reporting period, however, investment activity for municipal sludge drying plants rose in North America, China, and Korea due to economic stimulus programs launched by the governments of these countries. The demand for drying plants for industrial products, however, remained at a moderate level.

Project activity for biomass (sawdust/wood chips) drying systems continued at a stable level in Western Europe and Scandinavia.

![](_page_54_Picture_7.jpeg)

ANDRITZ ENVIRONMENT & PROCESS further extended its service network by opening a new centrifuge repair shop in Whitbank, South Africa.

The customer satisfaction report by 'China Water Web' – covering 100 water and wastewater treatment plants – has ranked ANDRITZ the number one for sludge dewatering equipment in five out of seven categories. This confirms the business area's leading position in this market.

#### The challenge: local manufacture

The economic stimulus package launched by the US government in view of the financial and economic crisis requires in its so-called 'Buy American' clause that products for municipal sludge treatment plants have to be manufactured in the US.

### The solution from ANDRITZ

ANDRITZ has been manufacturing fine screens, belt presses, and centrifuges for industrial applications in the US for many years now. The manufacturing capacity was extended in good time to include municipal centrifuges and dryers, thus the 'Buy American' clause can be fulfilled for all products.

![](_page_54_Picture_14.jpeg)

#### The challenge: drying large quantities of sawdust for industrial pellet production

High performance and unchanging quality – that's what the Heggenstaller sawmill in Lauterbach, Germany expects from the supplier of a new belt dryer. Heggenstaller has various uses for the sawdust from the belt dryer, including its wood pellet production beginning in 2010. 'As a result of the stringent demands, it was essential for us to find an established supplier with a great deal of experience in industrial applications', reports Heggenstaller's Managing Director, Gebhard Dünser.

### The solution from ANDRITZ

The belt dryer that ANDRITZ supplied to Heggenstaller (see picture below) and which went into operation successfully in 2009 consists of two lines, each with a belt width of eight meters and a water evaporation capacity of each line of approximately 11 t/h. The energy needed for drying is provided by exhaust heat from the customer's own biomass power plant. In addition to the high capacity, ANDRITZ also meets the stringent quality demands: the dried material has low and constant residual moisture, with only slight fluctuations of  $\pm 0.5\%$ .

![](_page_55_Picture_5.jpeg)

![](_page_56_Picture_1.jpeg)

During the reporting period, the business area received orders from China for the supply of several large filter presses for drinking water treatment and for a coal liquefying plant of the Shenhua Group. A major order for seven large municipal sludge centrifuges was received from the City of Doha, Qatar.

Polymetal, one of the leading gold producers in Russia, ordered three large filter presses for gold washing applications. This was the third order in a row for the business area from this customer.

A customer in Russia commissioned the business area to supply a high-temperature potash dryer; a sodium sulfate dryer, as well as three drying plants for special synthetic will be delivered to customers in China.

A large number of wastewater treatment plants in Guangdong Province, China, will be equipped with ANDRITZ belt presses for sludge dewatering. In total, more than 65 belt presses will be delivered to customers in Guangdong by the end of 2010.

#### Europe

The business area is to supply a drum drying plant, including two centrifuges, for a large sewage treatment plant in Brighton, UK.

EnBW, Germany, has awarded the business area an order for modernization and rehabilitation of municipal sludge drying plants.

#### **North America**

ANDRITZ ENVIRONMENT & PROCESS received an order from PCS Rocanville, Canada, for supply of eleven centrifuges for potash.

In the thermal drying sector, the business area will conduct modernization and rehabilitation of municipal sludge drying plants, including a plant for Ocean County Utility Authority, USA.

Synagro, USA, ordered two drum drying lines for the new municipal sludge treatment plant in Philadelphia. These lines will be the largest ever to be supplied by the business area. With the award of two orders to supply belt dryers for sludge, ANDRITZ ENVIRONMENT & PROCESS has successfully entered the belt drying market in the US.

