
GLOBAL TECHNOLOGY, **EASY LIFE.**

ANNUAL REPORT 2013

ANDRITZ

LIFE WITHOUT TECHNICAL PROGRESS
IS ALMOST UNTHINKABLE.

NOT ONLY DOES IT MAKE EVERYDAY LIFE EASIER,
IT ALSO BRINGS PROSPERITY AND CAN OFTEN
EVEN HELP SAVE LIVES.

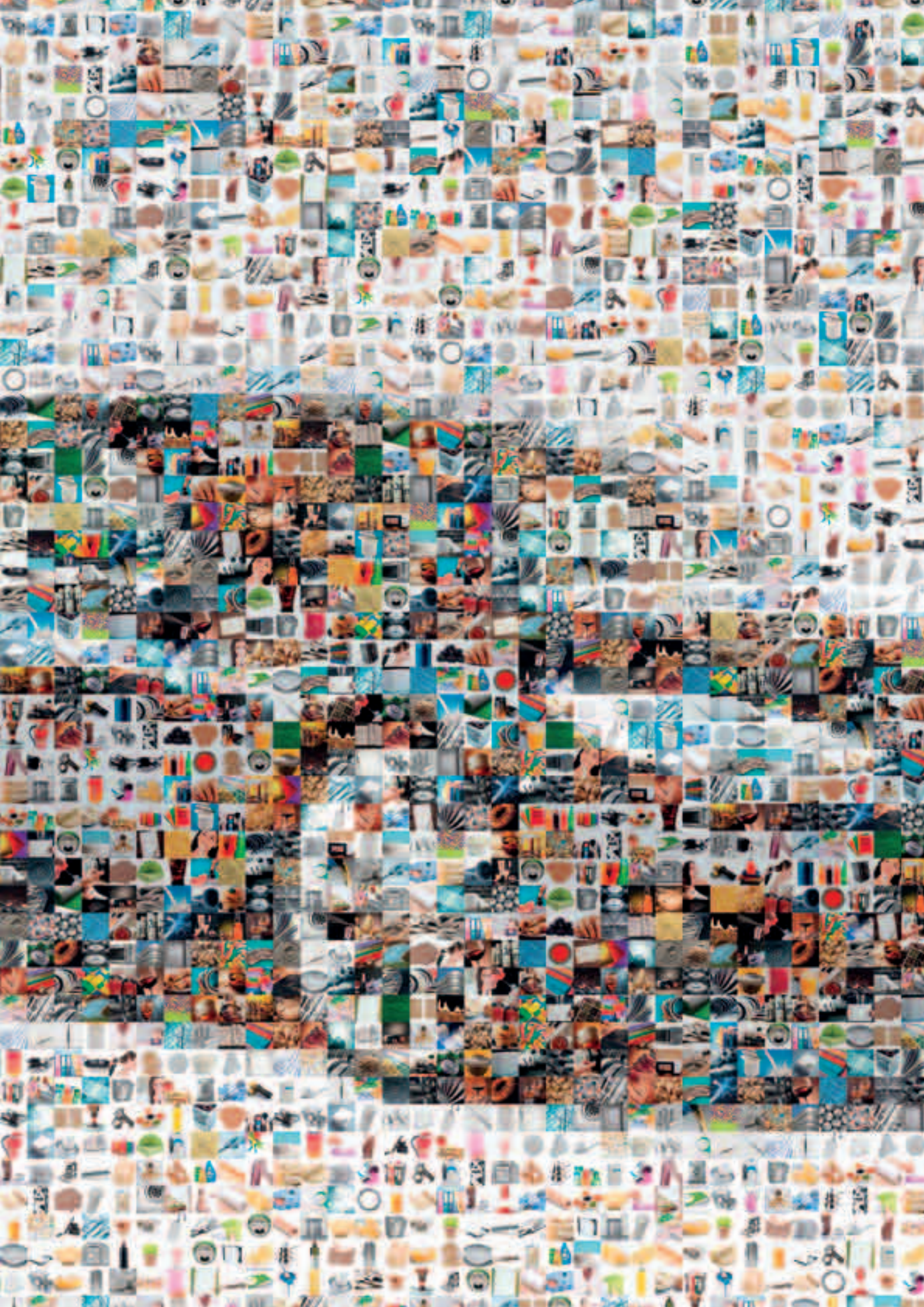
**THERE IS A GREAT
DEAL OF LIFE
AND PROGRESS
IN ANDRITZ
TECHNOLOGY –**

JUST AS THERE IS A LOT OF ANDRITZ TECHNOLOGY
IN OUR DAILY LIVES.

WHETHER IT'S ELECTRICITY FROM THE
SOCKET, CARDBOARD PACKAGING,
CARS, OR BABY FOOD.



This annual report will show you more than 100 products manufactured by ANDRITZ machines and technologies. Discover just how many ANDRITZ technologies are in your life!







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“My daughter needs light”

30 million people live in the booming Andean country of Peru – one tenth of them still without electricity. A report on life in Peru: with and without electricity.

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Packaged revolution

The rapid growth of the internet is revolutionizing not only our daily life, but also the pulp and paper market. Because the booming internet retail trading needs more and more cardboard and packaging paper to wrap the goods ordered online. One company alone – Alibaba, the world's largest online retailer – dispatches 4.4 billion packages a year.

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ANDRITZ at a glance

company profile, key financial figures, and market development in 2013

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“We stick to our long-term growth targets”

After a disappointing business year in 2013 and in view of the continuing moderate economic development worldwide, ANDRITZ has taken operational and organizational measures in order to secure its long-term goal of profitable growth. An interview with the members of the ANDRITZ Executive Board on failure, success, and challenges in 2014.



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An electric jolt for the automotive industry

A visionary entrepreneur from California is revolutionizing the market for electric cars. Essential components of his most successful car, the Tesla Model S, are manufactured using press lines from Schuler, global market and technology leader in metal forming and member of the ANDRITZ GROUP since 2013.

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2013 business year

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The ANDRITZ share

60

Little star gourmets

Small children are big gourmets. The baby food market is growing worldwide – demand has risen especially in Russia and China. All the large baby food producers use machines made by ANDRITZ Gouda.

Which products contain technologies from ...

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ANDRITZ AT A GLANCE

The ANDRITZ GROUP

is a globally leading supplier of plants, equipment, and services for hydropower stations, the pulp and paper industry, the metalworking and steel industries, and solid/liquid separation in the municipal and industrial sectors. The publicly listed, international technology Group is headquartered in Graz, Austria, and has a staff of around 23,700 employees. ANDRITZ operates over 220 production sites as well as service and sales companies all around the world. The ANDRITZ GROUP ranks among the global market leaders in all four of its business areas. One of the Group's overall strategic goals is to strengthen and extend this position. At the same time, the company aims to secure the continuation of profitable growth in the long term.

	Unit	2013	2012*	2011	2010	2009
Order intake	MEUR	5,611.0	4,924.4	5,706.9	4,131.9	3,349.3
Order backlog (as of end of period)	MEUR	7,388.5	6,614.8	6,683.1	5,290.9	4,434.5
Sales	MEUR	5,710.8	5,176.9	4,596.0	3,553.8	3,197.5
EBITDA ¹⁾	MEUR	255.2	418.6	386.2	307.3	218.2
EBITDA margin	%	4.5	8.1	8.4	8.6	6.8
EBITA ²⁾	MEUR	164.1	357.8	331.5	257.6	164.1
EBITA margin	%	2.9	6.9	7.2	7.2	5.1
Earnings Before Interest and Taxes (EBIT)	MEUR	89.8	334.5	312.7	245.5	147.1
EBIT margin	%	1.6	6.5	6.8	6.9	4.6
Earnings Before Taxes (EBT)	MEUR	80.3	330.4	321.7	247.9	149.6
Net income (including non-controlling interests)	MEUR	53.2	241.3	231.5	177.0	102.9
Fixed assets	MEUR	1,759.0	1,390.8	1,151.8	858.9	731.4
Current assets	MEUR	3,812.4	3,770.2	3,414.8	3,176.9	2,577.9
Total shareholders' equity ³⁾	MEUR	929.5	1,033.8	938.9	794.4	663.5
Provisions	MEUR	993.6	725.4	667.3	582.8	529.9
Liabilities	MEUR	3,648.3	3,401.8	2,960.4	2,658.6	2,115.9
Total assets	MEUR	5,571.4	5,161.0	4,566.6	4,035.8	3,309.3
Equity ratio ⁴⁾	%	16.7	20.0	20.6	19.7	20.0
Liquid funds ⁵⁾	MEUR	1,517.0	2,047.8	1,814.5	1,594.7	1,082.1
Net liquidity ⁶⁾	MEUR	893.1	1,285.7	1,400.6	1,177.0	677.9
Cash flow from operating activities	MEUR	93.7	346.5	433.8	704.5	345.7
Capital expenditure ⁷⁾	MEUR	111.4	109.1	77.0	68.8	70.5
Employees (as of end of period; without apprentices)	-	23,713	17,865	16,750	14,655	13,049

* Adjusted to comply with IAS 19 and IFRS 3

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 70,529 TEUR (2012: 22,942 TEUR), and impairment of goodwill at the amount of 3,800 TEUR (2012: 397 TEUR) 3) Total shareholders' equity including non-controlling interests 4) Shareholders' equity/total assets 5) Cash and cash equivalents plus marketable securities plus loans against borrowers' notes 6) Liquid funds plus fair value of interest rate swaps minus financial liabilities 7) Additions to intangible assets and property, plant, and equipment. – All figures according to IFRS. Due to the utilization of automatic calculation programs, differences can arise in the addition of rounded totals and percentages. MEUR = million euros. The Schuler Group was consolidated into the consolidated financial statements of the ANDRITZ GROUP as of March 1, 2013; no pro forma figures are available for the reference periods of the previous years.

ANDRITZ HYDRO

supplies electromechanical equipment for hydropower stations. With over 170 years of accumulated experience and more than 30,000 turbines installed totaling approximately 420,000 megawatts of output, the business area is one of the world's leading system suppliers, offering the complete product portfolio, including turbines, generators, and additional equipment of all types and sizes: "from water to wire" for small-scale and large hydropower stations up to outputs of more than 800 megawatts per turbine unit. ANDRITZ HYDRO is also well-positioned in the growing maintenance, refurbishment, and upgrade market for existing hydropower plants. Pumps (for water transport, irrigation, and applications for various industries) and turbogenerators for thermal power stations are also part of the business area.

Market development 2013

Global project activity for electromechanical equipment in hydropower plants was satisfactory in 2013. It was, however, still substantially below the very high level of the previous years. Investment activity was generally subdued. In addition to modernization and rehabilitation projects in Europe and North America, some new hydropower projects in

the emerging markets, particularly in South America and Africa, were implemented or in the planning phase. Project activity for small-scale hydropower plants and pumps was satisfactory.

	Unit	2013	2012	2011	2010	2009
Order intake	MEUR	1,865.4	2,008.4	2,096.2	1,870.1	1,693.9
Order backlog (as of end of period)	MEUR	3,722.4	3,842.3	3,671.4	3,376.0	2,894.5
Sales	MEUR	1,804.8	1,836.8	1,772.9	1,579.2	1,378.0
EBITDA	MEUR	176.8	182.4	174.3	139.9	120.9
EBITDA margin	%	9.8	9.9	9.8	8.9	8.8
EBITA	MEUR	146.9	153.2	147.7	118.0	100.5
EBITA margin	%	8.1	8.3	8.3	7.5	7.3
Capital expenditure	MEUR	44.5	56.7	44.3	41.5	44.5
Employees (as of end of period; without apprentices)	-	7,445	7,469	7,285	6,530	5,993

ANDRITZ PULP & PAPER

is a leading global supplier of equipment, systems, and services for the production and processing of all types of pulps, paper, tissue, and cardboard. The technologies cover the processing of logs, annual fibers, and waste paper; the production of chemical pulp, mechanical pulp, and recycled fibers; the recovery and reuse of chemicals; the preparation of paper machine furnish; the production of paper, tissue, and board; the calendering and coating of paper; as well as treatment of reject materials and sludge. The service range includes modernization, rebuilds, spare and wear parts, service and maintenance, as well as machine transfer and second-hand equipment. Biomass, steam, and recovery boilers, gasification plants for energy production, flue gas cleaning plants, production equipment for biofuel (second generation) and biomass pelleting, biomass torrefaction, plants for the production of nonwovens, dissolving pulp, plastic films, and panelboards (MDF), and recycling plants are also allocated to the business area.

Market development 2013

The international pulp market saw a positive development in 2013. Rising demand, particularly from international tissue and packaging paper producers, combined with a stable supply, led to a price increase in long-fiber pulp (Northern Bleached Softwood Kraft) from around 790 US dollars per ton at the beginning of January to approximately 860 US dollars per ton by the end of 2013. The price of short-fiber pulp (for example eucalyptus) also increased slightly – rising from around 750 US dollars per ton at the beginning of January to approximately 780 US dollars per ton at the end of 2013. Whereas the first half of the year was marked by substantial price increases as a result of steady demand from China, there was an oversupply in the second half of the year as a result of new capacities, which caused a slight drop in prices. The market for pulp mill equipment developed very well. A number of larger modernization orders were awarded. There was also substantial investment and project activity for new pulp mills. However, the competitive environment for pulp equipment suppliers remained challenging with high price pressure, particularly on large projects.

	Unit	2013	2012	2011	2010	2009
Order intake	MEUR	1,907.7	1,962.4	2,694.1	1,415.5	940.0
Order backlog (as of end of period)	MEUR	1,885.6	2,018.1	2,230.0	1,107.3	782.6
Sales	MEUR	2,005.3	2,282.2	1,884.9	1,129.8	925.5
EBITDA	MEUR	-11.5	156.2	138.1	99.9	41.7
EBITDA margin	%	-0.6	6.8	7.3	8.8	4.5
EBITA	MEUR	-35.7	134.6	120.4	82.2	17.2
EBITA margin	%	-1.8	5.9	6.4	7.3	1.9
Capital expenditure	MEUR	26.0	36.4	22.5	18.4	17.8
Employees (as of end of period; without apprentices)	-	7,136	6,774	6,208	5,046	4,418

ANDRITZ METALS

is one of the leading global suppliers of complete lines for the production and processing of stainless steel. These lines consist of equipment for cold rolling, heat treatment, surface finishing, strip coating and finishing, punching and deep drawing, and for the regeneration of pickling acids. In addition, the business area supplies lines for the production and processing of carbon steel and non-ferrous metal strip, resistance welding equipment for the metalworking industry, as well as turnkey furnace systems for the steel, copper, and aluminum industries. The Schuler Group, Germany,

fully consolidated as from March 1, 2013, is also part of the business area. As global market and technology leader in metal forming, Schuler supplies machines, production lines, dies, process know-how, and services for the entire metalworking industry. Its customers include car manufacturers and their suppliers, as well as companies in the forging, household equipment, packaging, energy, and electrical industries. Schuler is also the market leader in coin minting technology and offers system solutions for the aerospace and railway industries.

Market development 2013

Despite signs of slowing demand, project activity in the metal forming sector for the automotive and automotive supply industries was satisfactory in 2013. Due to continuing overcapacities in the international steel and stainless steel industry and the weak demand for stainless steel caused by the general economic climate, project activity for plants and equipment for the production and processing of stainless steel strip remained very low during the reporting period. In contrast, there was satisfactory investment activity for industrial furnaces.

	Unit	2013	2012	2011	2010	2009
Order intake	MEUR	1,233.8	324.2	318.6	302.7	296.2
Order backlog (as of end of period)	MEUR	1,427.6	451.4	465.1	521.0	564.1
Sales	MEUR	1,311.0	404.7	372.7	340.2	473.4
EBITDA	MEUR	76.6	28.0	21.5	21.2	23.2
EBITDA margin	%	5.8	6.9	5.8	6.2	4.9
EBITA	MEUR	53.5	25.1	19.4	18.4	20.5
EBITA margin	%	4.1	6.2	5.2	5.4	4.3
Capital expenditure	MEUR	32.7	2.6	1.8	1.9	2.0
Employees (as of end of period; without apprentices)	-	6,300	1,129	945	937	971

The Schuler Group was consolidated into the consolidated financial statements of the ANDRITZ GROUP as of March 1, 2013 and is allocated to the METALS business area. No pro forma figures are available for the reference periods of the previous years.

ANDRITZ SEPARATION

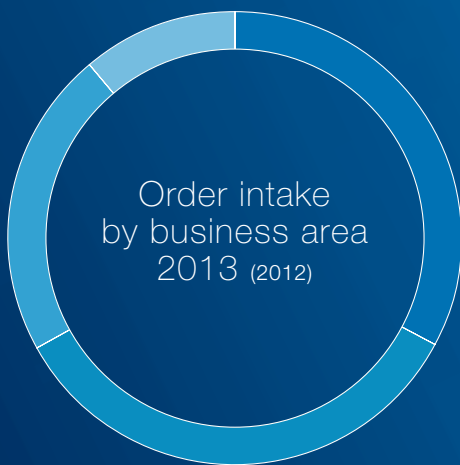
is one of the leading suppliers of technologies and services in the solid/liquid separation and thermal treatment areas for the environmental sector (particularly treatment of municipal and industrial wastewater), for mining and mineral processing, the chemical industry, and for the food and beverages industries. The extensive portfolio covers centrifuges, filters, thermal systems, screens, thickeners, separators, and conveying equipment. The business area also supplies equipment for the production of animal feed pellets and for biomass torrefaction. Based on 150 years of experience, ANDRITZ SEPARATION is a long-term service partner for the entire life cycle of customer plants, including delivery of wear and spare parts, modernization, and process optimization.

