Pulp & Paper – Capital Systems

Capital Market Days 2008, Austria

Disclaimer

Certain statements contained in this presentation constitute 'forward-looking statements.' These statements, which contain the words 'believe', 'intend', 'expect' and words of similar meaning, reflect management's beliefs and expectations and are subject to risks and uncertainties that may cause actual results to differ materially.

As a result, readers are cautioned not to place undue reliance on such forward-looking statements. The Company disclaims any obligation to publicly announce the result of any revisions to the forward-looking statements made herein, except where it would be required to do so under applicable law.

Contents

ANDRITZ PULP & PAPER – OVERVIEW

Pulp market

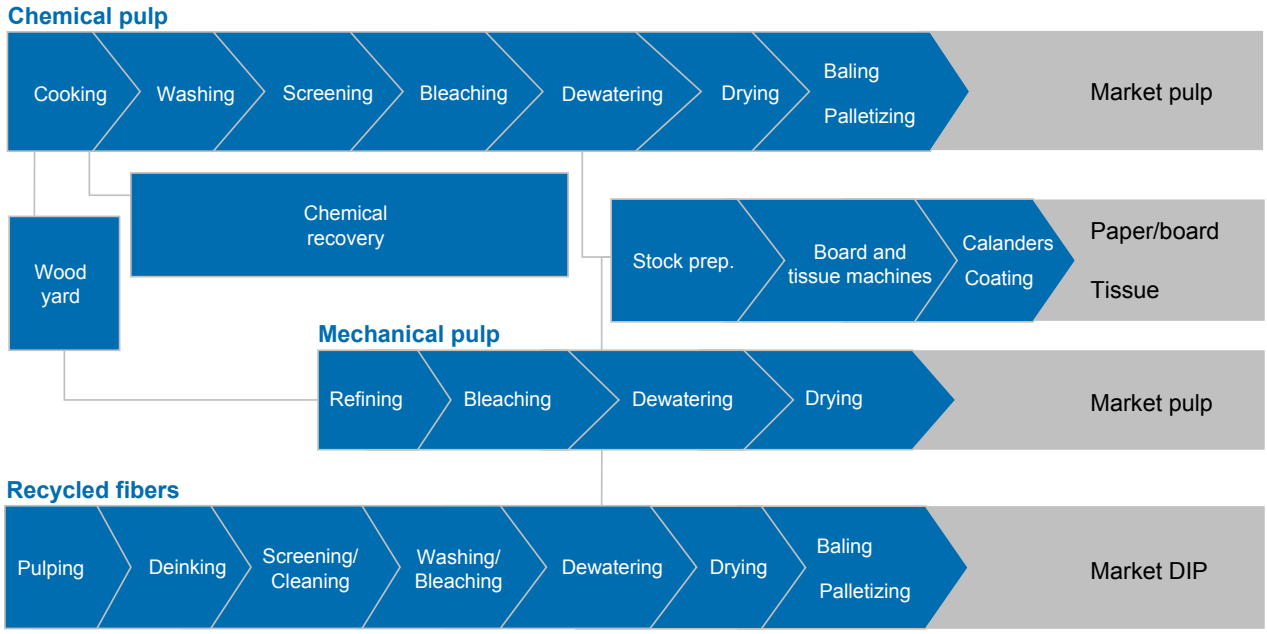
Growth drivers

Strategy and outlook 2009

Full line supplier: Andritz Pulp & Paper business lines

Customers	Main products	
Pulp mills	▪ Complete lines for chemical, mechanical, and recycled fiber production.	
Paper mills	▪ Complete lines for tissue and board. ▪ Stock preparation and approach flow.	
Power generating industry	▪ Bubbling fluidized bed boilers for bio-fuels.	

Full line capability in processes and equipment



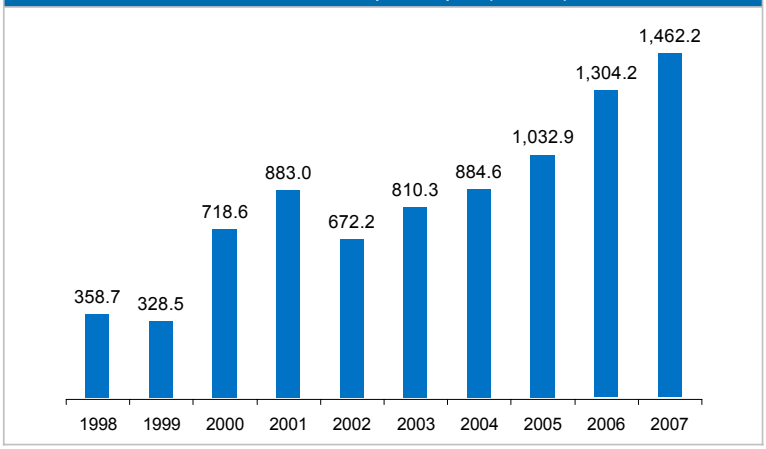
Service:
incl. engineered wear products, upgrades, modernizations, maintenance packages, automation solutions, etc.