![](_page_56_Picture_13.jpeg)

#### Further major orders at a glance

Country	Customer	Scope of supply/Project description
Belarus	Belurs	Supply of two large screen bowl centrifuges for potash
Brazil	Abengoa	Two dewatering plants for treatment of ash from
		the steam boiler in sugar factories
Canada	Suncor	Four centrifuges for dewatering of tar sand residue
China	Chengdu Water	Supply of three large filter presses for sludge dewatering
China	Taggart	Two hyperbaric filters for fine coal dewatering
China	China	Three centrifuges for dewatering of HDPE
	Petroleum	(High Density Polyethylene)
Egypt	NCIC – El Nasr Co	Supply of four membrane filter presses
Mexico	Pemex	Two large centrifuges for the petrochemical industry
Romania	Constanza	Delivery of the first centrifuges with patented TC drive
		(TC: transmission coaxial) for Romania
Russia	JSC Kuzbasskaya	Heavy duty belt presses for coal
Russia	OAO Uralkali	High-temperature fluidized bed dryer for 200 t/h potash
Singapore	De Smet	Nine membrane filter presses for plants in Malaysia and China
USA	DE-CAL Inc.	Centrifuges for sludge dewatering
USA	Trinity River	Supply of two of the largest wastewater inlet fine screens
	Authority	currently available on the market

The research and development activities of the Separation Technologies division focused on value analysis programs for products. These can be used either to achieve a cost reduction of around 20% on customer projects or to enhance unit performance also by around one-fifth – with no increase in costs. E.g., a value analysis project resulted in the development and patenting of a cylindrical-conical screen bowl centrifuge that enables an increase in throughput of 20-30% compared to conventional cylindrical centrifuges – with virtually unchanged space and energy requirement.

For applications in the mining industry, quickopening filter presses were developed that minimize the opening and discharge time significantly, thus increasing production capacity.

Successfully commissioned: the sludge dewatering and drying plant for Anglian Water in Tilbury, England. Anglian Water is the largest water and wastewater company in England and Wales, providing water and wastewater services to more than five million domestic and commercial customers. The Thermal Processes division focused its research and development work on biomass, concentrating primarily on increasing the value of biomass fuels and on the drying of biomass. Based on the positive experience gained with installed sawdust dryers, drying technology is now being extended to other biomass fractions, such as bark, rejects, or sludge from the pulp and paper industry. In addition, the through-air process used successfully in sawdust dryers and the alternative process arrangement with circulating air will be developed further; by using circulating air and heat recovery, savings of up to 20% can be made in the thermal energy required.

Development work on a biological and physicalchemical process for treating exhaust air in order to reduce odor and TOC (Total Organic Carbon) emissions from sludge drying plants continued successfully. Pilot tests showed that the nonthermal treatment processes available commercially cannot reliably guarantee the TOC content required by law in some countries. Thus, in borderline cases, the only alternative is to use exhaust air treatment processes with thermal postcombustion.

![](_page_57_Picture_8.jpeg)

Statement of the management

2009 was a difficult year for our end-user industries, which also made it a difficult year for us. As market leader, however, we expect continuing high growth potential in the medium to long term.

In the past year, we faced significantly reduced project activity in feed production systems. However, the market for biomass pelleting plants was very active, especially towards the end of the year.

Since the growth drivers for our business have remained intact, we expect good growth in the medium and longterm, particularly for biomass pelleting systems.

![](_page_59_Picture_0.jpeg)

![](_page_59_Picture_1.jpeg)

![](_page_60_Picture_0.jpeg)

# Strength

ANDRITZ FEED & BIOFUEL is one of the global market leaders for supplying plants, equipment, and services for the animal feed industry (pet food industry, fish and shrimp feed industries) and for biomass pellets (wood pelleting and pelleting of agricultural and industrial by-products).

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The business area received an order to supply a complete processing line for animal feed production from Lifland, Iceland. With this new plant, Lifland will provide approximately 60% of Iceland's entire animal feed production.

![](_page_62_Picture_2.jpeg)

In 2009, project activity in the animal feed sector was negatively impacted by the global economic and financial crisis. Due to both low demand from end-consumers and lack of financing, many projects were put on hold or project decisions postponed. Also in the special feed sector, project activity was at a very low level, especially for aquatic feed and pet food.