Market development 2013

Investment activity for solid/liquid separation equipment saw varied development in the industries served by ANDRITZ during 2013. Driven by the growth in population in the emerging markets and tightening environmental restrictions, investment and project activity in the municipal and industrial wastewater treatment sectors, and in the food industry, was relatively solid. Low project activity and several project delays and cancellations were noted in the chemical industry. Investment activity in the mining industry also continued to be low. Project activity in the animal feed industry was good – both for mill expansion projects and new greenfield plants.

	Unit	2013	2012	2011	2010	2009
Order intake	MEUR	604.1	629.4	598.0	543.6	419.2
Order backlog (as of end of period)	MEUR	352.9	303.0	316.6	286.6	193.3
Sales	MEUR	589.7	653.2	565.5	504.6	420.6
EBITDA	MEUR	13.3	52.0	52.3	46.3	32.4
EBITDA margin	%	2.3	8.0	9.2	9.2	7.7
EBITA	MEUR	-0.6	44.9	44.0	39.0	25.9
EBITA margin	%	-0.1	6.9	7.8	7.7	6.2
Capital expenditure	MEUR	8.2	13.4	8.4	5.5	6.2
Employees (as of end of period; without apprentices)	-	2,832	2,493	2,312	2,143	1,667

The FEED & BIOFUEL business area was allocated to the SEPARATION business area as of January 1, 2013. The reference figures for the previous years were adjusted accordingly.



HYDRO

1,865 MEUR (2,008 MEUR) = 33%* (41%)

PULP & PAPER

1,908 MEUR (1,962 MEUR) = 34%* (40%)

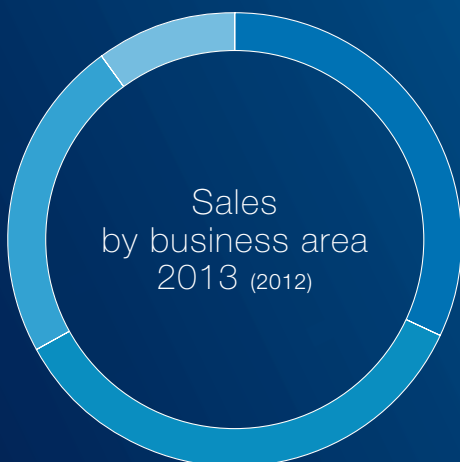
METALS

1,234 MEUR (324 MEUR) = 22%* (7%)

SEPARATION

604 MEUR (629 MEUR) = 11%* (12%)

* Share of ANDRITZ GROUP's order intake



HYDRO

1,805 MEUR (1,837 MEUR) = 32%* (35%)

PULP & PAPER

2,005 MEUR (2,282 MEUR) = 35%* (44%)

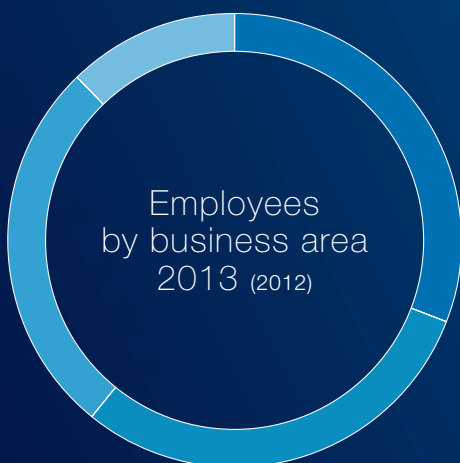
METALS

1,311 MEUR (405 MEUR) = 23%* (8%)

SEPARATION

590 MEUR (653 MEUR) = 10%* (13%)

* Share of ANDRITZ GROUP's sales



HYDRO

7,445 (7,469) = 31%* (42%)

PULP & PAPER

7,136 (6,774) = 30%* (38%)

METALS

6,300 (1,129) = 27%* (6%)

SEPARATION

2,832 (2,493) = 12%* (14%)

* Share of ANDRITZ GROUP's employees

“WE STICK TO OUR LONG-TERM GROWTH TARGETS”



Wolfgang Leitner
Responsibility: President and CEO,
central Group functions

Wolfgang Leitner on the problematic pulp mill project in South America: “Following a very successful initial order in Uruguay in 2007, this project has turned into a very big challenge, both for us and for our customers.”

After a disappointing business year in 2013 and in view of the continuing moderate economic development worldwide, ANDRITZ has taken operational and organizational measures in order to secure its long-term goal of profitable growth. An interview with the members of the ANDRITZ Executive Board on failure, success, and challenges in 2014.

Karl Hornhofer on large EPC projects that include substantial risks: "We will be even more selective on these projects in future."

Mr Leitner, after many years of continuously rising profits, in 2013 the ANDRITZ GROUP's net income has fallen substantially in spite of increasing sales figures – earnings were even below the level of 2009, the year of the worldwide crisis. What are the reasons for this?

Wolfgang Leitner: The financial development of ANDRITZ in 2013 was marked essentially by three factors. First of all, there were increased expenditures and provisions for a pulp mill in South America to which ANDRITZ not only supplied the production technologies and equipment, but was also responsible for construction and erection of the entire mill. The second reason for the decline in earnings was provisions planned from the outset for continuation of the strategy and growth program by the Schuler Group, acquired in the first quarter of 2013. Thirdly, we had substantial additional costs in the SEPARATION business area for the market launch of products in China. The very good development in the HYDRO business area was only able to make up for a part of these burdens.

What were the difficulties at the pulp mill in South America? And have they now been resolved?

Leitner: Following a very successful initial order in Uruguay in 2007, this project has turned into a very big challenge, both for us and for our customers. The problems in the execution of this project were long strikes by the staff of local sub-suppliers on the site, organized by the trade unions. As a result of the strikes, which affected both sub-suppliers to the pulp mill project – including ANDRITZ and its sub-suppliers – and the customer to an equal extent, there were considerable delays in the execution of the project and, as a result, substantial additional costs. We had higher expenditures for this reason. These external factors over which we had no influence were not foreseeable when the contract was signed in 2011. At that time, the project fulfilled all requirements for a successful project. ANDRITZ had successfully completed a very similar pulp mill project in good cooperation with the customer in Fray Bentos in 2007 – in the same country, with the same sub-suppliers, and the same plant capacity.

What lessons has ANDRITZ learned from this? Will the company continue to take on EPC projects – projects including construction and erection of entire plants – despite these risks?

Karl Hornhofer: EPC projects always come with certain risks – risks that can be managed, but not avoided altogether. In future, however, ANDRITZ will be even more selective on EPC projects. We will limit our activities to projects where EPC-based supply carries a higher value and benefit for our customers than supply of the equipment only and where our customers are also willing



Karl Hornhofer

**Responsibility: PULP & PAPER (Capital Systems),
Group-wide Quality and Safety Management**

to pay a fair price for this added value. In addition, we will offer alternative supply structures – on an open book basis for example, where the supplier's costs are disclosed in order to obtain complete transparency in terms of cost causation and cost origins, or supply structures in collaboration with other companies who act as general contractors.

Let's move on to another important topic for ANDRITZ – the Schuler Group, which has been a part of the ANDRITZ GROUP since March 2013. How is business going at Schuler, and why have provisions been made there?

Leitner: Schuler has developed very well, even exceeding our expectations to some extent. However, we expect a slight decline in business in 2014 due to market developments. Taking account of this and in order to continue the growth and strategy project started by Schuler in 2011 for the integration of the Müller-Weingarten company, we will make some operational and organizational adjustments.



Friedrich Papst: As far as organizational measures are concerned, we have implemented a number of measures already in 2013, such as downsizing the Executive Board from five to four members, reducing the number of second-level managers in Germany, and streamlining the complex group structure. In the operational business, the adjustments will focus on three areas: concentration on core competencies, expanding business in the service sector, and strengthening our presence in growth markets. This will create a firm basis, ensuring that Schuler is also well prepared for the needs of the market in terms of its competitive position, growth, and earnings.

Business development in the SEPARATION business area was well below expectations in 2013. Surprising, because these were the very industries and markets that market researchers considered to be long-term growth areas. What were the reasons for this?

Humbert Köfler: As far as earnings are concerned, the development was significantly below expectations and was thus certainly not satisfactory. Technical difficulties arose while we were launching some products on the Chinese market and relocating these products to our Chinese production facilities. These difficulties led to major additional costs. We have made progress in resolving the difficulties, but we have not finished yet. As for the order intake, the mining and the chemical industries continued to be very cautious in their investments. On the other hand, the municipal sector and the food industry were very stable. Speaking of the food industry, ANDRITZ Gouda, which was acquired in 2012 and which serves

Friedrich Papst on adjustments in the Schuler Group, which was acquired in 2013: "This will create a firm basis, ensuring that Schuler is also well prepared for the needs of the market in terms of its competitive position, growth, and earnings."

Friedrich Papst

Responsibility: METALS, HYDRO (Pumps), SEPARATION (Animal Feed Technologies), Group-wide Manufacturing and Procurement

this industry, showed very positive development in 2013, both in terms of sales and earnings.

Papst: On a further positive note, the animal feed and biomass sectors also saw excellent development. We were able to achieve a new record in order intake, particularly in the pet food and aquatic feed segments, where we further strengthened our market position.

Mr Semper, the HYDRO business area – the largest of the ANDRITZ business areas together with PULP & PAPER – also developed very well in 2013, particularly its earnings and margin. However, the order intake was slightly below the very high levels of the previous years. Do you think this is a long-term change in the hydropower market or only a short-term, market-related fluctuation?

Wolfgang Semper: We certainly do not expect a change in the long-term structural growth drivers in the hydropower market. Following the years of strong growth up to 2011, the market for hydropower equipment has returned to normal again in the past few years, which is absolutely natural after growth phases of this kind. We were able to maintain our order intake at a high level, which means that we were able to strengthen our market position and even extend it in some areas. The long-term drivers in the hydropower market are unchanged and will continue to uphold the business in the medium

Wolfgang Semper on the hydropower market: "Following the years of strong growth up to 2011, the market has returned to normal again in the past few years, which is absolutely natural after growth phases of this kind. We certainly do not expect a change in the long-term structural growth drivers."

and long term. The trend worldwide is moving towards clean, renewable energy sources, where hydropower with its share of 80 percent is the most important energy resource. The refurbishment needs of existing power stations, particularly in Europe and North America, are enormous. At the same time, we expect large hydropower plants to be built in many emerging countries in order to satisfy the sharply rising demand for power as a result of the economic and population growth in these countries. Topics such as energy storage to offset temporary power deficits as well as intelligent power networks are also relevant for us. So the overall prospects are good.

On the subject of prospects, what are your views on the global economy in 2014 and on development by ANDRITZ, Mr. Leitner?

Leitner: I don't expect a sustained recovery in the global economy, and, as a result, in our markets in 2014. Customers will continue to act with caution, investing at relatively short notice and only implementing investment plans step by step. Nevertheless we expect some large orders to be placed in the HYDRO and the PULP & PAPER



Wolfgang Semper
Responsibility: HYDRO, Group-wide Automation

Humbert Köfler
Responsibility: PULP & PAPER
(Service & Units), SEPARATION



business areas, and we think our chances are good due to our market position. Competition, however, will continue to be strong and challenging. As a result, we will also make some selective adjustments to the company's organizational structure and capacity in 2014 to adjust our cost structure in order to remain competitive. Nevertheless, we will not take any measures that limit our long-term goal of profitable growth for the ANDRITZ GROUP. We stick to our long-term growth targets. And we will continue to look out for interesting companies and products that can further strengthen our competitive position and broaden our sales markets. As we have a high level of cash liquidity, we have every opportunity to achieve further internal and external growth.

Thank you for this interview! <

Humbert Köfler on the negative business development in the SEPARATION business area: "Technical difficulties arose while we were launching some products on the market in China. These difficulties led to major additional costs."

DIFFICULT BUSINESS YEAR 2013

- › Order intake by region 2013 (2012)
- » Employees by region as of end of 2013 (2012)



* Share of ANDRITZ GROUP's order intake and employees



China

- > 629 MEUR (467) = 11%* (10%)
- >> 2,222 (1.800) = 9%* (10%)



Asia (without China)

- > 765 MEUR (627) = 14%* (13%)
- >> 1,438 (1.423) = 6%* (8%)

The 2013 business year was disappointing for the ANDRITZ GROUP. Although such key financial figures as sales, order intake, and order backlog rose significantly due to consolidation of the Schuler Group, earnings and profitability saw a considerable decline. The main financial developments in detail:

Sales of the Group amounted to 5,710.8 MEUR in the 2013 business year and were thus 10.3% higher than the reference figure for the previous year (2012: 5,176.9 MEUR). This increase is due to consolidation of the Schuler Group, which has contributed 966.6 MEUR sales since its first-time consolidation as of March 1, 2013.

The order intake rose by 13.9% compared to the previous year, reaching 5,611.0 MEUR in 2013 (2012: 4,924.4 MEUR), with the Schuler Group contributing 868.4 MEUR.

The order backlog amounted to 7,388.5 MEUR as of December 31, 2013, an increase of 11.7% compared to the end of last year (December 31, 2012: 6,614.8 MEUR). The Schuler Group contributed 1,040.4 MEUR to the order backlog.

Earnings (EBITA) amounted to 164.1 MEUR and were thus 54.1% below the reference figure for the previous year (2012: 357.8 MEUR). The EBITA margin declined to 2.9% (2012: 6.9%). The main reasons for this substantial decline are high provisions and expenses in the PULP & PAPER business area for cost overruns in connection with supplies to a pulp mill in South America, additional costs in the SEPARATION business area for the market launch of a new product series in China, as well as planned provisions and expenses for continuation of the growth and strategy project initiated by Schuler in 2011.

Net income (excluding non-controlling interests) amounted to 66.6 MEUR (-72.6% vs. 2012: 242.7 MEUR).

Due to consolidation of the Schuler Group, total assets of the ANDRITZ GROUP as of December 31, 2013 increased to 5,571.4 MEUR (year-end 2012: 5,161.0 MEUR). Thus, the equity ratio declined to 16.7% (year-end 2012: 20.0%).

Gross liquid funds amounted to 1,517.0 MEUR (December 31, 2012: 2,047.8 MEUR). Due to the acquisition of Schuler, the net liquidity, at 893.1 MEUR, significantly declined compared to the reference figure as of end of 2012 (1,285.7 MEUR). <

- > The financial report offers further data, facts, and figures on the 2013 business year. The financial and annual reports are available for download at www.andritz.com or can be requested as printed copies free of charge by sending an e-mail to investors@andritz.com.

ANNUAL FINANCIAL REPORT 2013

ANDRITZ

THE ANDRITZ SHARE

aced with a difficult business year the price of the ANDRITZ share fell by 9.4% in 2013. During the same period, the ATX, the leading share index on the Vienna Stock Exchange, increased by 2.8%. The highest closing price of the ANDRITZ share in 2013 was 54.94 Euros (March 11, 2013), while the lowest was 37.93 euros (June 24, 2013). The average daily trading volume of the ANDRITZ share (double count, as published by the Vienna Stock Exchange) reached 316,787 shares (2012: 345,754 shares). The highest daily trading volume was noted on May 2, 2013 (4,659,374 shares), the lowest trading volume on January 21, 2013 (95,384 shares).

ANDRITZ has a very stable and well-balanced shareholder structure. About 30% of the shares are owned by Certus Beteiligungs-GmbH, whose Managing Director is Wolfgang Leitner, President and CEO of ANDRITZ AG. Other larger shareholders are the international investment companies Capital Group Companies Inc. and FMR LLC (Fidelity Management & Research). The remaining free float is held by national and international institutional investors and private shareholders. The majority of institutional investors come from the Anglo-Saxon countries (particularly the UK and the USA), but also from Austria and Germany. Private investors are mainly based in Austria and Germany.

In 2013, meetings with international institutional investors and financial analysts were held in Amsterdam, Boston, Brussels, Chicago, Denver, Düsseldorf, Edinburgh, Frankfurt, Geneva, Helsinki, Kansas City, Copenhagen, London, Los Angeles, Milan, Melbourne, Montreal, Munich, New York, Oslo, Paris, Salt Lake City, San Diego, San Francisco, Singapore, Sydney, Tokyo, Toronto, Vienna, and Zurich. ANDRITZ gave presentations for private investors at various roadshows in Austria.

At the 2013 ANDRITZ Capital Market Day in Munich, attended by 20 national and international financial analysts, the Executive Board provided information on current developments and expectations for the business areas and on the goals of ANDRITZ and Schuler in the medium and long term.

The ANDRITZ annual report once again received international awards. At the ARC Awards in New York – the world's most renowned and largest annual report com-

petition – the 2012 annual report received awards in six categories. Thus, the report was the most successful worldwide in the manufacturing industry sector.