processes offered by Andritz

Strong growth through organic expansion and acquisitions

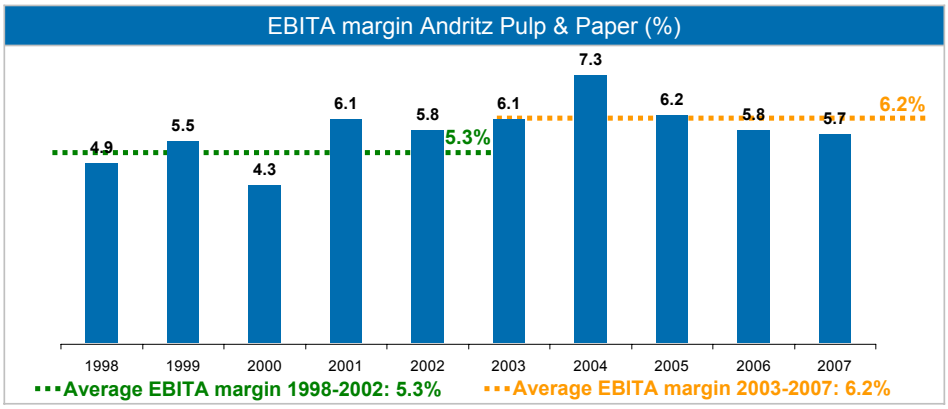
Focus on complementary products, technologies, and businesses.

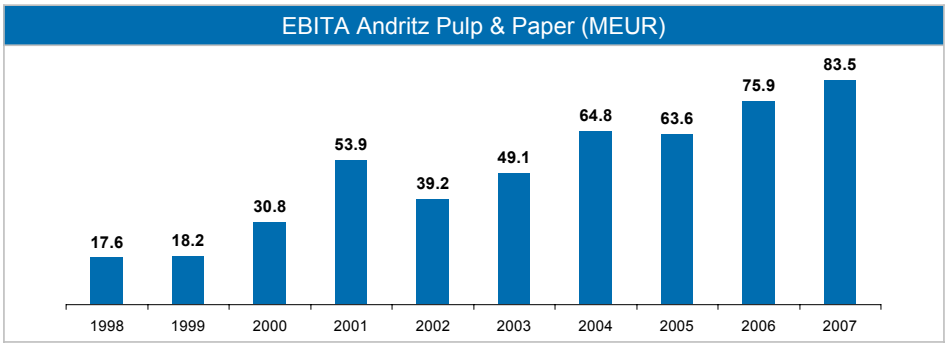
Sales Andritz Pulp & Paper (MEUR)



Acquisitions	
1990	Sprout-Bauer
1992	Durametal
1994	Kone Wood
1998	Kvaerner Hymac
1999	Winberg
2000	Ahlstrom Machinery
2000	Lamb Baling Line
2000	Voith Andritz Tissue LLC (JV)
2002	ABB Drying
2003	IDEAS Simulation
2003	Acutest Oy
2003	Fiedler
2004	EMS (JV)
2005	Cybermetrics
2005	Universal Dynamics Group
2006	Küsters
2006	Pilão
2007	Bachofen + Meier
2007	Sindus Human Technology
2008	Kufferath