The market for biomass/wood pelleting equipment showed reasonable project activity, especially in Northern Europe, but also in Eastern Europe, and North and South America. However, similar to the animal feed sector, several, in part larger, projects were put on hold or project decisions delayed due to unchanged tight credit markets.

## IMPORTANT EVENTS

ANDRITZ FEED & BIOFUEL successfully commissioned several plants and manufacturing lines during the reporting period. Amongst those, two large wood pelleting plants were successfully handed over to Stora Enso, Sweden: a 100.000 t/a pelleting section for Stora Enso's plant in Grums, and a complete process line for a wood pelleting plant with a production capacity of 160,000 t/a for its plant in Kopparfors (for this

plant, the ENVIRONMENT & PROCESS business area delivered a belt dryer for biomass).

The business area started up the largest straw pelleting plant of the world (annual capacity: 100,000 t/a) at Drax Energy's power station, one of UK's largest power plants. Drax supplies approximately 7% of the UK households with energy.

![](_page_62_Picture_9.jpeg)

The largest pelleting plant for straw worldwide, supplied by ANDRITZ, was commissioned successfully in 2009 for Drax Energy's power station. Drax supplies electricity to around 7% of UK's households.

![](_page_63_Picture_0.jpeg)

#### Europe

At the beginning of 2010, the business area received the order from the pulp and paper producer Vyborgskaja Cellulosa, <u>Russia</u>, to supply all process equipment for a complete wood pelleting plant in Vyborg. With a production capacity of over 900,000 t/a, this wood pelleting plant will be the largest worldwide. The scope of supply includes debarking lines, chip handling system, belt dryers, as well as hammer and pelleting mills. This order will be booked as order intake in 2010.

To BioWood Norway AS, <u>Norway</u>, ANDRITZ FEED & BIOFUEL will deliver another wood pelleting plant. This plant has a total annual capacity of 450,000 t wood pellets.

For Lifland, <u>lceland</u> the business area will supply a complete processing line for animal feed production. With this greenfield plant (capacity 50,000 t/a), Lifland will cover nearly 60% of total animal feed production in lceland.

Within the special feed segments, the business area received a number of orders for new extru-

sion lines, amongst those major upgrades for a large salmon feed plant in <u>Scotland</u>, and a petfood plant in <u>Belgium</u>.

![](_page_63_Picture_7.jpeg)

#### **North America**

The business area will supply a complete wood pelleting plant including debarking line, chip handling system, as well as hammer and pelleting mills to Georgia Biomass LLC, a subsidiary of Europe's leading electricity and gas company RWE. With a production capacity of 750,000 t/a, this wood pelleting plant in Waycross, <u>USA</u> will be the largest in North America. ANDRITZ PULP & PAPER will supply the plant's woodyard.

Within the feed segment, a complete pelleting line for the production of poultry and pig feed with a capacity of 25 t/h was secured in <u>Mexico</u>.

#### Asia

Based on the increased presence and capacity of the business area in Asia, a good number of orders for extruder and dryer lines was secured from the aquatic feed and animal feed sectors in <u>China</u> and <u>Southeast Asia</u>.

The FEED & BIOFUEL business area – together with the ENVIRONMENT & PROCESS business area – continued focusing its R&D activities on programs to increase the value of biomass fuels.

The business area developed a new series of its conditioner, ensuring a more hygienic product and better feed quality compared to former solutions. The temperature controlled conditioner secures that no feed leaves the controlled thermal treatment before meeting the set hygienic standards.

Additionally, the business area implemented a new test line for biomass milling and pelletizing in order to conduct research and development work in the area of solid biofuel/renewable energy generation. The line will also be used for customerspecific trials to optimize process characteristics for new raw materials, as well as for operator training purposes.