At the Vienna Stock Exchange Awards 2013, ANDRITZ was honored again for its Investor Relations achievements. ANDRITZ took second place in the main category, the ATX Award. This prize is awarded to companies in the leading index of the Vienna Stock Exchange for their outstanding communication policy in the Austrian capital market. In addition, ANDRITZ took first place in the private investors' award category, which was awarded this year for the second time. The main focus of this award is the quality of the annual report and the media relations activities, as well as the information policy towards private investors. <

Financial calendar 2014

February 28, 2014	Results for the 2013 business year
March 21, 2014	Annual General Meeting
March 25, 2014	Ex-dividend
March 27, 2014	Dividend payment
May 6, 2014	Results Q1 2014
August 7, 2014	Results H1 2014
November 6, 2014	Results Q1-Q3 2014

Shareholder structure as of end of 2013

Free float	About 70%*
Certus (CEO)	About 30%

* Thereof 9.23% The Capital Group Companies Inc. and 5.02% FMR LLC (Fidelity Management & Research)

Performance since the IPO

(June 2001-end of 2013):

ANDRITZ: +1,634%; ATX: +106%

Performance 2013:

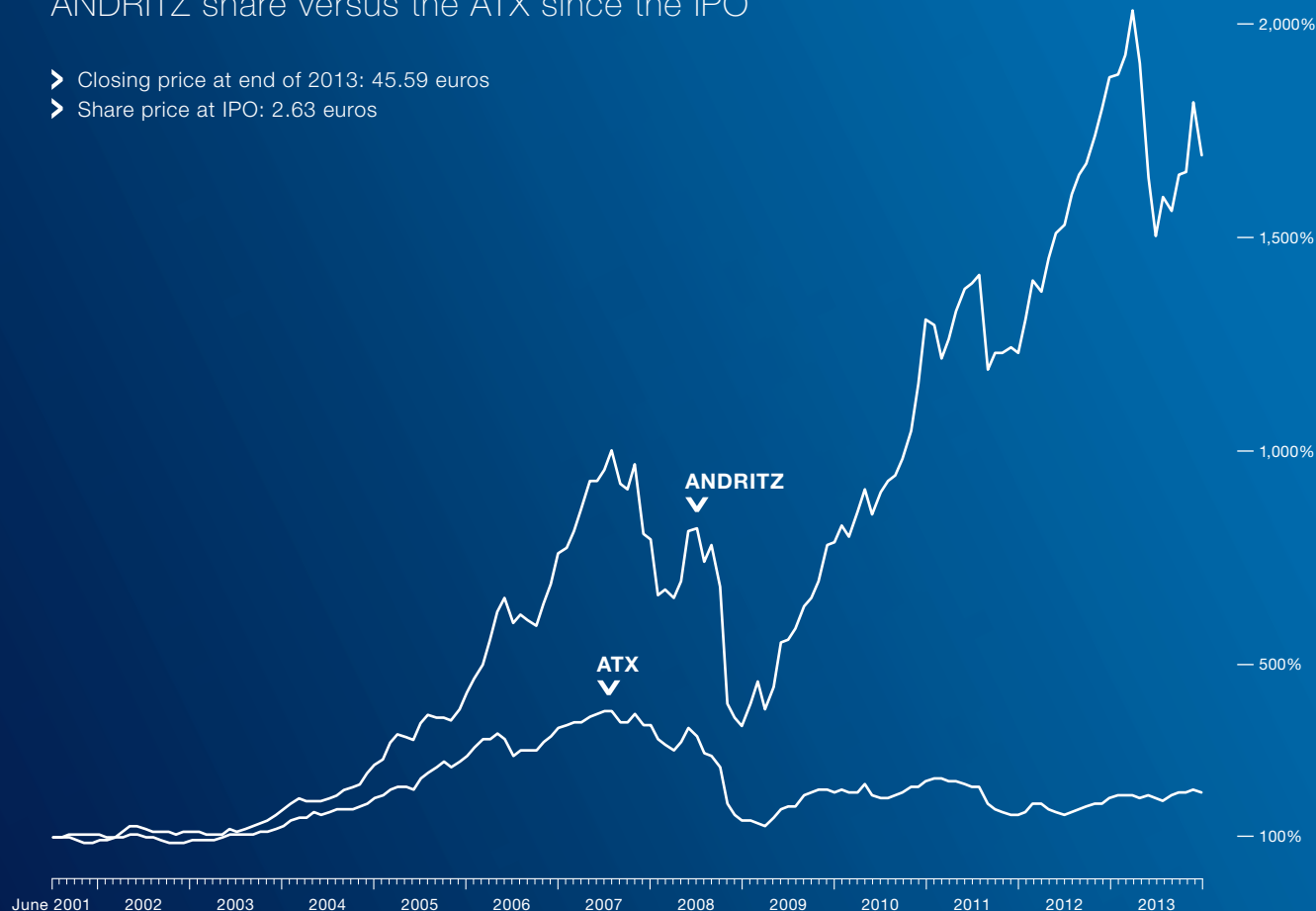
ANDRITZ: -9%; ATX: +3%

Basic data on the ANDRITZ share

ISIN code	AT0000730007
First listing day	June 25, 2001
Types of share	No-par value shares, bearer shares
Total number of shares	104 million
Authorized capital	None
Free float	About 70%
Stock exchange	Vienna (Prime Market)
Ticker symbols	Reuters: ANDR.VI; Bloomberg: ANDR, AV
Stock exchange indices	ATX, ATX Global Players, ATX Prime, WBI

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

- Closing price at end of 2013: 45.59 euros
- Share price at IPO: 2.63 euros



Key figures of the ANDRITZ share	Unit	2013	2012	2011	2010	2009
Earnings per share	EUR	0.64	2.35	2.25	1.74	0.95
Dividend per share	EUR	0.50 ¹⁾	1.20	1.10	0.85	0.50
Payout ratio	%	78.1	51.1	49.0	48.9	52.9
Equity attributable to shareholders per share	EUR	8.70	9.76	8.75	7.34	6.14
Highest closing price	EUR	54.94	50.00	37.75	34.46	20.97
Lowest closing price	EUR	37.93	32.83	27.41	19.75	8.75
Closing price at end of year	EUR	45.59	48.54	32.05	34.40	20.26
Market capitalization (as of end of period)	MEUR	4,741.4	5,048.2	3,333.2	3,577.1	2,107.0
Performance	%	-9.4	+47.9	-7.6	+67.8	+111.0
ATX weighting (as of end of period)	%	9.5082	10.6128	9.2705	7.3211	4.3701
Average daily number of shares traded ²⁾	Share unit	316,787	345,754	568,138	461,546	614,058

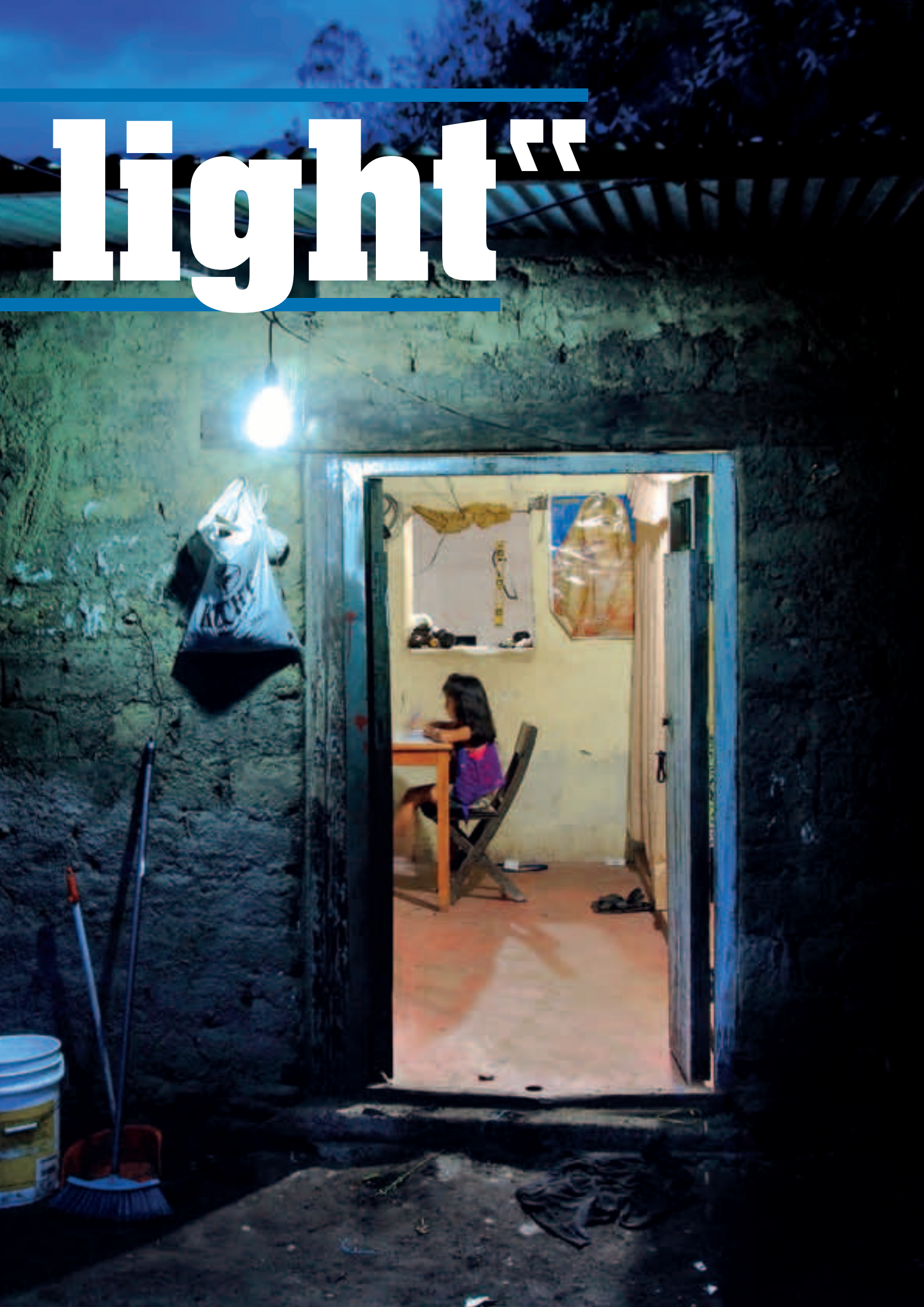
Source: Vienna Stock Exchange 1) Proposal to the Annual General Meeting 2) Double count, as published by the Vienna Stock Exchange

30 million people live in the Andean country of Peru – one tenth of them still without electricity. Most of us take electricity in our homes for granted, but for the Peruvian population, it is the distinction between rich and poor. A report on life in Peru: with and without electricity. >

“My daughter needs



▲ Four-year-old Zaritha Mainicta (left page) had no electricity in her home until only recently. Her greatest wish: “A television set like my friend Judith has.” Her friend, Judith Oruel (right page), has had electricity in her house for a few years now.



light



▲ Alejandro Labra is one of three million Peruvians who live without electricity. The fifty-year-old farmer knows why more and more people want to live with electricity: "People are not as frugal as they used to be."

A beaten path leads up the valley from where the dirt road comes to an end. A box hung from a steel cable takes visitors across the thundering river. The walk up to the small settlement in the mountains just below the legendary Inca city of Machu Picchu is arduous, but is worth it if you want to feel how it is when the past and the future collide. We're here to visit Alejandro Labra, who is still living without electricity, and his sister-in-law Rosmery Mainicta, who recently laid a kilometer-long cable through the wilderness so that she can use the newfangled energy source from the socket to power a light-bulb – all so that her four-year-old daughter Zaritha can do her homework by light.

The settlement is made up of a few wind-battered wooden huts. Day-to-day life in this remote area is difficult. It is still dark when the cock first begins to crow. Alejandro Labra feels around in the darkness for his clothes and the machete.

They are both always in the same place and the 50-year-old farmer finds them without trouble. He then brews some coffee on a wood fire. In his youth he would take a candle, later an oil lamp – the technological advance, which he too yearns for, is only slowly coming to this isolated mountain region.

By the time dawn starts to break behind the high mountain-tops at five o'clock, Alejandro Labra is already at work on his fields, sowing tomatoes, weeding, collecting honey, or fertilizing the orange trees. Both his father and grandfather also worked in this way, and not much has changed in the way of work since the times of the Incas. In the afternoon, Labra has work to do on the farmyard: chickens, ducks, and guinea pigs have to be fed, tools need to be repaired, firewood chopped. When it becomes dark and the day's work is done, he likes to sit on the wooden bench next to his hut listening to the news on his old battery-powered portable radio. He has no electricity in his hut. He is one of three million Peruvians who live without electricity.

"These people usually live in poverty in remote areas", says Luis Antonio Nicho Díaz, Director of Electricity at the Peruvian Ministry for Energy. "But their situation will soon improve." Peru has plenty of potential for electricity production, especially in the area of hydropower, which is already the most important energy source today. According to the Ministry's figures, hydropower plants currently produce more than 23,000 gigawatt hours of electricity annually – that's more than half of Peru's total electricity use.

"The government wants to diversify energy production and expand renewable energy", reports Luis Antonio Nicho Díaz. Because the energy demand of the booming Andean country is constantly on the rise (up by more than 30% since 2008), energy production plays an important strategic role in the future development of the country. The economy grew by 6.3% in 2012 and it is expected to grow by around 6.0% in 2013. Furthermore, Peru wants to establish a network with neighboring countries Chile and Ecuador to import or export energy according to their needs. The capital expenditure for that has risen, according to figures from the Trade Association for Mining, Oil, and Energy, from 170 million euros in 2003 to

The Santa Teresa hydropower plant is expected to connect to the grid in 2014, supplying 98.5 megawatts.

two billion euros in 2012. This investment comes largely from private companies. And demand is growing further: Peru's electricity consumption is currently at just over 43,000 gigawatt hours per year. In ten years' time, it is expected to have more than doubled to 95,000 gigawatt hours, according to the Ministry's estimates. "Hydropower is going to play a key role here in future too", says Díaz. Thirty six new hydropower plants are planned by 2023.

Back in the present, back in the little settlement near Machu Picchu, back to the farmer Alejandro Labra. One of these new hydropower plants, Santa Teresa, is currently being built

Selection of hydropower plants in Peru that were or will be equipped by ANDRITZ HYDRO

Did you know that ...

... ANDRITZ HYDRO has supplied equipment to more than half of all Peruvian hydropower plants? The first delivery was made in 1911. The Peruvian government is planning to build 36 new hydropower plants by 2023.

Lima

Hydropower plants in operation

- 1 Las Pizarras
- 2 Carhuaquero
- 3 Gallito Ciego
- 4 Cañón del Pato
- 5 Candelaria
- 6 Callahuanca
- 7 Huampaní
- 8 Moyopampa
- 9 Yaupi
- 10 Yuncán
- 11 Yanango
- 12 Chimay
- 13 Monobamba
- 14 Charcani

Hydropower plants under construction

- 15 Potaca
- 16 Cerro del Águila
- 17 Santa Teresa
- 18 Ángel 3

five kilometers upstream along the Vilcanota River. The facility, which is being planned by the private power supply company Luz del Sur, is being blown out of the mountain below ground and uses the drainage channel of the Machu Picchu power plant 188 meters further up. The Santa Teresa hydropower plant is expected to connect to the grid in 2014, supplying 98.5 megawatts. As part of the project, ANDRITZ HYDRO is supplying two Francis turbines as well as the generators, among other equipment. The new facility poses technical challenges because the power of the Vilcanota pulls large masses of stones and sediments with it. Appropriate steps must be taken by ANDRITZ to protect the turbines in the new power station.

The Machu Picchu power station, which first came on stream in the 1960s and which is equipped also with ANDRITZ technology, has already brought progress to Santa Teresa: construction work is going on everywhere in the small town. The old wood and clay huts are giving way to stone houses. Countless families have moved here from the surrounding countryside. But the people here are not as frugal as they used to be, ac-

cording to Alejandro Labra. His sister-in-law Rosmery Mainicta, for example, felt that her home was far too dark and so recently had an electric cable laid down from the neighboring farm. The electricity meter will be installed soon. The wooden posts that carry the electricity cable over a deep ravine and a turbulent river stand a little crooked. Whether they'll survive the next rainy season is doubtful. But Rosmery Mainicta is not concerned by that. "I need a fridge so that I can store meat and milk for longer periods of time," says the 32-year-old. "And a socket to recharge my mobile

phone. And my daughter needs light so that she can do her homework." The bright-eyed four-year-old Zaritha is Alejandro Labra's pride and joy. "Today's youth is much better educated than we were", reflects Labra. The little one is in pre-school during the day, then she goes to her mother who runs a kiosk at the thermal baths of Santa Teresa. The two don't get home until the evening.



During his youth, Alejandro Labra had to work on his parents' farm and had to do his homework in the evenings under the glow of a candle or oil lamp. "I sometimes fell asleep doing it, knocking over the lamp in the process", he remembers. At best only the book was stained, at worst the straw roof of the hut caught fire. For young Zaritha, these are just wild stories of yesteryear. While she does her homework in the light of the naked light bulb that's dangling above the kitchen table from the corrugated tin roof, she tells us her deepest wishes. What she really wants is a television set like her friend Judith, who lives half an hour further upriver in Collpani.


Collpani has already had electricity for a few years. The residents have taken advantage of that, turning their living rooms into little kiosks where they sell sweets, toilet paper, ice creams, and cold drinks. Judith lives on the coffee grove up on the hillside. Her mother Sabina Oruel says: "We used to have to salt meat and fish to conserve them." Now it's enough to just open the fridge door. She has dreams of owning a washing machine but has not yet saved enough money for one. Her eldest daughter would like to have a computer. "All in good time", says the mother. The electricity bill is already high enough. "Some months I have to pay up to 100 soles", she sighs – that's around 26 euros. "And that's although using energy saving lamps."

Despite that, the 35-year-old woman doesn't want to do without soap operas and TV news in the evenings. Her daughter Judith, on the other hand, is more of a Tom and Jerry fan. But her mother pulls the plug out every afternoon to make sure she doesn't forget to do her homework despite the television, just to be on the safe side. <

Sandra Weiss (text) and
Thomas Wedderwille (photos), Lima



▲ On the subject of luxury, Sabina Oruel says: "We used to have to salt meat and fish to conserve them." Now she has only to open the fridge door. She has dreams of owning a washing machine but has not yet saved enough money for one.



◀ Families in the mountain villages close to the legendary Inca city of Machu Picchu still hear the news from a battery-operated radio set because there is no electricity supply. Like four-year-old Zaritha Mainicta (photo on the left-hand page), many people in the remote areas of Peru live in poverty. But their situation should improve when the power grid is expanded. The Peruvian government has chosen to do this with hydropower.