Long-term development of profitability

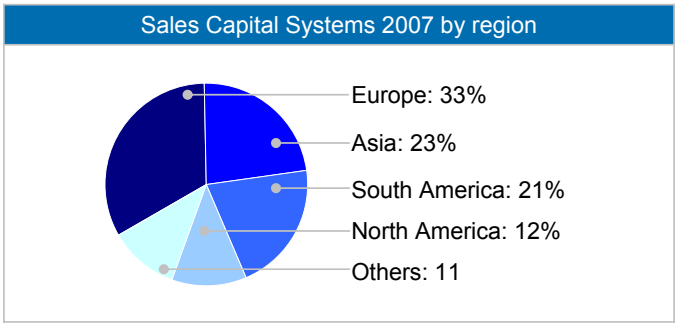


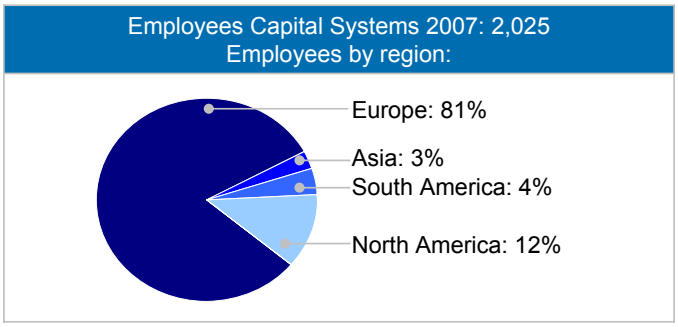


Decline in profitability from 2004 to 2007 mainly due to

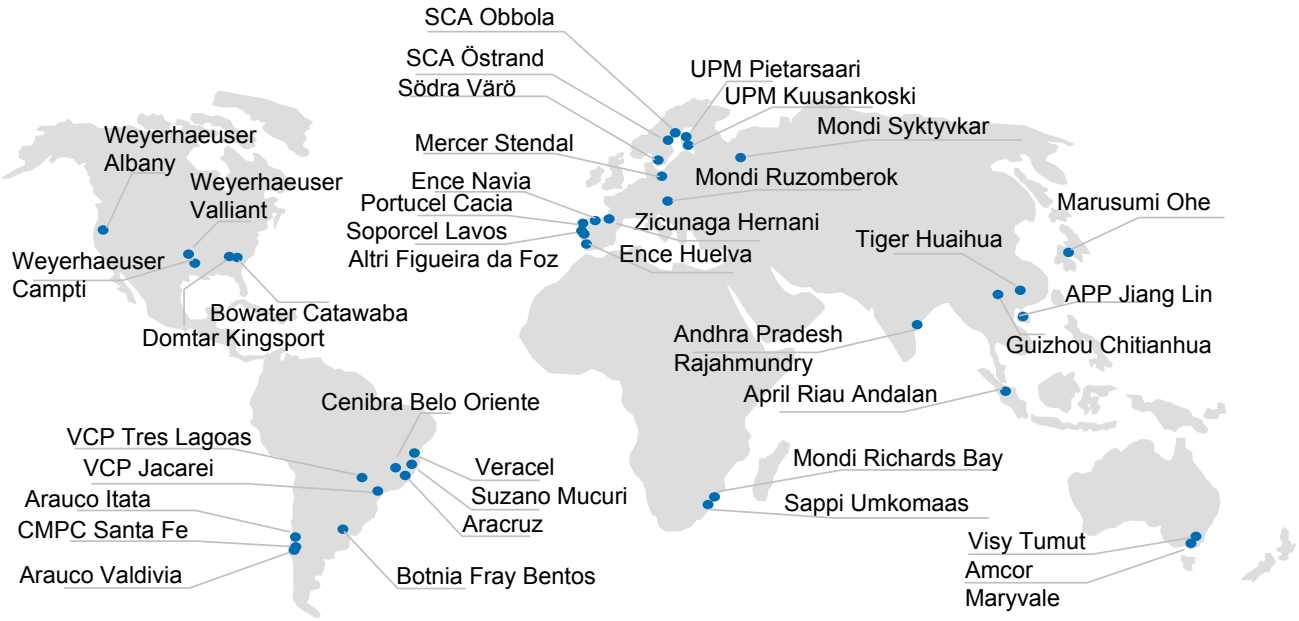
- decline of service sales as % of total business area's sales – resulting from the strong growth of the capital business and
- investments in expansion of product scope (board machine, biomass power boiler, etc.).

Global presence of Andritz Pulp & Paper – Capital Systems





Important references (I)



Andritz is also engaged in the maintenance of most of these mills.