![](_page_63_Picture_16.jpeg)

## Manufacturing

The ANDRITZ GROUP runs over 55 manufacturing and service sites worldwide. These facilities manufacture and assemble key components and spare/ wear parts for ANDRITZ equipment and systems. With its make-or-buy strategy, proven successfully for many years, manufacturing capacities can be adjusted quickly and flexibly to the respective workload.

Due to the financial and economic crisis, capacities at some manufacturing locations were adjusted to the difficult economic environment. In the HYDRO business area, however, manufacturing capacity was increased slightly – particularly in China, India, and Brazil – in view of the continuing favorable development of order intake.

#### Investments

Investments at the manufacturing locations focused on new manufacturing technologies, automation, as well as on establishing and expanding manufacturing capacities in the emerging markets in 2009.

#### The challenge: fluctuations in capacity utilization

As a company being active in the project business, ANDRITZ has to adjust its manufacturing capacity constantly in order to deal with changes in workload at any given time.

#### The solution: the ABC of manufacturing

ANDRITZ pursues a stringent make-or-buy strategy: depending on workload, the ratio of in-house manufacturing to outsourced production by qualified suppliers can be adapted quickly and flexibly. For this purpose, all key components and spare parts are split into three categories:

#### **Category A:**

High-quality key components and spare parts critical to the technology – these are always manufactured inhouse, regardless of whether workload is high or low. **Category B:** 

Semi-critical key components and spare parts – these are sourced from qualified suppliers if workload is high and manufactured in-house if it is low.

#### **Category C:**

Non-critical key components and spare parts – these are always sourced from qualified suppliers, regardless of whether workload is high or low.

Flexible working hour models, a high proportion of skilled temporary workers, and regular supplier checks regarding quality and on-time delivery support this strategy.

![](_page_64_Picture_16.jpeg)

#### Major developments in 2009

- Expansion of the ANDRITZ HYDRO manufacturing facilities with locations in Weiz, Austria, and Tiszakécske, Hungary.
- Capacity increase and extension of the product portfolio for ANDRITZ HYDRO at the manufacturing sites in Araraquara, Brazil, and Chengdu, China.
- Integration and productivity enhancement at the new manufacturing locations in Düren, Germany, and Levice, Slovakia.
- Expansion of manufacturing facilities in Foshan and Sanshui, China.
- Successful production start of a manufacturing line for heat exchanger plates at the manufacturing location in Tiszakécske, Hungary.

# **Human Resources Management**

At the end of 2009, the number of ANDRITZ GROUP employees amounted to 13,049 (-4.8% compared with December 31, 2008: 13,707 employees). In 2009, the Group was again able to fill all vacant key positions successfully. One particular focus of Human Resources (HR) Management was the development of high potentials and successor candidates for global top positions.

![](_page_65_Picture_3.jpeg)

Technologically critical and high-quality key components and spare parts are always manufactured by ANDRITZ itself, regardless of workload. In the manufacturing sector, HR activities focused on further qualification of shift managers on the subject of management know-how.

![](_page_65_Picture_5.jpeg)

One focus of HR Management in 2009 was the development of high potentials and successor candidates for global top positions.

The main task of Human Resources Management, which is responsible for Group-wide coordination of human resources work, is to provide sufficient management resources for existing and new business opportunities. This includes planning succession for global key positions – e.g. for managers of the business areas, divisions, and affiliates – as well as developing high potentials for future management posts.

A Group-wide standard was developed for performance appraisals in order to facilitate pre-selection of junior staff for future top management posts according to their personal performance and potential.

In addition, the development programs for management resources were extended. The Groupwide management training program 'ANDRITZ GROUP Management Challenge', which is carried out together with the St. Gallen Management Center of Switzerland, was adapted especially to the needs of future managers. A new 'Leadership Development' program for successor candidates in global key positions was implemented successfully.

#### Vocational training in manufacturing

In the manufacturing sector, the main focus rested on further qualification of shift managers and supervisors during the reporting period. Based on the results of the 'Reduction of Disturbance Variables' improvement project, additional vocational training courses were held on management know-how for shift managers and on project and process management for supervisors in addition to the regular technical training courses.