22,000,000,000,000 KILOWATT-HOURS



Annual production of electricity has more than trebled worldwide since 1970 because of global economic and population growth. More than 22,000 terawatt-hours of electricity are generated every year, which is more than 22 billion kilowatt-hours. Approximately one fifth of the global power generation comes from environmentally and climate friendly, renewable energy sources – around 80% of which is hydropower. In comparison: this proportion of hydropower from the total electricity production of one year alone would meet the

current power demand of Austria, with around 8.5 million inhabitants, for over 50 years. In previous years, electricity production from hydropower increased annually by approximately 2% on average in the OECD countries, and in non-OECD countries by around 4%. The strong economic growth in countries like China, India, and Brazil, the increasing environmental and climate protection measures by many countries, and the ever shorter supply of fossil fuel resources mean that power generation from hydropower will very probably continue to rise in the future. ANDRITZ HYDRO is one of the leaders in this growth market. <

Source: International Energy Agency








Pelton turbine

The Pelton turbine – patented in 1880 by the American engineer Lester Pelton as a further development of the classic mill-wheel – uses the energy in a jet of water that enters the turbine at high speed to transform hydraulic energy into mechanical energy. For example, if water in a storage power station drops 1,800 meters through penstocks from a reservoir on the plateau of a mountain, the water jet can reach a speed of up to 666 kilometers per hour. A Pelton turbine rotates with up to 3,000 revolutions per minute. The turbine's efficiency can be up to 92%.



Francis turbine

This turbine, named after the American engineer James B. Francis (1815-1892), is the most commonly used turbine type today. It is ideal for heads of up to 600 meters and for large water volumes in run-of-river power plants with large heads and in storage and pumped storage power stations. In the Francis spiral turbine, a helical tube referred to as the spiral creates additional swirl in the water and then directs it towards the opposite curved turbine runner blades by means of a fixed guide apparatus (wicket gate) with adjustable guide vanes. The turbine's efficiency can be up to 97%.



HOW DO **HYDROELECTRIC TURBINES WORK?**

Kaplan turbine

In 1912, the Austrian engineer Viktor Kaplan filed a patent for his invention as a further development of the Francis turbine. The turbine has a runner that looks like a marine screw propeller. However, the propeller vanes are adjustable, with the result that the turbine can be adjusted easily to handle different flow rates. The Kaplan turbine is usually installed vertically, thus the water flows vertically downwards through it. Primarily, it is used in run-of-river power stations because it operates efficiently at low heads (up to 25 meters) and fluctuating flow rates. The turbine has four or up to a maximum of eight runner blades, depending on the head. The turbine's efficiency can be up to 96%.



ANDRITZ HYDRO

Important events

Energji Ashta, an Albanian subsidiary of the Austrian utilities VERBUND and EVN, took over the Hydromatrix plant for the Ashta hydropower plant. ANDRITZ HYDRO supplied a total of 90 Hydromatrix units for the two power plant stages Ashta 1 and Ashta 2. The Hydromatrix technology developed by ANDRITZ HYDRO is an innovative and low-cost concept consisting of a matrix of pre-assembled modules for small turbine-generator units that can be combined flexibly for different power plant arrangements.

With a total output of 53 megawatts, Ashta will supply 240 million kilowatt-hours of electrical energy per year for 100,000 Albanian households.

The business area completed hand-over of the 220-megawatt turbine-generator extension unit at Theun Hinboun hydropower station and of two turbine-generator units, each with an output of 30 megawatts, at Nam Gnouang hydropower station, Lao

People's Democratic Republic. Thus, the total capacity of Theun Hinboun, which has been in operation since 1998, was extended to 500 megawatts.

At the Allai Khwar hydropower station in Pakistan, the complete electromechanical equipment including two Pelton turbines, each with an output of 62 megawatts, was also commissioned. Allai Khwar is part of the "Initiative 2025" by national utility WAPDA to develop sustainable projects for energy generation in Pakistan with as little environmental impact as possible.

The Kindaruma hydropower station project in Kenya was completed with the delivery of a new 24-megawatt unit and a 20% increase in output of the two Kaplan turbines to 24 megawatts each on behalf of the Kenya Electricity Generating Company. The two existing turbines have been in operation since 1968.

Four bulb turbines, each with an output of ten megawatts, were commissioned at the Gössendorf and Kalsdorf hydropower plants in Austria, which supply 44,000 households with clean energy.

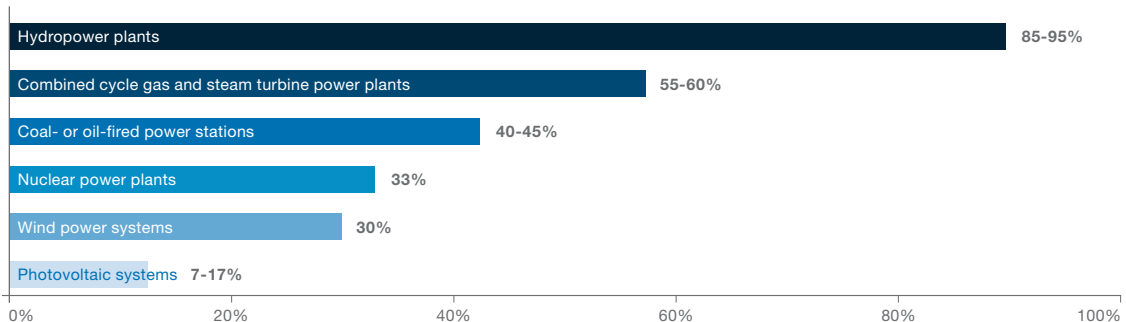
Important orders

ANDRITZ HYDRO received an order from CH. Karnchang Company to supply the electromechanical equipment for Xayaburi run-of-river power plant in the Lao People's Democratic Republic. The scope of supply includes seven Kaplan turbines each with an output of 175 megawatts and one Kaplan turbine with an output of 69 megawatts. With a nominal capacity of 1,285 megawatts, Xayaburi will have an annual output of 7,406 gigawatt-hours and provide electricity for around one million households. Due to the shortage or entire lack of other energy resources, Laos has focused on expanding hydropower in order to improve the standard of living of its population (half of the population has no electricity supply), stimulate the

Did you know that ...

... ANDRITZ HYDRO has installed almost 30,000 turbines with a total output of more than 420,000 megawatts in the past 170 years? ANDRITZ hydro-power technologies thus secure the daily power demand of 270 million people worldwide – that is more than one third of Europe's entire population. It also helps to save 540 million tons of CO₂ emissions, which is almost the entire annual CO₂ emission of Canada!

The high efficiency of hydropower*



* Efficiency is a measure of performance of energy conversion and thus describes the ratio between the power input and the effective power output. Using a light bulb as an example: of the 100% electric power input, 95% is converted into thermal energy and only 5% into light power. Thus, the efficiency is 5%. Hydroelectric turbines achieve efficiency of up to 97% depending on the turbine type. The efficiency of a hydropower station can be up to 95%, taking slight losses as a result of generators, transformers, energy leakages, and the plant's own energy consumption into account. Source: Eurelectric

country's economic growth, and reduce its dependence on fossil energy resources for years.

Also from Laos, the business area received an order from POSCO Engineering and Construction Company to supply the electromechanical equipment for Nam Lik 1 hydropower plant. The scope of supply includes two bulb

will each have an output of 85 megawatts, equaling an increase in output of approximately 20%.

Volta River Authority signed a contract with ANDRITZ HYDRO for refurbishment of electromechanical equipment at Kpong hydropower plant, Ghana. The order includes supply of four 45.7-megawatt Kaplan turbines.

Potential and advantages of hydropower

According to research by market experts, only about one third of the global hydropower potential has been developed so far. Compared to other sources of energy, hydropower offers substantial benefits:

- Water is a renewable source of energy.
 - Hydropower is a clean form of energy generation, it does not leave any environmentally harmful residues, and it contributes substantially towards reducing greenhouse gas emissions.
 - Hydropower makes a major contribution towards stabilizing power grids and provides a solid foundation for further development of volatile energy sources like wind and solar energy.
 - In many regions of the world, water reservoirs are vitally important for water supply, irrigation, transportation, and flood control.
 - Compared to other energy sources, hydroelectric power generation is cost-efficient and not sensitive to fuel price increases.
 - Hydropower preserves fossil fuel resources.
 - Construction of hydropower plants creates local jobs and supports regional economies.
-

turbines each with an output of 32.3 megawatts. Nam Lik 1 will supply 200,000 people in Laos with electrical energy from renewable resources.

For the Albanian utility company KESH, the business area will refurbish the complete electromechanical equipment at the Komani hydropower station, which is the largest hydropower plant in Albania with an output of 624 megawatts and covers around one fifth of the country's entire power consumption.

Kraftwerke Oberhasli, Switzerland, ordered the supply of two Pelton turbines (150 and 90 megawatts) as part of the project to expand Innertkirchen 1 and Handeck 2 hydropower stations. The project to modernize the two power plants built over 60 years ago makes a substantial contribution towards covering peak energy demand to compensate for volatile wind and solar energy supplies. As a result of the modernization, an additional 70 gigawatt-hours will be generated every year, thus covering the energy demand for more than 14,000 households.

The business area will supply two 90-megawatt Francis turbines to BKK Produksjon, Norway's second largest utility company, for the Matre-Haugsdal hydropower plant. Eidsiva Vannkraft, also in Norway, awarded a contract to increase the output of two Francis turbines at the Øvre Vinstra hydropower station. The two runners

JSC Shardarinskaya HPP, a subsidiary of the state-owned utility company Samruk Energy, Kazakhstan, ordered an upgrade of four Kaplan turbines at the Shardarinskaya hydropower plant. Their output will be increased by around 20% from the current 26 megawatts to 31.5 megawatts per machine.

From PT Perusahaan Listrik Negara, Indonesia, the business area received the order to supply electromechanical equipment for the hydropower station Peusangan. The order includes delivery, installation, and commissioning of four 23-megawatt Francis turbines and four generators.

The 5 de Noviembre hydropower plant, El Salvador, is being extended with the supply of two 41-megawatt Francis turbines for Comissão Executiva Hidroelétrica do Rio Lempa (CEL).

Unit 3 at the Shiroro hydropower plant will be modernized on behalf of Shiroro Hydroelectric, Nigeria. Shiroro is equipped with four 155-megawatt Francis turbines and is the most important hydropower plant in Nigeria, supplying electricity to the capital city Abuja.

ANDRITZ HYDRO received an order as part of a consortium from Kalehan Enerji, Turkey, for supply of three 235-megavolt-ampere generators for the new hydropower plant to be built at Upper Kaleköy. The plant has



Photo: Sanjit Das/Panos

a total output of 636 megawatts. With an annual output of around 1,470 gigawatt hours, it will cover the power demand of 150,000 households in Turkey.

As member of a consortium, ANDRITZ HYDRO received the order to modernize the SALACO hydropower plant group, comprising Salto II, Laguneta, and Colegio hydropower stations, from Emgesa, Colombia.

Nalcor Energy has awarded the business area a follow-up order to supply the hydromechanical equipment for the new Muskrat Falls hydropower station, Canada, including roller and intake gates (the equipment has a total weight of 9,000 tons). In 2013, ANDRITZ HYDRO was awarded an order to supply the entire elec-

tronic equipment for Muskrat Falls. Muskrat Falls has a total output of 836 megawatts and will replace an oil-fired thermal power station.

The Austrian utility company Grenzkraftwerke placed an order for refurbishment of control and excitation equipment for 19 machine sets, upgrade of electrical protection for three power stations, and supply of five major control stations and a reservoir simulator for four hydropower plants on the River Inn, Austria, and for the Jochenstein hydropower station on the River Danube on the border between Germany and Austria.

To VERBUND Hydro Power, the business area will deliver control and protection equipment for Reisseck II



Pumps safeguard life and survival

The various uses of ANDRITZ pumps include irrigation of agricultural land. So this technology meets one of the prerequisites for growing grain and rice crops. Here is one example: the Indian state of Andhra Pradesh is hit frequently by widespread drought. As some 70% of the population makes a living directly or indirectly from agriculture, the Indian government launched the Jalayagnam project for irrigation of agricultural land. ANDRITZ is fitting a total of eleven pumping stations with spiral casing pumps. It would only take three of these large pumps, with an impeller diameter of up to four meters, to fill an Olympic swimming pool with 2,500 m³ of water in under 20 seconds!

pumped storage power plant, and refurbish and connect the hydraulic protection for Malta pumped storage power station, Austria. In order to make more efficient use of the equipment, the currently separate hydraulic systems for the Malta and Reisseck/Kreuzeck power plant group will be linked. Reisseck II will have an output of 430 megawatts in turbine and pumping operations.

Numerous orders were booked for the supply of small-scale hydropower plants during the reporting period, particularly in North and South America, and in Asia, which confirmed the business area's worldwide market leadership in this segment: This includes deliveries for Renace II, Guatemala, as well as McLymont and Oki-

kendawt, Canada. The business area is supplying Nam Can Hydro Electric JSC with the entire electromechanical equipment for Nam Can 2 small-scale power plant, Vietnam.

In the pumps sector, orders included the supply of cooling water pumps for a power station in the Netherlands, as well as standard pumps for a pulp mill in Indonesia. For a mining company in South Africa, the business area will supply three submersible motor pumps for heads up to 430 meters for drainage of a disused mine. ANDRITZ is also supplying main cooling water pumps for a power plant in South Korea. <



PACKAGED REVOLUTION

The rapid growth of the internet is revolutionizing not only our daily life, but also the pulp and paper market. Because of strong growth in internet retail trading, the global market for cardboard and packing paper is booming. Goods ordered online have to be well packaged to ensure that they reach the buyer undamaged. The world's largest online retailer, the Chinese company Alibaba, sends a total of 4.4 billion parcels each year. One of the largest ANDRITZ cardboard machines is installed in China. >



When Lilian Lee sees clothes or shoes she likes, she first turns to the internet. "It's cheaper and more convenient to order things online", says the 25-year-old event manager from Shanghai. "And within just two days, the products have arrived." Lilian Lee does around half her shopping on the internet. By now she is even buying food online. "It's still hard to find milk in Shanghai, but more than anything I just can't be bothered to carry the things home." Lilian Lee is one of 250 million people who regularly shop online in China – the largest e-commerce market in the world.

The top dog in China is Alibaba, which has its headquarters in Hangzhou near Shanghai. Goods totaling 126 billion euros were sold on the company's online platforms in 2012 – as much as eBay and Amazon combined. The company, founded by English teacher Jack Ma in 1994, achieved earnings of 358 million euros in 2012 and has a staff of 24,000 employees. The company's flagship platforms are Taobao and Tmall. Taobao is similar to eBay, while Tmall is comparable to Amazon.

Alibaba has profoundly changed business in China. "E-commerce is a revolution in China", confirms Porter Erisman, a long-standing employee at the online giant. "Suddenly a lot of young people can set up new companies, because it can be done cheaply

on the internet." In a politically restricted environment, global online trading is a small piece of freedom for many Chinese. What's more, it allows many people in more remote regions to become consumers for the first time.

By now, orders placed on Taobao and Tmall make up almost two thirds of all parcels sent in China – that's an average of around 12 million parcels of all sizes each day. The boom in orders broke a new record on Singles' Day on November 11, 2013, a holiday for unmarried, single Chinese: on that day, employees at Alibaba packed 152 million parcels!

Such numbers are a huge logistical challenge: large parts of China are still difficult to reach. Logistics companies such as STO, who transport the parcels ordered online to customers,

The Chinese online retailer Alibaba sold goods totaling 126 billion euros in 2012 – as much as eBay and Amazon combined.

are therefore increasingly relying on air transport. That is the only way this booming market can be served, explains company spokesperson Shen Tao. One fifth of all deliveries are already carried out by air. In 2012, DHL, the world's market leader in logistics, opened its new Chinese hub at Pudong airport in Shanghai to enable it to better serve this booming market. Like DHL, their competitors FedEx and UPS are also experiencing (low) double-digit growth thanks to e-commerce.

Over the last five years, online retailing has grown by an average annual rate of 13%. In the USA, for example, around one in ten retail sales is now made online. And since everything that is ordered online has to be packaged before being sent to

The ten most important online retail markets

China is the world's most significant e-commerce market. Market experts at A.T. Kearney reveal the ten most important countries for online retailing in the "Global Retail E-Commerce Index 2013", which takes sales, customer behavior, infrastructure, and future potential into consideration:

- | | |
|-------------------|--------------|
| 1. China | 6. Germany |
| 2. Japan | 7. France |
| 3. USA | 8. Brazil |
| 4. United Kingdom | 9. Australia |
| 5. South Korea | 10. Canada |





the customer, the growth of e-commerce is a blessing for the packaging industry. Along with population growth, online retail is the most important driver of growth for this industry – mainly, although not only, in China.

One of the largest producers of packaging material in China is Nine Dragons. Zhang Yin founded the company in 1995 and it has become one of the global market leaders, making Zhang Yin one of the richest women in China. With the production of more than 12 million tons of boxes and packing paper, the publicly listed company achieved sales of 3.3 billion euros in 2012. That is 6% higher than the previous year. According to the company, this can also be attributed to the growing online sector. Production is carried out using 33 cardboard and paper machines in China, Vietnam, and in Mongolia. One of Nine Dragons' larger cardboard machines was supplied by ANDRITZ PULP & PAPER. The machine produces up to 1,100 tons of containerboard – each day!