Important references (II)

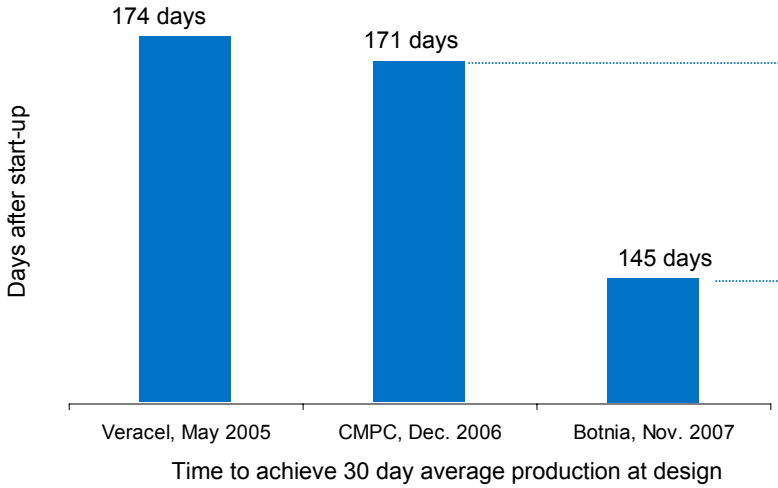
Botnia-Frey Bentos, Uruguay	▪ **Supply:** eucalyptus pulp mill including maintenance contract for nine years ▪ **Capacity:** 1,000,000 ton/a ▪ **Start-up:** 2007 ▪ **Special features:** Andritz supplied the complete line; 145 days to capacity = world record.	
Ence Navia & Huelva, Spain	▪ **Supply:** Two BioPower boilers ▪ **Capacity:** 30 and 50 MWe ▪ **Start-up:** 2008 + 2009 ▪ **Special features:** green electricity sourced to the public grid.	

Important references (III)

Hunan Tiger Forest & Paper – Huaihua, China	▪ **Supply:** full line chemical pulp mill ▪ **Capacity:** 400,000 ton/a ▪ **Start-up:** 2008 ▪ **Special features:** full-line capability ensuring smooth interaction of the individual process areas.	

Latest pulp mill start-ups and main competitors

Conclusion of start-up learning curve



Gain 145 days vs. 171 days:
~50.000 t Bl eucalyptus pulp for sale to Europe:
- Variable cost DD Europe: 330 USD/t*
- Ave. price H2 2007
  Bleached eucalyptus kraft: 730 USD/t**