## Employees by region as of December 31, 2009 (as of December 31, 2008) in %

![](_page_65_Figure_13.jpeg)

## **Automation**

ANDRITZ AUTOMATION combines automation know-how with the expertise in process and mechanical design available in the ANDRITZ GROUP and is thus able to develop customer-tailored automation products that meet customers' technological and economic requirements. Complete automation systems from one source enable short start-up times and smooth operation of ANDRITZ plants and technologies.

![](_page_66_Picture_3.jpeg)

#### **Product developments**

In the PULP & PAPER business area, development work continued on the Advanced Process Control System for optimization of thermo-mechanical pulp production. Control systems were developed successfully also in connection with improving operation of recovery boilers and chlorine dioxide plants in pulp mills.

Modular control systems for belt presses and centrifuges in order to adapt to different dewatering processes were the target of further development work in the ENVIRONMENT & PROCESS business area. Control systems were developed for belt dryers so that very narrow tolerance ranges can be guaranteed for the dryness content of the finished products.

In the FEED & BIOFUEL business area, the SCADA system (SCADA: Supervisory Control and Data Acquisition) – a modular and scalable software platform for easy adaption to customer requirements – was started up successfully.

#### **Business development**

As part of a project for supply of a board machine and stock preparation plant to Hebei Yongxin Paper Co. Ltd., China, ANDRITZ AUTOMATION specialists from Europe and China successfully started up process and quality control systems, as well as a paper machine monitoring system.

The entire automation system, electrical equipment and instrumentation for the pulp drying line and lime kiln supplied to Celbi, Portugal, was delivered, installed, and started up successfully.

Automation teams from Finland and Brazil successfully completed work on the electrical equipment and automation system for the woodyard at Veracel pulp mill, Brazil.

At Fibria's Horizonte mill in Três Lagoas, Brazil, the complete equipment supplied by ANDRITZ AUTOMATION – from transformer to automation systems for digester, fiberline, drying line, and recausticizing – went into operation. For the mill staff, the IDEAS training simulator was introduced successfully. Horizonte is the world's largest single fiberline and was supplied by ANDRITZ PULP & PAPER (see report page 10). In the METALS business area, automation packages for rolling mills and strip processing lines were successfully commissioned in China, Taiwan, and the US.

In the ENVIRONMENT & PROCESS business area, dewatering and separation machines with the latest control and automation technology went into operation for customers in Europe, Asia, and the US.

Control systems for biomass drying were started up at the Lauterbach plant, Germany, and at Koppafors, Sweden.

In order to improve overall plant operations, automation systems were started up in belt drying plants for sludge treatment in Hereke and Antalya, both in Turkey, in Agde, France, and in Heilbronn, Germany.

The automation upgrade for potash production at underground-mine Intrepid Potash in Carlsbad, USA, was completed successfully.

#### **Major orders**

ANDRITZ HYDRO Automation received a contract to modernize the regulating equipment at Augst-Wyhlen and Laufenburg hydropower stations, Germany. The scope of supply comprises regulating equipment for seven Francis and 23 Straflomatrix™ turbines.

Ten excitation systems will be modernized for EDELCA, Venezuela, at the Guri II hydropower station, one of the largest in the world (see report page 6).

A process simulator and several Advanced Process Control Systems will be supplied for the fiberline and recovery sector of a pulp mill of Shandong Chenming Paperholding Ltd., China.

A dynamic simulator for transporting ore will be delivered for Codelco, Chile.

In the METALS sector, ANDRITZ AUTOMATION received orders to supply automation systems and electrical equipment for the continuous pickling line to Usiminas, Brazil, and for the electrolytic galvanizing plant and the annealing and pickling line to Benxi and ZPSS, both in China. With almost 800 engineers, ANDRITZ AUTOMATION has a presence at 65 locations in 64 countries worldwide.

The motor control center – the switchgear used to control all the electric drives – in Southern Water's drying plant for municipal sludge in Ashford, England. Southern Water supplies fresh, quality drinking water to more than one million households.