By 2015 Nine Dragons wants to increase production to 14 million tons to meet increasing demand – because Alibaba

is also expanding further. Alibaba boss Jack Ma wants to list his company on the Hong Kong or US stock exchange in 2014. According to current estimates by financial analysts, the flotation should bring at least 50 billion euros into the Alibaba coffers. The company wants to use that to expand, with new South Asian markets such as Indonesia and India on the agenda. Most importantly, however, the Chinese market will grow further, because at the moment only less than half of the Chinese population uses the internet. According to market forecasts, by 2020 the Chinese e-commerce market will already be bigger than that of France, United Kingdom, Germany, Japan, and the USA combined. <

Philipp Mattheis, Shanghai

▲ 250 million Chinese purchase almost everything online: from bicycles to milk.

The background of the entire page is a photograph of a large stack of brown cardboard boxes. The boxes are of various sizes and are stacked in a way that creates a sense of depth and volume. Some boxes have white labels, and others have shipping symbols printed on them. The lighting is warm and slightly blurred, giving the image a soft, industrial feel.

First past the post

- 375 billion letters and parcels of various sizes are sent every year worldwide.
- 190 million tons of cardboard and corrugated paper were produced for all types of parcels in 2012 (+34% compared to 2003: 143 million tons).
- The packaging industry has annual sales of 227 billion euros worldwide.
- The worldwide per-capita consumption of cardboard and corrugated paper was 27 kilograms in 2012 (+20% compared to 2003: 22 kilograms). This was highest in the USA, with 110 kilograms, followed by Western and Northern Europe (71 kilograms), China (40), Eastern Europe and South America (24), and Africa (3).

Sources: Pöyry, Euwid

“PACKAGING IS A PART OF BRAND APPEARANCE”



Franz Rappold is on the Executive Board of Mayr-Melnhof (MM) Karton AG in Vienna, Austria. MM Karton is the world's leading producer of coated recycled cardboard and the company is growing its business in the areas of virgin fiber-based cardboard and premium coated packing paper. MM Packaging is Europe's leading producer of folding boxboards and has a growing presence outside of Europe.

What effect has the boom in online retailing had on your company?

Rappold: Brand appearance from conventional retailing is carried over into the online retailing arm: here the recognition factor for the buyer is achieved primarily through recognizable packaging. The packaging is therefore an important part of brand appearance. Folding boxboard packaging is taking a central role – in online retailing as well as on the high-street – due to its versatile functionality. As online retailing grows, the business of shipping packaging produced using sustainable or recycled raw material is growing strongly with it, thereby fulfilling the demands of consumers and producers for sustainability.

Which markets are growing?

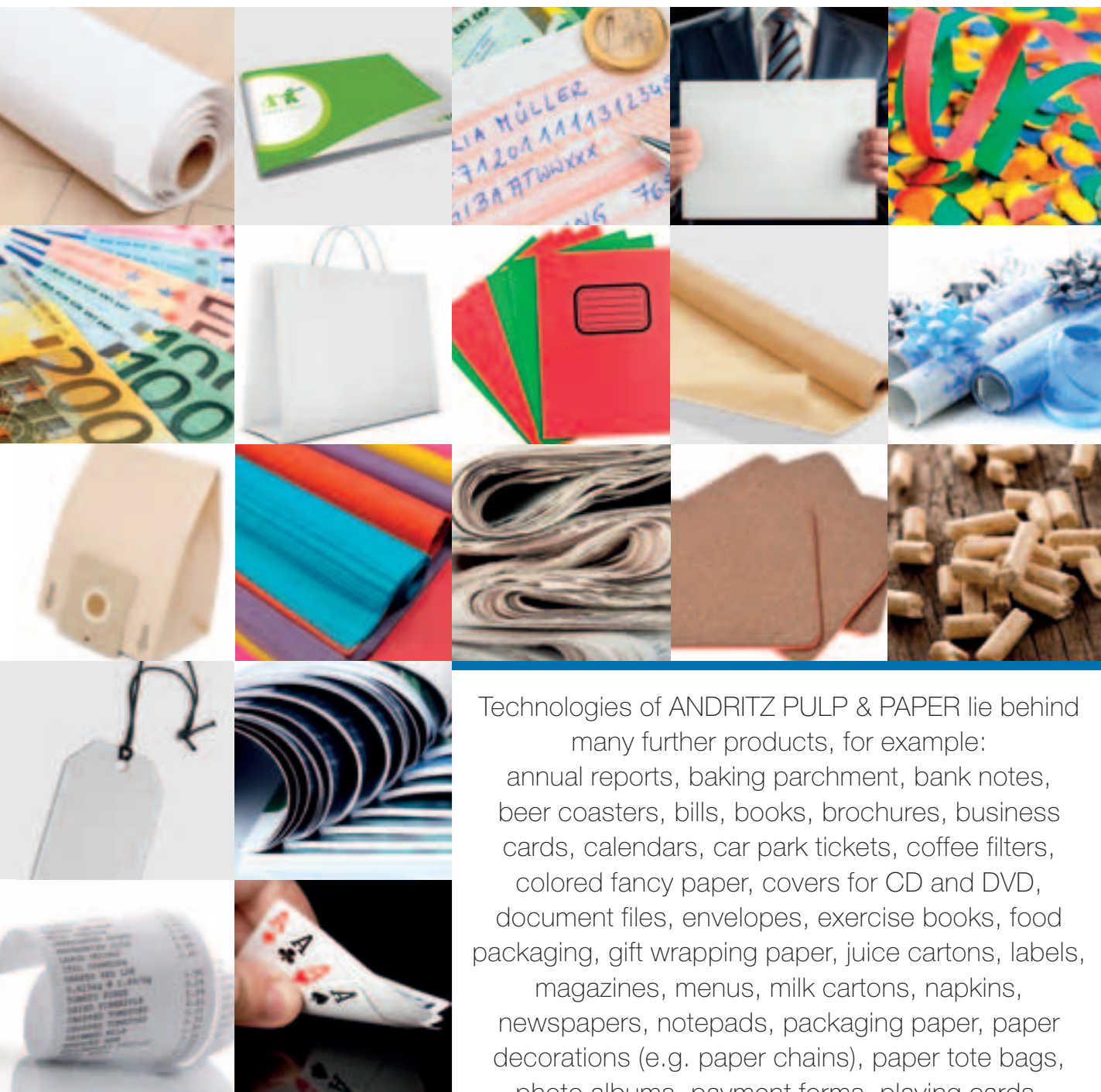
Demand for boxes and folding boxboards correlates to a large degree with general economy, especially in terms of private consumption. Our aim is to accompany our customers as they expand in growing markets, and to assist them in growing sustainably over the long term. We're seeing lots of growth potential in Eastern Europe, in Turkey, and in Russia. One of the industries growing most strongly is the pharmaceutical industry.

Why do you produce with ANDRITZ machines?

ANDRITZ has been a professional and competent supplier of machines and plants for the packaging industry for decades. They are innovative and well-positioned globally. ANDRITZ is competitive internationally. To put it briefly: ANDRITZ is a solid and trusted partner of ours. <


^ The recognition factor for the buyer is achieved primarily through recognizable packaging.





Technologies of ANDRITZ PULP & PAPER lie behind many further products, for example:

annual reports, baking parchment, bank notes, beer coasters, bills, books, brochures, business cards, calendars, car park tickets, coffee filters, colored fancy paper, covers for CD and DVD, document files, envelopes, exercise books, food packaging, gift wrapping paper, juice cartons, labels, magazines, menus, milk cartons, napkins, newspapers, notepads, packaging paper, paper decorations (e.g. paper chains), paper tote bags, photo albums, payment forms, playing cards, postcards, posters, sales slips, sandwich wrapping paper, telephone directories, travel catalogs, vacuum cleaner bags, writing paper, ...

The background of the entire page is a close-up, slightly blurred image of several large rolls of white tissue paper. The rolls are arranged in a way that creates a sense of depth and texture, with the edges of the paper visible. The lighting is soft, highlighting the fibrous nature of the tissue.

30 MILLION TONS OF TISSUE PER YEAR

Tissue is an absorbent, finely creped sanitary paper made of chemical pulp or recovered paper. It is normally used in several layers for toilet paper, kitchen rolls, napkins and handkerchiefs, facial and cosmetic wipes, and for hand towels, and is manufactured on special paper machines. At the center of these machines is the Yankee, with diameters of up to 6.7 meters, on which the paper web is dried within a few tenths of a second by a hood at a temperature around 500 °C. Annual production of tissue is over 30 million tons. The largest manufacturers are in North America (with a share of just under 30%), Western and Eastern Europe (around 25%), and China (approximately 17%); in the past decade, China was by far the largest growth market with annual growth of 8%. The largest consumers of tissue are the North Americans, with annual consumption of 24 kilograms per capita, followed by the Western Europeans and the Japanese (each with annual consumption of 15 kilograms) – by contrast, this figure in China is only just short of four kilograms per capita.

Source: RISI



Did you know that ...

... ANDRITZ tissue machines have a production speed of more than 2,200 meters per minute (which is equal to 130 kilometers per hour)? One machine can produce a daily average of two million rolls of toilet paper.

ANDRITZ PULP & PAPER

Important events

Metsä Fibre, Finland, started up the world's largest single polysulfide cooking line at its Joutseno mill. The technology supplied by ANDRITZ enables the mill to improve pulp quality and increase fiber yield during pulp production.

JKPM, India, started up its pulp mill after ANDRITZ completed major modernization of the woodyard, fiberline, white liquor plant, evaporators, and recovery boiler.

An upgraded chemical recovery boiler at the Kotlas mill belonging to OAO Ilim Group, Russia, and a new recovery boiler at Mondi's mill in Frantschach, Austria, were started up. Stora Enso Nymölla, Sweden, started up a magnesium sulphite liquor boiler after ANDRITZ performed an upgrade.

ANDRITZ biomass boilers were started up successfully for Iggesund paperboard, UK, and Graphic Packaging International, USA. The business area also started up a turnkey circulating fluidized bed boiler power plant in Busan, South Korea.

Ganzhou Hwagain Paper, China, experienced a quick start-up of its ANDRITZ tissue machine. It took only 15 minutes from start-up of the stock pump to the first paper on the reel. Nanning Phoenix, China, also started up a new tissue machine, equipped with a steel Yankee.

Nine Dragons Paper Industries, China, started up an OCC (Old Corrugated Container) processing line and two paper machine approach systems. Hebei Changtai, China, started up stock preparation equipment, while Vipap Videm Krško, Slovenia, restarted its upgraded deinking line. The business area also started up stock preparation equipment for UMKA, Serbia, after an upgrade to a line which produces white-lined chipboard.

Stora Enso started up a recycled fiber stock preparation plant and rejects handling system in Poland. This is one of the largest OCC processing lines in Europe, and currently the most modern.

Daelim, South Korea, started up an ANDRITZ Biax line for the production of plastic films. The films, with a thickness of 10-60 micrometers, will be used primarily in the packaging industry.

The new ANDRITZ biomass torrefaction demonstration plant in Stenderup, Denmark, started full operation. Customers can carry out research work and trials on biomass materials (up to one ton per hour).

Important orders

Two Mondi mills in Europe ordered ANDRITZ technology as part of Mondi's program to increase energy efficiency and improve environmental performance. For Mondi SCP, Slovakia, the business area will deliver a retrofit to the evaporation plant, a new recovery boiler to increase the mill's electricity production, and a new lime kiln. Components for the rebuild of a packaging paper machine and upgrade of the drying section of another machine will be supplied to Mondi Štětí, Czech Republic.

The business area will rebuild a sulfite liquor boiler for Domsjö Fabriker, Sweden. The new ANDRITZ design will enhance efficiency by up to 20%.

Suzano Papel e Celulose, Brazil, ordered a new cooking plant and the upgrade of its evaporation systems. Papelera Guipuzcoana de Zicuñaga, Spain, also selected ANDRITZ to upgrade its evaporation plant.

A pulp drying system, cooking and screening plant, and a pre-evaporator will be installed for Celulosa Beira Industrial (Celbi), Portugal. At a working width of 4.88 meters,

70 billion packs of paper tissues or 12 billion rolls of toilet paper

ANDRITZ is one of the leading suppliers of pulp producing equipment worldwide. New pulp mills have very high production capacities:

A single new pulp mill has an average annual production of up to 1.2 million tons of pulp. The pulp is used to produce different paper products for example.

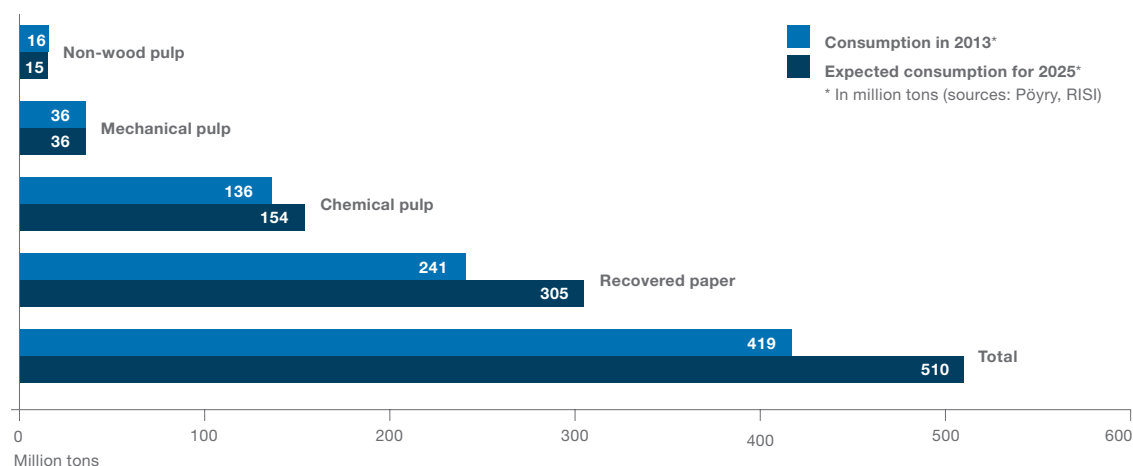
In order to obtain such paper properties as softness and tear resistance, a mix of long fibers (for example from spruce), short fibers (eucalyptus for example), and/or recycling fibers is used in pulp production.

1.2 million tons of pulp would be enough to produce 70 billion packs of paper tissues (each containing ten 3-ply paper tissues) or 12 billion rolls of toilet paper! <



Steadily growing demand for paper, tissue, and cardboard products

According to market research data, the demand for paper, tissue, and cardboard products is expected to grow from about 419 million tons in 2013 to 510 million tons by the year 2025. This corresponds to an average growth rate of 1.7% per year. To feed this demand, different raw materials are required:



ANDRITZ PULP & PAPER supplies technologies and equipment for production and processing all of these raw materials.

the drying line currently holds the world record for the highest specific throughput per meter.

In order to produce dissolving pulp in addition to kraft pulp, China CAMC Engineering Hongkong ordered a pre-hydrolysis vessel to be added to the cooking process at its pulp mill in Belarus. ANDRITZ will also perform some modifications to the evaporation plant and drying machine.

Bahia Specialty Cellulose, Brazil, awarded a five-year millwide service and maintenance contract for its pulp mill to ANDRITZ. The customer aims to reduce the overall cost of service and maintenance and increase production due to improved availability of the equipment.

The business area received an order from Mjölby-Svartadalen Energi, Sweden, for turnkey supply of a bio-mass-fired combined heat and power plant.

Zhejiang Jingxing Paper, one of Asia's largest liner-board producers, and Shandong Sun Paper, a leading Chinese pulp and paper producer, are entering the tissue business with orders for two tissue machines each, all with steel Yankees. Shin-Ei Paper, Japan, also ordered two tissue machines with steel Yankees.

Subsidiaries of Gold Hong Ye Paper Group, China, ordered stock preparation equipment for four tissue machines. Stock preparation and machine approach systems for a tissue machine were ordered by PMP, Poland, and Pindo Deli Paper Perawang Mills, Indonesia.

Siam Kraft Industry (SGP Paper), Thailand, ordered a complete recycled fiber stock preparation system and rejects handling system for a new corrugated board machine. Chongqing Lee & Man Paper Manufacturing, China, ordered a new recycled fiber processing line for old corrugated containers and a machine approach system. Zhejiang JingXing Paper, China, placed an order with the business area to deliver stock preparation and machine approach equipment to improve the quality of the customer's paper products.

Did you know that ...

... paper is a high-tech product that is manufactured on ANDRITZ machines that are up to 700 meters long?

Bohui Paper, China, ordered a new pre-treatment stage to improve pulp quality for a board production line. As a follow-on order, ANDRITZ will also deliver refiners for the rebuild of the mill's mechanical pulping line.

Kartonsan, Turkey, selected ANDRITZ to upgrade a board machine and the related stock preparation systems. For Naberezhnye Chelny Paper Mill, Republic of Tatarstan, ANDRITZ will rebuild a packaging paper machine.

Empresa Eléctrica Guacolda, Chile, ordered three dry flue gas cleaning plants, four desalination systems, and a denitrification plant for its coal-fired steam power station.

In the nonwovens industry, Summit, Thailand, ordered a new needlepunch line. A spunlace production line will be delivered to Avangarde, Russia.

Pressurized refining systems for the production of panelboards (MDF) were ordered by several customers,

including Longteng Wood, Beypan Entegre Orman Ürünleri, Divapan Entegre Agac Panel, Turkey, and by ZRK Industries, Pakistan.

Elektronikai Hulladékhasznosító, Hungary, ordered a turnkey recycling plant from ANDRITZ MeWa, acquired in 2013, for waste electrical and electronic equipment and refrigeration systems.

Howe Sound Pulp & Paper, Canada, selected the business area to supply a new oxygen delignification system for a fiberline.

Rentech, Canada, ordered technology for wood pellet production at two plants, including hammermills, pellet presses, feed equipment, and coolers. <

Did you know that ...