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# Glossary

#### A

#### Advanced process control

Generic term for different control strategies; ANDRITZ mainly uses model-based controllers (e.g. Brain-Wave®) for complex control tasks.

#### Annealing

Process in which metal is heated, retained at a suitable temperature, then cooled rapidly or slowly to reduce internal stress. As a result, the metal becomes softer and more workable, particularly in cold processes.

#### Annual General Meeting

Body of a stock company which usually meets once a year and takes resolutions on important company matters according to company law.

#### Approach equipment/flow system

Feeding system that provides stable feeding conditions for the paper/ board machine.

#### ATX

Austrian Traded Index Price index calculated by the Vienna Stock Exchange, containing the most actively traded shares on the Vienna Stock Exchange. The ATX comprises approximately 20 shares, weighted in the index according to market capitalization and free float.

#### ATXPrime

Price index calculated by the Vienna Stock Exchange and containing all the shares of the ATXPrime market segment (see 'Prime market').

#### AWP

ANDRITZ Wash Press Equipment for pulp washing and dewatering.

#### В

#### Biomass power boiler

Power boiler in which biomass is used as fuel. High-pressure tubes, in which water circulates, are part of these furnaces. By burning the biomass, the water is heated to steam phase – the steam drives turbinegenerators to produce electricity, or is used for heating purposes.

#### **Black liquor**

Mixture of spent cooking chemicals and dissolved wood material remaining after sulphate cooking. Black liquor is recovered during pulp washing, concentrated by evaporation, and burned in the recovery boiler to regenerate the cooking chemicals and also to produce energy for the mill.

#### Calender

In paper, nonwovens, and textile production, machine with one or several rolls, which causes certain profile and surface properties in web materials (gloss, strength, roughness).

#### Coating

In paper production, process through which the surface of paper or board is closed by chemical substances or a color coat. This improves certain properties (e.g. the printability of paper) significantly and prepares the material for certain uses.

#### **Cold-rolled strip**

Cold-rolled stainless steel has been subjected to several processes after hot rolling including annealing, pickling, reduction rolling (cold rolling), and further thermal and surface treatment steps. These process steps serve to adjust the technological characteristics (corrosion resistance, temperature resistance, cold forming capability, etc.).

#### Condensate stripping system

A distillation system for treating evaporator foul condensate; removes methanol and TRS (Total Reduced Sulphur) compounds that would prevent water reuse. In modern mills, an integral part of an evaporation plant.

#### Cooking

Process to produce pulp (fibers) for papermaking. Wood chips or other cellulosic materials are treated in a pressure vessel with chemicals under elevated pressure and temperature. Reactions dissolve lignin ('glue') and liberate the fibers from the wood matrix without using mechanical action.

#### **Corporate Governance code**

Set of rules for companies that provides a regulatory framework for responsible company management and control. It is a yardstick for good corporate governance.

## D

#### DD washer Drum Displacer® washer

This washer can be used in all fiberline process stages to separate the waste liquor that is generated during cooking and that contains dissolved wood and chemicals from the stock. It is a pressurized multistage washer which can include as many as four stages.

#### Deinking

A process in which most of the ink, filler, and other extraneous material is removed from printed and/or unprinted recovered paper. The result is a pulp which can be used in the manufacture of new paper, including tissue, printing, writing, and office papers.

#### Delignification

Removal of lignin from wood fibers. This is performed primarily in the cooking process and further carried out in the washing and bleaching process. In bleaching, ECF pulp mills use chlorine compounds (chlorine dioxide) for this process, although it can be achieved with oxygen, hydrogen peroxide, or ozone (which do not create organochlorines).

#### DIP

Deinking Pulp Pulp produced from deinked wastepaper, like old newsprint and old magazines.

#### Dividend

That part of a company's profits paid out to the shareholders. The amount of the dividend is proposed by the Executive Board of a company and approved in a resolution by the Shareholders' Meeting.

# E

### EBITA

Earnings before Interest, Taxes, and Amortization of goodwill This earnings measure is of particular interest in cases where companies have high goodwill. EBITA is a good measure of comparing companies within one industry.