... ANDRITZ PULP & PAPER also supplies numerous technologies for products you would find in a house? These include furniture, drapes, carpets, wallpaper, laminate flooring, wooden insulation panels, facade cover, lining material for roofs, heat and footfall sound insulation, or filters for air conditioning systems. In addition, ANDRITZ's affiliate Schuler supplies loading systems for brick manufacturing.



A woman with blonde hair in a ponytail, wearing a white bathrobe, is looking out a window. She is holding a pink bottle of mouthwash and has a small amount of liquid on her lower lip. The background is a bright, slightly blurred view of a garden with pink flowers.

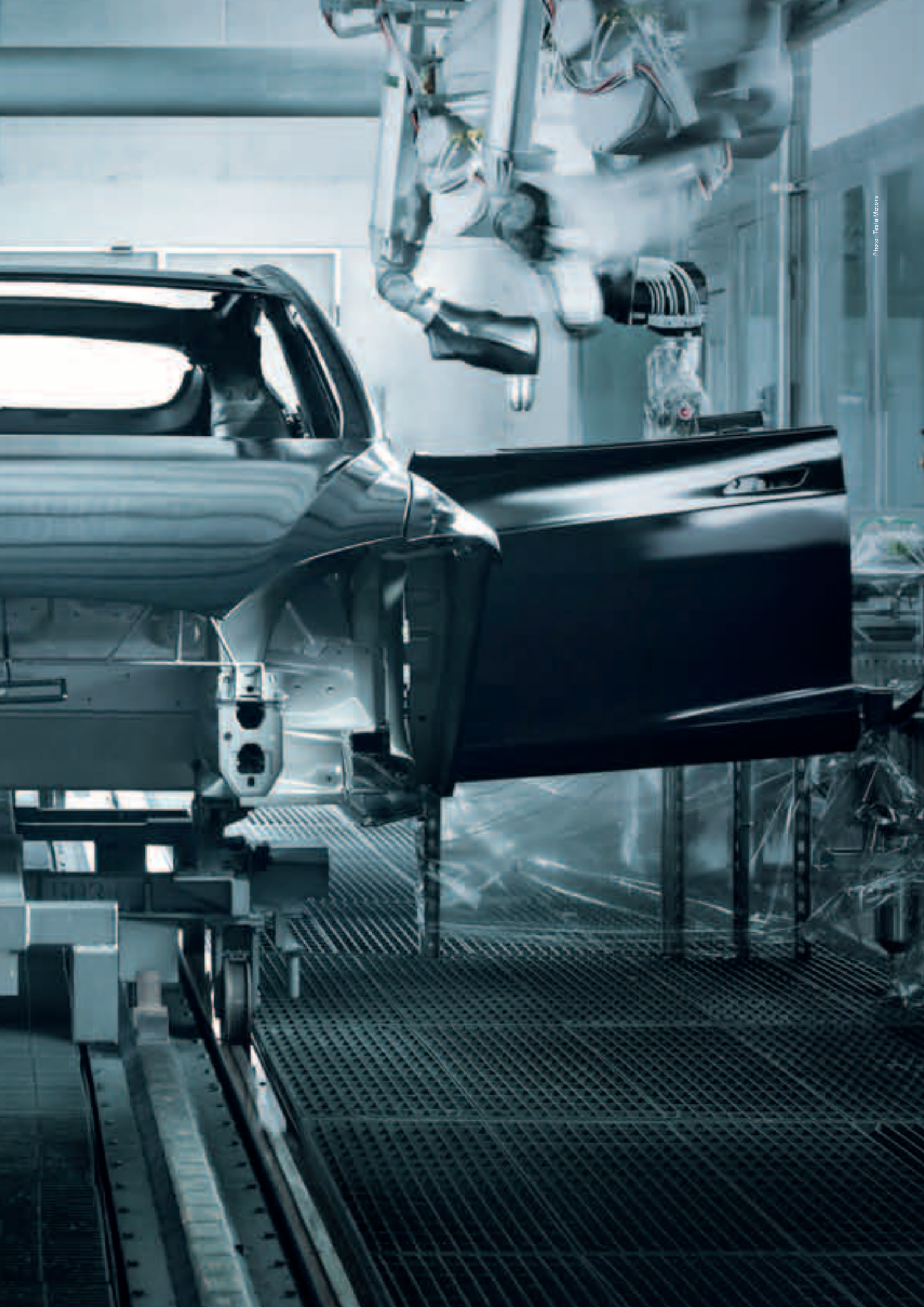
HAVE YOU HAD AN ANDRITZ PRODUCT IN YOUR HAND TODAY?

ANDRITZ also supplies technologies and equipment for the production of nonwovens, which are used for numerous products you may have already had in your hand today. Products made of nonwovens are, for example, cotton pads, skin care wipes, feminine hygiene products, top layer for diapers, medical dressings, re-usable and disposable cleaning cloths, backing material for imitation leather applications such as upholstery furniture, shoes, or golf bags, interlining material for shirts and jackets, surgical clothing, teabags, packing material for foodstuffs, or protective nonwovens for weed control. <

A blue-tinted photograph of an industrial manufacturing environment. In the foreground, a robotic arm is positioned above a car body, which is partially visible on the right side of the frame. The car body is dark and metallic, with some components already welded. The background shows a factory setting with various mechanical parts and structures. The overall scene conveys a sense of precision and automation in automotive manufacturing.

An electric jolt for the automotive industry

A visionary entrepreneur from California is revolutionizing the market for electric cars. Essential components of his most successful car, the Tesla Model S, are manufactured using press lines from Schuler, member of the ANDRITZ GROUP since 2013. >



Elon Musk is a 42-year-old man with a vision: he wants to take on mankind's ecological, social, and economic challenges, and find sustainable solutions for the future. No idea is too big – he has built a profitable, private space launch center to take satellites into orbit (SpaceX), and he wants to create a colony of 80,000 humans on Mars. In the future, in just 35 minutes goods and passengers will

be transported the 600 kilometers between Los Angeles and San Francisco in pneumatic tubes at speeds above 1,200 kilometers per hour – faster and cheaper than any other mode of transportation (Hyperloop).

Clearly, the self-made billionaire is full of ideas. And one thing that proves that he can turn these visionary ideas into impressive realities is Tesla Motors, a company which Elon Musk and four other investors founded in 2003. It has become the world's largest manufacturer of cars with purely electric drive systems. When Elon Musk built the factory where the Tesla is produced, most other car manufacturers did not yet believe in the electric car, and were at best experimenting with hybrid vehicles. Robert Lutz, CEO of General Motors, freely admits that seeing the first Tesla S in 2009 was "the crowbar that helped break up the logjam". His engineers had told him that lithium battery technology was still at least ten years away – "and boom, along comes Tesla."

And how the Tesla came along! The Model S has become the best-selling car of the year in some US markets, as well as in Norway (where sales are subsidized with tax breaks). The sedan, which seats five adults, produces zero emissions, but has performance data to match any luxury gas-guzzler: 362 horsepower, from 0 to 100 kilometers per hour in 5.6 seconds, top speed 200 kilometers per hour.

The only way to achieve this is by building an ultra-light aluminum body, which compensates for the nearly 800 kilograms that the battery pack adds to the overall weight. The body is nevertheless strong and safe, thanks to the German press line manufacturer and ANDRITZ member Schuler. In crash tests, the Tesla S outperformed all existing safety ratings in the history of the National Highway Transportation Safety Administration (NHTSA), earning a rating of 5.4 out of the officially possible 5.0!

In the factory in Fremont, California, where the Tesla Sedan is built, a large Schuler press line shapes aluminum body parts, including side panels, roofs, engine hoods, doors, trunk lids, and fenders. These hydraulic press lines are capable of processing sheet metal up to four meters long and two meters wide, which makes it possible to produce entire side panels, from fender to fender, in one piece. This reduces the number of welding points, which increases the stiffness of the parts. This modern Schuler technology also

► Elon Musk founded Tesla and set new standards for the entire automobile industry with his electric cars. The 42-year-old visionary and self-made billionaire knows all about setting new standards: Musk has built a profitable, private space launch center to take satellites into orbit and soon intends creating a colony of 80,000 humans on Mars.



enables to use stiffer materials, with a high tensile strength and low weight, to build the components with a minimum number of processing steps and a maximum amount of precision.

"Therefore it is important that the speed of the presses' moving parts can be adjusted at practically any time during the forming process", explains Frank Viola, Automotive Sales Manager at Schuler. The company is the global market and technology leader in this field. Practically all the major automobile manufacturers in the world use press lines made by Schuler.

While an electric car buyer in the USA (where about 30% of all electric cars worldwide are manufactured) cares primarily for fuel economy, Asian customers view electric motors mainly as a way to reduce dependency on imported oil. In Europe, on the other hand, electric cars are seen as an answer to climate change: the German government, for



Photo: Yeaton, Andrew, Motor Trend, June 2013

It is not only sheet metal that is used for electric cars: the interior of the electric BMW i3, for example, is not made from aluminum, but from carbon. A Resin Transfer Molding (RTM) process is used, which reduces the weight by 60% compared to conventional steel. For this process, the i3 manufacturing plant in Leipzig, Germany, is equipped with hydraulic press lines from Schuler. These press lines use a time-controlled injection and molding process, with forces up to 36,000 kilonewtons, to produce perfectly finished hardened parts up to 3.6 meters long and 2.4 meters wide in four to eight minutes.

Schuler is the global market and technology leader in metal forming and member of the ANDRITZ GROUP since 2013. Practically all the major automobile manufacturers in the world use press lines made by Schuler.

example, has projected a target of one million electric cars on German roads by 2020.

"E-Mobility has reached the production line", announced Thomas Weber, member of the Daimler Executive Board. Almost every manufacturer has at least one electric vehicle in their product range. Nissan has been producing their purely electric Leaf since 2010, and has sold over 71,000 so far. In November 2013, BMW launched the battery-powered i3 into a market which seemed to be awaiting it anxiously: thousands of customers had pre-ordered the car without ever having seen it. Mercedes will begin supplying its B-Class Electric Drive in 2014, with a power train made by Tesla. Mass production for the

▲ Driving the Tesla S with zero emissions, just like being in a luxury gas-guzzler: 362 horsepower, from 0 to 100 kilometers per hour in 5.6 seconds, top speed 200 kilometers per hour.



▲ A large Schuler press line shapes aluminum body parts of the Tesla S, including side panels, roofs, engine hoods, doors, trunk lids, and fenders.

Photo: Tesla Motors

Chevrolet Volt started in the USA in 2010, and it has been sold in Europe since 2011, under the name Opel Ampera. Despite an entry price of 70,000 euros, about 20,000 of the Tesla Model S have been sold since its introduction in June 2012. That figure is expected to double in 2014.

Currently, however, production can barely keep up with demand: BMW already has a waiting list of up to five months for its i3, and also Elon Musk can't produce as many cars as the market demands.

The bottleneck for the production of the Tesla – and essentially for the manufacture of electronic cars globally – is the supply of lithium-ion batteries. Panasonic, Tesla's main supplier of batteries, intends increasing its deliveries tenfold in the next four years. However, even this will not be enough, according to Musk: "If we want to produce 500,000 cars a year, we need a corresponding number of batteries – that would be almost on par with the amount of lithium-ion production in the world today."

And he wouldn't be Elon Musk, if he had not decided to find a solution to this challenge too. He wants to build the largest battery factory in the world, whose capacity will exceed all existing production plants combined. ◀

Jürgen Schönstein, New York City

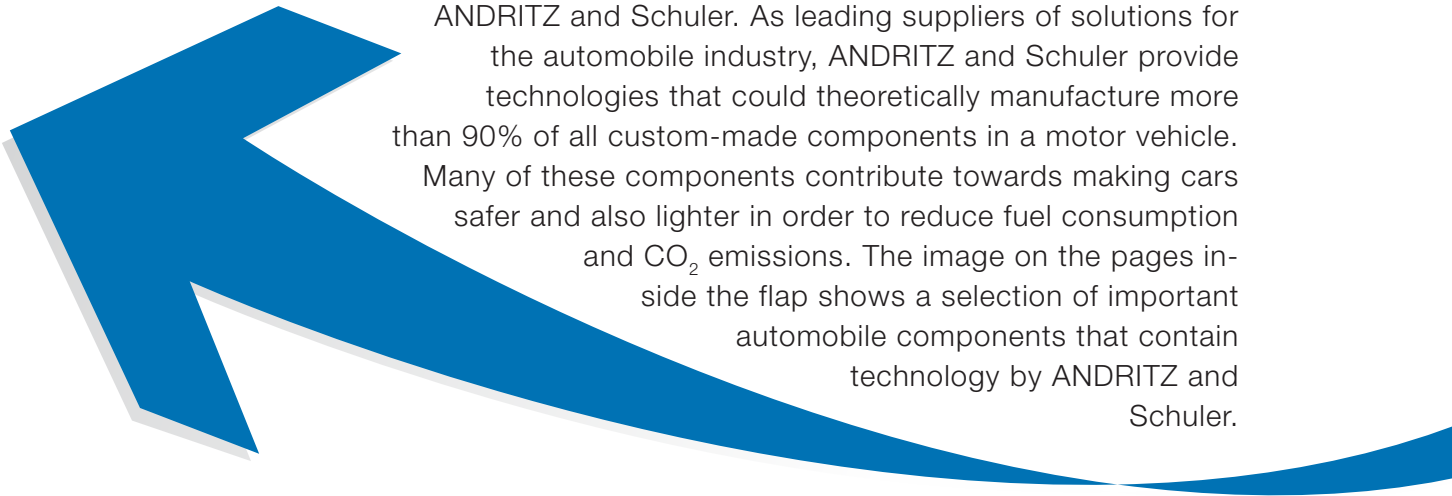


Electric cars are seen as an answer to climate change: the German government, for example, has projected a target of one million electric cars on German roads by 2020.



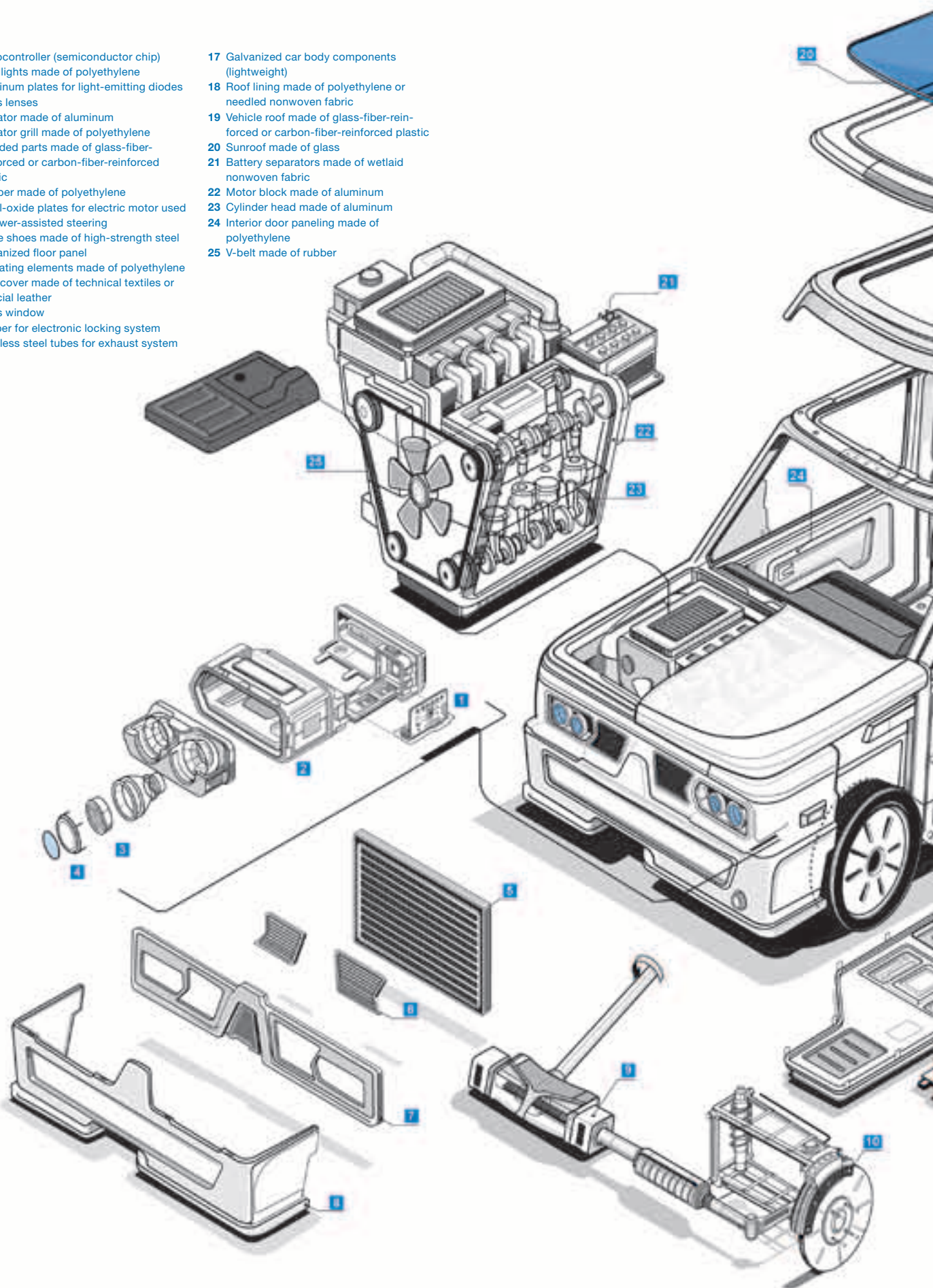
THIS MUCH ANDRITZ AND SCHULER IN ONE CAR

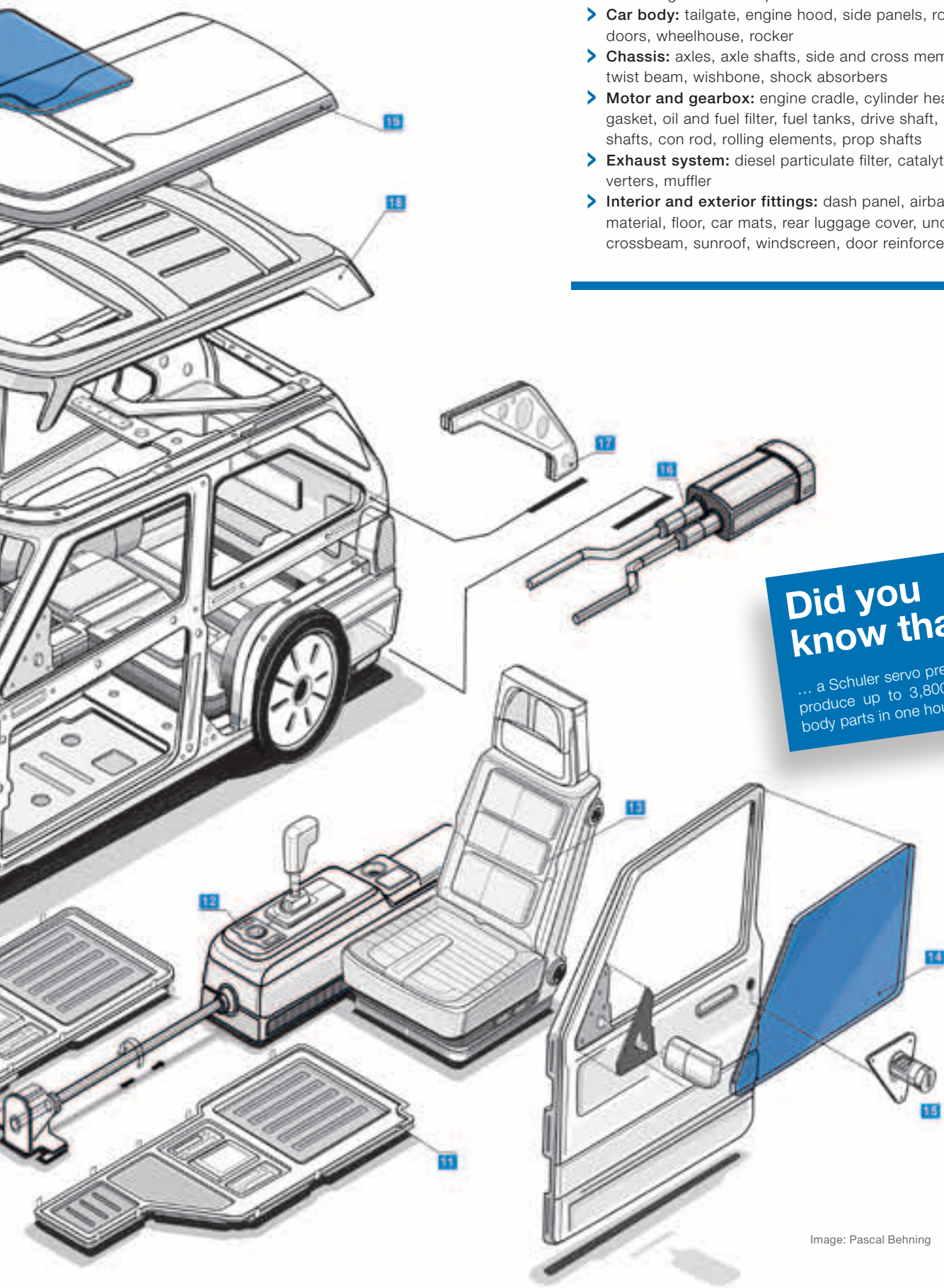
Almost all cars of producers that are known throughout the world contain parts that were manufactured using equipment from ANDRITZ and Schuler. As leading suppliers of solutions for the automobile industry, ANDRITZ and Schuler provide technologies that could theoretically manufacture more than 90% of all custom-made components in a motor vehicle. Many of these components contribute towards making cars safer and also lighter in order to reduce fuel consumption and CO₂ emissions. The image on the pages inside the flap shows a selection of important automobile components that contain technology by ANDRITZ and Schuler.



- 1 Microcontroller (semiconductor chip)
- 2 Headlights made of polyethylene
- 3 Aluminum plates for light-emitting diodes
- 4 Glass lenses
- 5 Radiator made of aluminum
- 6 Radiator grill made of polyethylene
- 7 Moulded parts made of glass-fiber-reinforced or carbon-fiber-reinforced plastic
- 8 Bumper made of polyethylene
- 9 Metal-oxide plates for electric motor used in power-assisted steering
- 10 Brake shoes made of high-strength steel
- 11 Galvanized floor panel
- 12 Operating elements made of polyethylene
- 13 Seat cover made of technical textiles or artificial leather
- 14 Glass window
- 15 Copper for electronic locking system
- 16 Stainless steel tubes for exhaust system

- 17 Galvanized car body components (lightweight)
- 18 Roof lining made of polyethylene or needled nonwoven fabric
- 19 Vehicle roof made of glass-fiber-reinforced or carbon-fiber-reinforced plastic
- 20 Sunroof made of glass
- 21 Battery separators made of wetlaid nonwoven fabric
- 22 Motor block made of aluminum
- 23 Cylinder head made of aluminum
- 24 Interior door paneling made of polyethylene
- 25 V-belt made of rubber





In addition to the items shown in the image, technologies from ANDRITZ and Schuler are also used in production of the following vehicle components:

- > **Car body:** tailgate, engine hood, side panels, roof, doors, wheelhouse, rocker
- > **Chassis:** axles, axle shafts, side and cross members, twist beam, wishbone, shock absorbers
- > **Motor and gearbox:** engine cradle, cylinder head gasket, oil and fuel filter, fuel tanks, drive shaft, crankshafts, con rod, rolling elements, prop shafts
- > **Exhaust system:** diesel particulate filter, catalytic converters, muffler
- > **Interior and exterior fittings:** dash panel, airbag material, floor, car mats, rear luggage cover, underseat crossbeam, sunroof, windscreen, door reinforcement

Did you know that ...

... a Schuler servo press line can produce up to 3,800 large car body parts in one hour?

Image: Pascal Behning



HIGH-TECH FOR **AIRCRAFT** AND ROCKETS

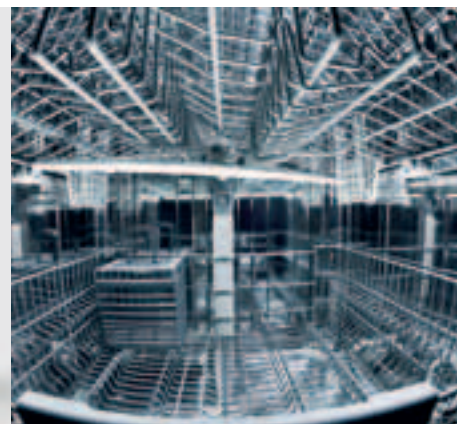
It's not only in cars and railways that you'll find ANDRITZ technology, but also in aircrafts and rockets. For example, many aircraft include compressor blades forged on Schuler presses. For the European Space Agency (ESA) ANDRITZ supplies the highest product precision, which is used for only a few minutes. Since 1994, ANDRITZ has supplied more than 170 DAAR rings (DAAR: Dispositif D'Accrochage Arrière) for Ariane – a series of European launcher rockets developed on behalf of ESA and which carry satellites into space. DAAR rings are retaining rings for the rockets' solid propellant boosters. Ariane 5 has two 30 meter high auxiliary solid-fuel rockets (boosters) that each provide 540 tons of propulsive force in the initial launch phase for a firing time of 130 seconds. The rings certainly have the shortest life time of all ANDRITZ products. They are jettisoned together with the boosters only a few minutes after a rocket is launched. A DAAR ring weighs 750 kilograms and has an outer diameter of 3.5 meters. It is precision-machined from a special steel blank weighing 2.2 tons. The ring combines maximum possible strength with lowest possible mass and must be manufactured with absolute precision in order to meet the stringent requirements of the aerospace industry. <



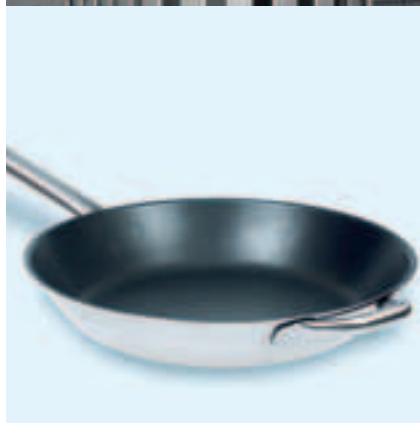
ALSO TRAINS GET MOVING WITH ANDRITZ AND SCHULER

Large investments are under way worldwide in extending high-speed rail links. Turkey is also expanding its rail-road system on a large scale and is planning to double its network to 25,000 kilometers by 2023 according to government announcements. The Turkish steel producer Kardemir, which has been supplying rails for the national rail network for decades, placed an order with Schuler in 2013 for delivery of a complete production line for the manufacture of high-grade railway wheels – the largest individual order in Schuler's history so far. The new production line will supply 200,000 wheels a year. Schuler, part of the ANDRITZ GROUP since 2013, will deliver

hydraulic presses and a newly developed wheel rolling machine, which shapes railway wheels from steel blanks weighing up to 500 kilograms, as well as the testing and inspection technology for the finish-machined wheels. ANDRITZ Maerz, the specialist for industrial furnace systems in the ANDRITZ GROUP, is supplying the fully automated heat treatment line for the railway wheels, comprising furnace equipment and hardening machines. Among the deciding factors in the award of this order were the proven technologies from ANDRITZ and Schuler, which fulfill the highest standards in terms of safety and service life for railway wheels used in high-speed trains. <



Technologies of ANDRITZ METALS lie behind many further products, for example: aerosol cans for personal hygiene products and cosmetics, beverage cans, stainless steel handrails, ceramic cooktops, cooking pots, cutlery, dishwashers, elevators, microwave ovens, pans, screws, sinks, stainless steel façades, stoves, surgical instruments, washing machines, wires ...





ANDRITZ METALS

Important events

ANDRITZ METALS started up a tension-leveling line and an offline skin-pass mill for the stainless steel producer Jiuquan Iron & Steel Group, China. Both plants are designed for an annual production capacity of 200,000 tons.

An annealing and pickling line for cold-rolled stainless steel strip with an annual capacity of 400,000 tons and a regeneration plant for mixed acid (capacity: 7,500 liters/hour) – the fourth plant of its kind for the TISCO Group – were handed over to Tianjin TISCO & TPCO Stainless Steel, China.

A furnace plant supplied to the Bonatrans Group, Czech Republic, was started up for heat treatment of 400,000 railway wheels per year.

In a record time of just six weeks, the business area completed the rebuild of electrical engineering and automation equipment for a 2-high reversing rolling mill stand at Böhler Bleche, Austria. The modernized rolling mill can produce an additional 2,000 tons of premium-grade stainless steel sheets annually.

Important orders

Schuler received an order from a German premium car manufacturer to supply a press line with ServoDirect technology for its production site in Mexico in order to manufacture interior and exterior car body panels. The press line comprises a 21,000-kilonewton lead press and five downstream presses (each with a press force of 12,000 kilonewtons). The scope of supply also comprises automatic transport of parts between the individual press stages, the automation equipment for material feed, and a try-out press with a press force of 21,000 kilonewtons, which is used in order to shorten the start-up phase.

Schuler will manufacture a 6-stage press line with fly-wheel drive and Crossbar Feeder automation for a Ger-

man premium automobile manufacturer in China. This is the sixth line of its kind to be ordered by this customer within four years. Large car body parts for a new vehicle are to be produced on this press line, which has a total pressing force of 81,000 kilonewtons.

Other important orders from the German automobile industry for Schuler include the order to supply a try-out press with a pressing force of 25,000 kilonewtons (this press will be used to perform manual work on dies for the servo press line already ordered by the customer and also for overhaul work) and a mechanical transfer press with a pressing force of 12,500 kilonewtons and an output of 20 parts per minute for warm-forging of ball hubs.

A manufacturer in the premium sector awarded an order to modernize a three-stage hydraulic pressing line and extend it by adding three presses with pressing forces between 20,000 and 25,000 kilonewtons as well as a new automation system; exterior car body panels for luxury vehicles will be manufactured on this pressing line. To another German car manufacturer in the premium sector Schuler will supply the first cutting press with TwinServo technology. The 8,000 kilonewton press is part of a strip-cutting plant used to produce steel and aluminum blanks.

Schuler secured two large orders in Brazil: A Japanese car manufacturer ordered a mechanical press line for his plant in Itirapina; the line comprises a lead press and five downstream presses with a total pressing force of 36,000 kilonewtons. Schuler will supply a mechanical press line fitted with robot automation for a European car manufacturer; this plant consists of a head press and three downstream presses (total pressing force: 39,000 kilonewtons), as well as a transfer press with 25,000 kilonewtons pressing force.

XCMG Railway Equipment, China, commissioned Schuler to supply a transfer press (pressing force: 35,000 kilonewtons), including transfer system, tools, and feed equipment for hot-forming of chain links to be used in caterpillar vehicles, excavators, and other con-



Euros, dollars, and renminbi made by Schuler

Every US cent and dollar coin and almost every euro coin in circulation is minted on a Schuler press. Schuler machines are deployed worldwide to mint coins in over 60 countries. Schuler's customers also include China Banknote Printing & Minting, the company that produces China's renminbi coins and bank notes. The Schuler presses used here mint over 10,000 coin blanks per minute!

struction vehicles. The plant will produce around 20 parts per minute.

Tubex, Germany, ordered another Schuler high-performance line for the production of aluminum monobloc aerosol cans for personal care products. The line will produce up to 240 cans per minute with a maximum diameter of 50 millimeters in an extrusion molding process. The plant comprises an impact extrusion press, automatic cutting and brushing unit, washing machine with dryer, internal coating machine with oven, coating and 9-color printing machine, as well as a necking machine with three intermediate accumulators.

Schuler will supply nine coin minting presses to the United States Mint under a five-year contract. The United States Mint is planning to replace many of its 100 coin minting presses in the next few years.

Tangshan Iron and Steel Group, China, ordered furnaces including process equipment for a hot-dip galvanizing plant (annual capacity: 415,000 tons) and for a continuous annealing line (annual capacity: 770,000 tons). Both lines process steel strip of high-strength steel grade for the automotive industry.

OAO Severstal ordered a new strip processing plant for an existing continuous pickling line in Cherepovets, Russia. The customer is a member of the Severstal Group, Russia's third largest steel producer.

ANDRITZ will rebuild the 20-high rolling mill it supplied in 1994 for Hyundai BNG Steel, South Korea. The rebuild is intended to make the mill suitable for rolling even thinner gage stainless steel strip with a thickness of up to 50 micrometers.

Baoshan Iron & Steel, China, awarded an order to supply a cold

rolling mill for high-strength carbon steel strip with a width of up to 1,500 millimeters.

Longkou Nanshan Aluminum Rolling New Material, China, ordered a tension leveling line for cold-rolled aluminum strip with an annual capacity of 90,000 tons.

To Böhler Edelstahl, Austria, a new double-chamber furnace for hardening and tempering, as well as two homogenizing furnaces will be supplied. Metal Ravne, Slovenia, ordered another double-chamber tempering plant. Voestalpine Austria Draht ordered a new walking beam furnace for continuous casting billets. Melting and holding furnaces for the production of very hard aluminum alloys will be supplied to Henan Tongren Aluminum Industry (twelve furnaces) and to Shandong Nanshan Aluminum (eight furnaces), China.

BAIC Motor, PCMI Metal Product, Baosteel Chongqing, and Anshan Steel, China, as well as Baosteel, India, ordered a laser welding system for car body parts (tailored blanks) from ANDRITZ Soutec. For Tata Steel, United Kingdom, the business area will supply a laser welding system with an annual capacity of almost one million tailored blanks – Tata Steel manufactures car body parts for the new generation Mini for BMW. The business area is supplying a brake shoe welding machine to TRW, Brazil – TRW will use this equipment to manufacture components for VW, Fiat, and Ford. And a joint venture by Mitsui & Co., Japan, and Severstal, Russia, which is setting up a new steel center in Russia, will take delivery of a fully automatic laser welding system from ANDRITZ Soutec. The joint venture plans to supply the Russian production facilities of Renault-Nissan, Ford, General Motors, and VW, who are currently importing car body parts. <

Did you know that ...

... Schuler presses can form steel with a press force of 50,000 tons? That is five times the weight of the Eiffel Tower in Paris.





LITTLE STAR- GOURMETS

Small children are big gourmets. The baby food market is growing worldwide – demand has risen especially in Russia and China. All the large baby food producers use machines made by ANDRITZ Gouda. >



You'll be able to smell why there is no alternative to our drum dryer for the production of cereal-based baby food", says Alexander de Jager, Key Account Manager at ANDRITZ Gouda, before we enter the room that contains the testing facility at the company's headquarters in Waddinxveen, the Netherlands.

Through the glass door that leads to the testing facility we can see a technical room containing stainless steel machines. The smell that meets me is not unlike that at a bakery: what appears to be endlessly streaming out of the ANDRITZ Gouda drum dryer as a paper-thin beige sheet, emits a pleasantly sweet smell. "This smell is produced as a result of the Maillard reaction, a non-enzymatic browning process, while starch and proteins react with each other, which is vital for a good end product", explains de Jager.