#### EBITA margin

Financial figure that calculates the EBITA in relation to sales and states the profitability over a specific period.

#### EPC

Engineer Procure Construct A project delivery where one supplier assumes total responsibility for product and project engineering, equipment and construction procurement, and on-site construction.

#### Equity ratio

The equity ratio indicates the proportion of equity capital in a company's total assets (balance sheet total).

#### **Evaporation plant**

System for removing water from black liquor so that it can be efficiently burned in a recovery boiler. At the same time, the evaporated water is segregated and cleaned for reuse in the pulp mill processes.

#### Ex-dividend

The price of the share is lowered by the amount of the dividend a few days before the dividend is paid out.

#### Extruder

A continuous process in which animal feed components are cooked under pressure in a combination of frictional and steam heat in order to expand the resulting product and convert it into feed granulate. This process is very common in the production of pet food, fish feed, and cereals.

# Fiberline

The machines and process systems involved in converting wood chips into pulp. Process steps can include cooking, washing, screening, knot separation, refining, and bleaching.

#### Fluidized bed drying

Thermal process causing freeflowing products such as plastics, chemicals, etc., or sludges to float due to gas or air infeed and to dry by intensive material and heat transfer between the fluidizing gas and the product.

#### Francis turbine

This reaction turbine is the most widely used and most universal type of water turbine; used primarily in run-of-river and storage power stations with medium flow rate and medium head.

#### Free float

The proportion of a company's shares that is traded on the stock market and is not held by investors with a very long-term interest in the company.

#### Gasification

G

Gasification is a process for converting carbon-containing feed stocks, such as coal, petroleum, or biomass, into gas by causing the raw material to react with a controlled amount of air, oxygen, and/or steam at high temperatures.

#### Gravitel

Process developed by ANDRITZ, used for electrolytic galvanizing of steel strip.

#### н

#### HDPE

High Density Polyethylene Synthetic material used for pressure pipes and industrial coatings.

#### HERB

High Energy Recovery Boiler This boiler increases the electricity generation from black liquor compared to conventional recovery boilers. This is achieved by increasing the steam temperature and pressure, and by preheating the combustion air and feed water.

#### Hot-rolled strip

Hot-rolled stainless steel strip is material resulting from the rolling of slabs or other input materials at high strip temperatures (approximately 700-1,000° C).

### 4

#### IFRS

International Financial Reporting Standards International accounting standards drawn up by the International Accounting Standards Board (IASB). Complying with IFRS should enable investors and other relevant stakeholders to better compare annual accounts presented by companies from different countries.

#### Investor Relations

Interface between the company and the financial community. An Investor Relations department should regularly provide transparent, comprehensive, and up-to-date information on developments within the company to shareholders, financial analysts, and investors.

#### ISIN

International Securities Identification Number Individual identification number of a security, enabling computerized in-

ternational registration of a security.

#### Κ

#### Kaplan turbine

Water turbine with axial inward flow and adjustable runner, used in river power stations with high flow rate and low head.

#### L

#### Lime kiln

A long, slowly rotating kiln used to reburn lime mud (calcium carbonate) to form calcium oxide, which is reused in recausticizing.

#### M

#### Market pulp

Pulp sold on the open market, as opposed to that which is produced for internal consumption by an integrated paper mill.

#### MDF

Medium Density Fiberboard Board made of mechanical pulp from the refiner process.

#### Mechanical pulp

A generic term describing pulp produced by a mechanical (as opposed to a chemical) process. Also known as 'high-yield pulp' as the processes utilize a higher proportion of the raw material (wood) than the chemical processes. Mechanical pulp is produced using either grinders or refiners. It is principally used in the production of newsprint, magazine papers, printing papers, specialty papers, tissue, towelling, paperboard, and wallboard.

# Ν

#### NBSK

Northern Bleached Softwood Kraft Pulp that is mainly produced in Canada and the Nordic countries but also, to some extent, in the northwestern USA and Russia. Benchmark grade of pulp for pricing and inventory data.