The first step in the production of instant baby cereals is mixing the ingredients with water (slurry preparation). This slurry is then fed to the drum dryer, processed to form a thin film, then cooked and dried within one rotation. That is what makes this machine so unique: The drum dryer combines

four steps. As well as being dried, the slurry is pasteurized by the heat, making it non-perishable. The starch in the slurry is gelatinized so that the product can be digested, and this also ensures that it is easily soluble when reconstituted. The result is a smooth and light porridge that feels pleasant in the baby's mouth. The Maillard reactions mentioned previously create the elements that are so important for the smell, the taste, and the color of the baby food. The final product that is scraped off the drum is a thin film of 0.2 millimeters with about 4-5% residual moisture. Finally, the dried product is ground to a powder from which the consumer can make baby porridge by adding water or milk.

New recipes by ANDRITZ customers are tested in the pilot laboratory to ensure that the baby porridge is to the liking of the little star gourmets and their parents. As part of this process, a number of the machine's settings are experimented with, such as varying production temperatures or speeds. After the test runs, the process data are analyzed in the laboratory next to the testing facility, and the samples undergo intensive taste tests by the customer. "That way we

can give all of our customers a recommendation regarding the perfect machine settings for their product", explains Alexander de Jager.

The drum dryer looks like a simple machine from the outside – "but the devil is in the detail," explains Hidde Frankena, Managing Director of ANDRITZ Gouda and member of the family from which ANDRITZ acquired the company, founded in 1909: "The individual parts have to work perfectly together, like clockwork. If there is just one tiny anomaly, it has an effect on quality." Each single gram of instant powder, for example, has to contain the same amount of nutrients.



> The world market leader for baby food, Nestlé, has been a customer of ANDRITZ Gouda for almost 60 years. The photos show examples of various baby food for different markets: Cerelac for Asia, Gerber for North America, and Pyjama Papje for Europe.

ANDRITZ Gouda: world's market leader for drying machines for production of baby food

Founded as a family business in 1909 and part of the ANDRITZ GROUP since 2012, today ANDRITZ Gouda employs 170 people, and delivers machines and complete production lines for the food, environment, and chemical industries worldwide from seven locations. As always with the ANDRITZ GROUP, new solutions are continuously being developed with customers. One of the most important challenges for the future, according to Managing Director Hidde Frankena, is the further development of machines and process solutions with a focus on increasing energy efficiency and reliability. The first ANDRITZ Gouda drum dryer was developed in 1916. Since then, this machine has become the company's main product and has already been installed in more than 130 countries, making ANDRITZ Gouda the world's leading supplier of drying machines for the production of baby food.



The market for baby food is booming

According to figures by Transparency Market Research, the world-wide market for baby food is currently 28 billion euros a year. The market research company expects this to grow to 47 billion euros by 2017. The countries with the highest rates of growth are China (annual growth of up to 22%) and Russia (annual growth of up to 24%), where rising birth rates and growing prosperity are driving demand. Another market driver, also in western countries, is the rising level of families with two working parents. Consequently, the parents have less and less time to prepare food for their babies themselves, meaning that demand for instant baby food is increasing.

ANDRITZ's customers are extremely demanding when it comes to production technology. That is understandable considering the fact that they're selling a product that not only has to meet the demands of strict food laws, but also the high expectations of consumers regarding quality and hygiene. ANDRITZ Gouda is therefore proud to be able to count all of the world's large producers of baby food as its customers, amongst them Indofood, Danone, Heinz, Hero, Progress, and Nestlé.

The global market leader, Nestlé, has already been working with the Dutch company for almost 60 years. Why? Luc Nicolay, Group Manager at the Nestlé Product Technology Centre in Orbe, Switzerland, explains: "We expect machines that offer high levels of performance and reliability. The machines of ANDRITZ Gouda meet these demands, as proven by more than 100 drum dryers that we have installed at most of our infant cereal plants worldwide over the last few decades. The ANDRITZ drum dryers allow us manufacture our high-quality products efficiently and sustainably."



Managing Director Hidde Frankena is pleased to hear this praise from Nestlé because it confirms one of the fundamentals of the ANDRITZ business culture: mutual trust between customer and supplier. "We don't just sell machines. We also sell the knowledge and experience we have gathered over more than 100 years.

As a result, customers get the peace of mind that comes from knowing that everything will work perfectly, just as they want it to." <

Inga Pfannebecker (text) and Michel ter Wolbeek (photos), Amsterdam





Technologies of ANDRITZ SEPARATION lie behind many further products, for example: artificial turf, beer, bread, butter, cement, cheese, cleaning agents, coal briquets, copper, cosmetics, creams, detergents, fertilizer, fire extinguishers, fruit juices, glass, glue, gold, herbs and ground spices (dried), hydraulic oils, ink, ketchup, lithium batteries, lubricating oils, milk drinks, paint, pancakes, pasta, PET bottles, pet food, pills, purees, quark, sauces, soap, soda pops, sour cream, soy products, spirits, sugar cubes, sunflower oil, synthetic paint, syrups, textile dyes, tortillas, toy building bricks, wine, whey, yogurt, zinc, ...





FROM ATHENS TO ZAGREB: **MODERN TECHNOLOGIES** FOR A **CLEAN ENVIRONMENT**

Today, around half of the world's population of seven billion people lives in cities, and forecasts by futurologists say that urbanization will continue to increase. This development and the increasingly strict legislation to improve environmental protection are confronting every country worldwide with enormous challenges in municipal sewage and sewage sludge treatment. Waste water treatment technology has reached a stage where the once negative impact of waste water on the environment is now nearly negligible. In addition, more and more people can profit from continuously improving drinking water quality. So far, more than 10,000 wastewater treatment plants have been equipped with technologies from ANDRITZ SEPARATION, dewatering and drying more than nine million tons of sewage sludge per year. These include smaller plants as well as the largest in the world – for example in Athens, Bangkok, Barcelona, Beijing, Berlin, Bratislava, Brussels, Budapest, Buenos Aires, Doha, Edinburgh, Frankfurt, Hong Kong, Kyoto, Madrid, Mexico City, Miami, Moscow, Munich, New Delhi, New York City, Panama City, Paris, Prague, Rio de Janeiro, Rome, Rotterdam, Santiago, São Paulo, Shanghai, Singapore, Vienna, and Zagreb. <



▲ ANDRITZ separators used in the food industry for the production of olive oil, but also in the chemical and pharmaceutical industries, usually operate at 6,300 G force. As a comparison, a roller coaster is subject to three to five G force.

ANDRITZ SEPARATION

Important events

Six paddle dryer lines, treating 100 tons of wet sludge per day per line, were started up at the Ambarli wastewater treatment plant in Istanbul, Turkey. This makes Ambarli one of the largest sludge drying plants in the world and the largest plant using paddle dryer technology.

In Columbus, Ohio, USA, ANDRITZ received final acceptance for four sludge thickening centrifuges – the centrifuges are the largest in the world.

In the food industry, the business area performed several successful start-ups during the reporting period. These include a separator, which is also used to optimize wine clarification, for the largest winery in South America, separators for craft breweries in the USA, separators for tea production in China, and a separator for a dairy plant with the 3-A sanitary standard applying in the USA.

Important orders

The business area received an order to supply four large centrifuges to the Barueri wastewater treatment plant in São Paulo, Brazil. Barueri is one of the largest municipal wastewater treatment plants in South America, treating the sewage water from 4.4 million inhabitants.

One of the largest desalination plant operators in the Middle East placed an order to supply decanter centrifuges and conveyors. The desalination plant provides potable water for the city of Dubai.

ANDRITZ SEPARATION received the order to supply a thermal drying system for the municipal solid waste and refuse-derived fuel plant in Swindon, United Kingdom. The supply is based on drying technology of Vandenbroek Thermal Processing, Netherlands, acquired by ANDRITZ in 2013.

The Tai Po water treatment plant, which supplies potable water to Hong Kong and Shenzhen, China, will

be equipped with four large membrane filter presses. The fact that ANDRITZ is the only manufacturer that can provide a fully automatic system, allowing operation without continuous operator surveillance, was decisive in the award of this order.

Sarda Mines, India, ordered six membrane filter presses as well as engineering services for a complete filtration plant for the largest iron ore tailings dewatering plant in India. Also in India, seven membrane filter presses for dewatering of leached zinc slurry will be delivered to Binani Zinc.

Ten large belt presses for wastewater treatment were ordered for the Cerro Verde mine, Peru.



Why does chocolate melt in your mouth faster than in your hand?

Thanks to ANDRITZ technology, chocolate only melts very slowly in your hand, but very quickly in your mouth. Fractions of vegetable fats and oils with different melting characteristics are separated from one another by means of temperature-controlled crystallization in ANDRITZ machines. The physical principle applied in isolating and cleaning these substances is mechanical solid/liquid separation.

◀ In milk production, particularly high quality and safety standards apply. Filters used in the beverages and dairy industries, for example, remove bacteria, germs, proteins, enzymes, and many other components from slurries. ANDRITZ equipment can filter out components down to a size of only seven nanometers. One nanometer is one billionth of a meter, and its size in relation to a meter is approximately that of a hazelnut to the globe.

One of the leading companies in the global agrochemical sector placed an order for a helical dryer for treating fungicides.

In the beverage industry, ANDRITZ introduced a new technology for membrane filters that can be used to recover wine from various process steps. Orders for the supply of these dynamic cross-flow membrane filters were received from Italy and Bulgaria.

Several orders for separators were received from customers in the craft brewing industry in the USA. These breweries use ANDRITZ separators to improve the quality of their beer.

ANDRITZ Gouda received orders for a total of five double drum dryers from customers in the food industry in South America, North America, and Africa.

Based on the increasing demand for packaged tea in Asia, 15 separators for the tea producing industry will be delivered to various customers in China.

A dairy customer in Ireland ordered decanter centrifuges for expansion of casein production capabilities in support of a growing dairy-based ingredient market.

Equipment for a cellulosic feedstock fermentation plant was supplied to a customer in the USA.

In the potash industry, EuroChem, Russia, ordered 14 thickeners. EuroChem is one of the top three European nitrogen and phosphate fertilizer companies. Three pusher centrifuges were ordered

by Uralkali, Russia. Two large fluidized bed dryers were sold to China for potash production.

The largest paraxylene producer in India awarded ANDRITZ an order to supply 17 large screen bowl centrifuges.

A Chinese PVC producer ordered a fluid bed dryer system for the drying of PVC generated in polymerization reactors.


A major iron ore customer in the USA ordered two hyperbaric disc filters. A mining customer in Russia placed an order for a vacuum disc filter.

In the animal feed area, the business area noted several important orders, especially from customers in Asia, Latin America, and Europe. Amongst numerous orders for fish feed extrusion lines, ANDRITZ secured the order to deliver high-capacity extrusion technology for a Chinese fish feed factory and a fish feed extrusion line for marine species from a customer in the Mediterranean region. Additional orders for new pet food extrusion lines were received in Europe and Latin America. <

Did you know that ...

... an ANDRITZ extruder produces enough fish feed pellets in one hour to rear 10,000 salmon for two and a half years up to an individual weight of two kilograms?





> Pusher centrifuges are used for solid/liquid separation in various industries, such as mining, food, and plastics. In the chemical industry, one of the applications of pusher centrifuges is in processing the basic material for shatterproof glass in the production of window panes. The solids throughput of the world's largest pusher centrifuge supplied by ANDRITZ is 150 tons per hour and thus equals the loading capacity of twelve trucks.

“A CONTRACT WITH THE FUTURE”

More than 800 apprentices are currently being trained by ANDRITZ worldwide – many of them in countries with high rates of youth unemployment. An apprenticeship with ANDRITZ gives young people excellent career prospects. Two apprentices tell how their apprenticeships have changed their lives.

How has this apprenticeship changed your life?

Iván Gael Vázquez Villegas: It was a huge change for me at the start, because here they don't just put great emphasis on the marks you get, but also on orderliness, uniform, how we express ourselves, how respectfully we treat each other, and on punctuality – and we Mexicans are not exactly known for our punctuality. But I've become used to this new life in the meantime.

Metehan Günay: I moved from my hometown of Adana, which is around 550 kilometers away from here. That was, as you can imagine, a big change for me and my family. When I got here, everything was unfamiliar to me – the city, school, and the apprenticeship. I wasn't used to having so many lessons, as I've never had that at any school before. It's far beyond anything I've ever experienced, not just in terms of the number of teaching hours, but also in terms of the quality of the training. For the first time in my life, I have the feeling that I have a successful future in front of me, that I've signed a contract with the future, that everything will be good and success will come. Nobody has been able to give me that feeling of optimism before.

How much do you earn?

Günay: I earn 500 lira a month – that's a very good wage for an apprentice in Turkey. Usually in Turkey you're paid a fraction of what we're earning at ANDRITZ, if anything at all. I know a lot of companies that don't pay anything for apprentices.

Villegas: 4,000 pesos a month. That is two and a half times the legal minimum wage.

What do you do with your wages?

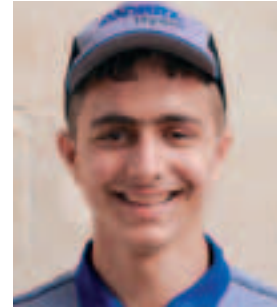
Villegas: I still live with my mother and most of the money goes on food, electricity, gas, and water. I usually have around 400 to 500 pesos a month to go to the cinema or to do something with friends. I've also started saving up to get a car. I won't have to spend so much time travelling on the bus each day then. I'm one of the





Metehan Günay (18)

is doing an apprenticeship as a welder at ANDRITZ HYDRO in Mardin, Turkey. In 2012, ANDRITZ, in cooperation with Turkish authorities, opened a training center for young people from the region along the Syrian border. Up to 36 metalworkers, electricians, and certified welders are all trained here per course. Youth unemployment in this part of Turkey currently is up to 40% – the highest in the whole country.



few in my circle of friends who have a job. Many of them have been looking for a job for more than a year now – so far in vain.

Günay: I send half of it to my family and I use the other half for day-to-day expenses. It's nice that I can support my family now. Until now, they've been supporting me in material terms, now I can return the favor. It's a good feeling to know that my family can afford things that they couldn't buy before because they lacked the money – whether it's a new fridge or a washing machine. Personally I don't have many needs, my family is more important.

Do you still remember your first day as an apprentice?

Villegas: Yes. We were all called to the auditorium. There we were introduced to the instructors, given an introduction to the dual education system, and told what was expected of us. That really motivated me – especially the German educational model, which is completely different to the Mexican one. In Mexico, companies usually hire young people as unpaid trainees to begin with.

Günay: What fascinated me most was the fact that every apprentice has their own welding booth, that everyone wears a uniform, and that so much emphasis is put on safety in the workplace. I'd never experienced that before.

What aspects of the apprenticeship do you particularly enjoy?

Günay: I like the practical work more than the theory work. I enjoy welding more than anything.

Villegas: The practical part. I really like working on and with machines and I find the way our instructors communicate their experience fascinating. It's amazing how much they know and they're very patient with us.

Is there anything you'd like to tell your boss?

Günay: That I'm full of admiration for my teachers and I would like to thank them all. Osman Hoca, for example, is a very good teacher. He can put himself in his students' shoes. He finds a solution for every problem, I think that's great.

Villegas: I'd like to thank him for the chance he's given me. I definitely won't let him down. I want to do my part for the company and for Mexico!

What are your plans after having finished your apprenticeship?

Günay: I'd like to go and work abroad. I think that the training I'm getting here is so good that I'll be able to get a job anywhere in the world. If that doesn't work out I'd like to work on one of the hydropower plant projects in Turkey. I also dream of being my own boss, of setting up my own business, and training young people myself. In any case, unemployment is very high in Turkey. At the end of the day, the most important thing is to earn one's living and thus secure the future. I'm taking the first steps in that direction by doing the apprenticeship here.

Villegas: Firstly, I'd like to work for Schuler for three years and then I'd love to study Mechanical Engineering at a German university. That's why I'm learning German at the moment. <



Iván Gael Vázquez Villegas (22)

is doing the three-year apprenticeship in tool mechanics at the Vocational Training Centre of Cedral (Centro des Especialización Dual) in Puebla, Mexico. Schuler, member of the ANDRITZ Group, opened the center in 2013 together with other companies (Allgaier, Gestamp, Luk, PWO, ThyssenKrupp Presta, and ThyssenKrupp Materials) to provide German-standard training for 90 industrial and tool mechanics per course. Youth unemployment is a huge social problem in Mexico too: a quarter of all 15- to 29-year-olds are not in work or education.

www.ANDRITZ.com

If you want to find out more about ANDRITZ, you've come to the right address at www.andritz.com. At our website, you can find all important information on the ANDRITZ GROUP and its business areas, our entire range of products and services, current news on major orders, acquisitions, and financial results, all the ANDRITZ locations worldwide, and further annual reports and annual financial reports since the IPO.

ANNUAL FINANCIAL REPORT 2013

ANDRITZ

^ The financial report offers further data, facts, and figures on the 2013 business year. The financial and annual reports are available for download at www.andritz.com or can be requested as printed copies free of charge by sending an e-mail to investors@andritz.com.

> **February 28, 2014**
Results for the 2013 business year

> **March 21, 2014**
Annual General Meeting

> **March 25, 2014**
Ex-dividend

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

➤ **March 27, 2014**
Dividend payment

➤ **May 6, 2014**
Results Q1 2014

➤ **August 7, 2014**
Results H1 2014

➤ **November 6, 2014**
Results Q1-Q3 2014

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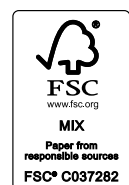
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ANDRITZ