#### Net liquidity

Liquid funds plus fair value of interest rate swaps minus financial liabilities.

#### Nonwovens

Flat textile structure consisting of single fibers bound together by such processes as thermal bonding, solidification by water jet, chemical bonding, or ultrasonic solidification. Nonwovens contrast with paper in that they lack the hydrogen bonds that give paper its strength.

## 0

#### occ

Old Corrugated Containers System for preparation of Old Corrugated Containers.

#### Ρ

#### Pelton turbine

Impulse turbine used in storage power stations with low flow rate and large head in lower and in high mountain ranges.

#### Pickling

Process for chemical treatment of oxidized steel, applied to obtain a clean metallic surface. Here, the steel is dipped into a hot bath of diluted sulphuric or hydrochloric acid.

#### Power boiler

Steam boiler used for heat and/or electricity generation from a variety of fuels, e. g. coal, gas, biomass.

ANDRITZ power boiler technology uses biomass fuels and is based on Bubbling Fluidized Bed (BFB) technology.

#### Prime market

Market segment of the Vienna Stock Exchange which contains stocks that are admitted to listing on the official market or semi-official market and meet special additional listing criteria.

#### PrimePress X

Shoe press used for dewatering in paper machines that is capable of extracting large amounts of water from the material while preserving the bulk.

#### Pyromars

When pickling stainless steel, a waste acid solution is produced containing hydrofluoric and nitric acid. This mixed acid is recovered in the Pyromars plant. The waste solution is thermally decomposed. The acid gases resulting from the process are absorbed in water and reused in the pickling plant. Mixed oxide (iron/chromium/nickel) is a byproduct that can be reused in the stainless steel melt.

R

#### **Recovery boiler**

The recovery boiler is a steam boiler where the black liquor from the cooking process is burned after it has been concentrated in the evaporation plant. The residual biomass (lignin) is burned and the inorganic chemicals are recovered and returned to the pulp mill chemical cycle. Simultaneously, combustion of the biomass generates steam to produce electricity and heat for the pulp mill.

#### Refiner

Machine used to grind pulp between two discs. Refiners can operate at low consistency or at higher consistencies. At low consistencies, the material is fed to the refiner using a pump. At higher consistency levels, conveying devices are used. Other refiner types are used for breaking down wood chips into fibers.

#### **Regeneration system**

The hydrochloric waste acid solution from carbon steel pickling is recovered in the regeneration system. The waste solution is thermally decomposed. The acid gas resulting from the process is absorbed in water and reused in the pickling plant. Iron oxide is a by-product that is reused in various applications such as ferrite production.

#### RTS TMP

TMP process which reduces the specific refining energy by approxi-

mately 10-20% compared to conventional processes. The wood chips are subjected to high temperature (T) over a short time (R: Retention); the refiner is operated at high speed (S: Speed).

## S

SCADA Supervisory Control and Data Acquisition Centralized/decentralized systems that monitor, visualize, control, and regulate the entire equipment and technical processes.

### Т

## Thorn

Thermo-Mechanical Pulp Pulp produced by refining chips in a refiner at high temperature and pressure. The process relies mainly on mechanical energy and heat. TMP is most commonly used in newsprint and magazine papers.

#### тос

Total Organic Carbon Limit value used to determine the total emission of organic hydrocarbon compounds.

#### Treasury

Company department that deals with allotment and investment of existing or incoming funds and with the monitoring and hedging of financial risks.

#### W

### WAPUR

Waste Acid Purification Process for separating chemical contaminants from the waste solution from carbon steel pickling plants. This cleaning process ensures that high-grade iron oxide can be produced in the regeneration system.

#### WBI

Wiener Börse Index – Vienna Stock Exchange Index The WBI contains all shares listed on the official market and the semiofficial market. The WBI, as the overall index, reflects the development of the Austrian stock market as a whole.

#### White liquor

A strongly alkaline solution used in the cooking (digesting) process.



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Stattegger Strasse 18 8045 Graz Austria

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Although the greatest caution was exercised in preparing data, all information related to the future is provided without guarantee.

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