-> Gain: ~ 20 MUSD

* RISI data; ** FOEX data

Contents

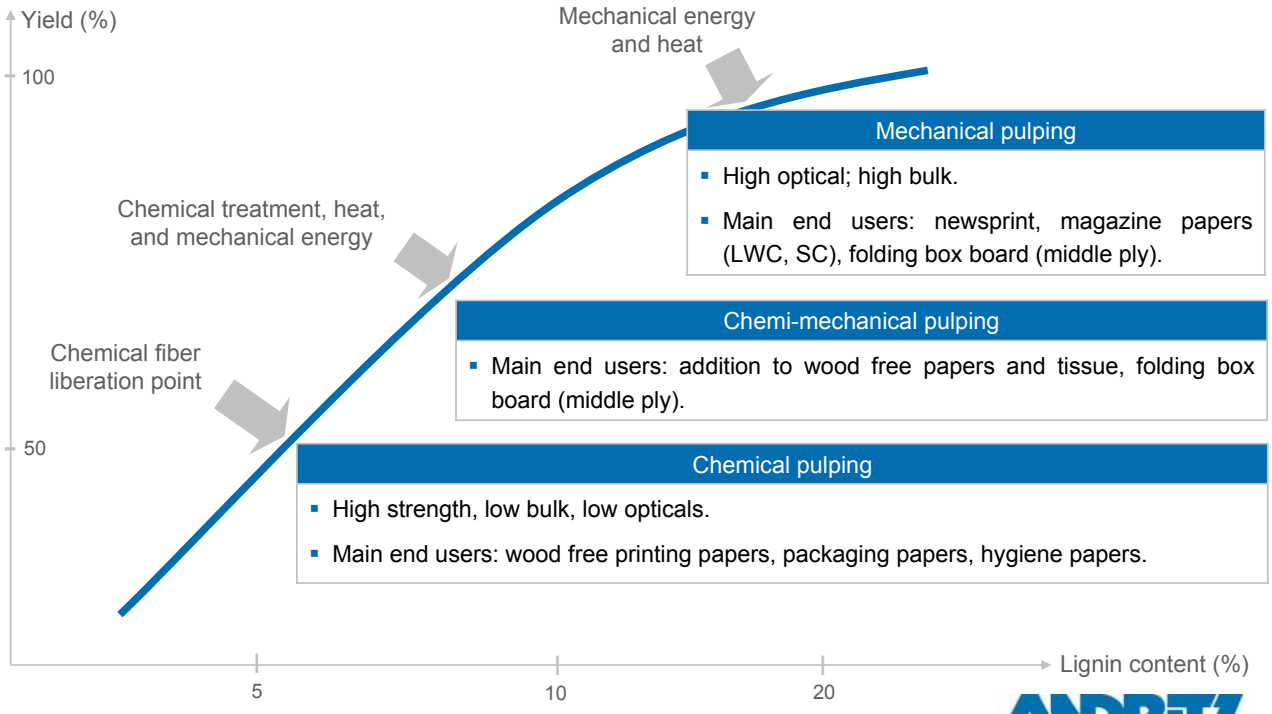
Andritz Pulp & Paper – overview

PULP MARKET

Growth drivers

Strategy and outlook 2009

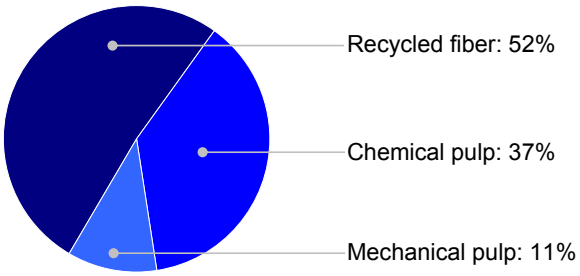
Different means to liberate wood fibers



Markets by sort of pulp

Pulp capacity worldwide 2008: ~410 million tons

Markets 2008 by sort of pulp (%)



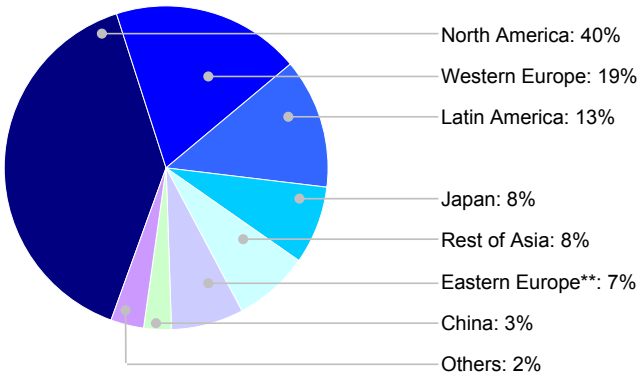
Source: Poyry; RISI consumption 2008E

Chemical pulp: strong growth in Latam and Russia

Chemical pulp capacity 2008 and announced growth:

Capacity

- Chemical pulp capacity 2008: 153 mill. t.
- Chemical pulp capacity 2008 by region:



Announced growth*

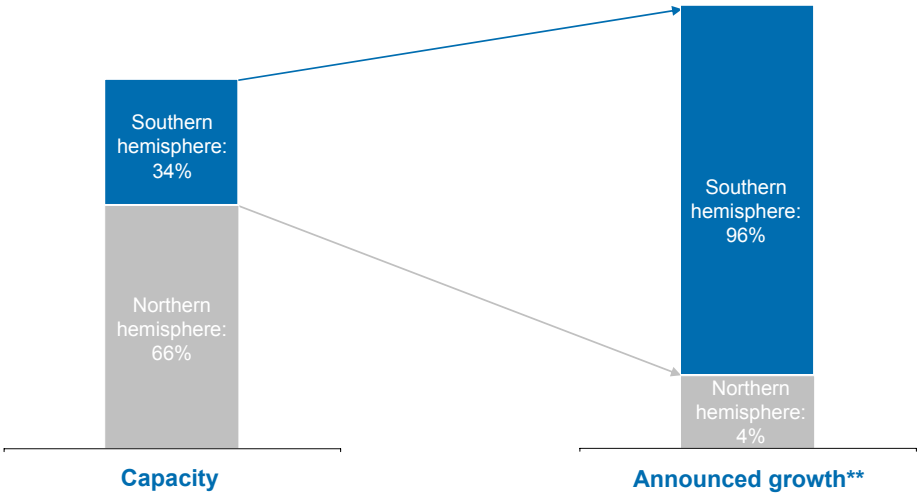
- Announced growth: 34 mill. t (+22%).
- Announced growth by region:**

North America:	+1%
Western Europe:	+3%
Latin America:	+46%
Japan:	0%
Rest of Asia:	+7%
Eastern Europe**:	+27%
China:	+13%
Others:	+3%

* Announced = decided and planned with start-up 2012+
** incl. Russia
Source: Poyry, Oct. 2008

Chemical pulp: shift from northern to southern hemisphere*

Chemical pulp capacity 2008 and announced growth:



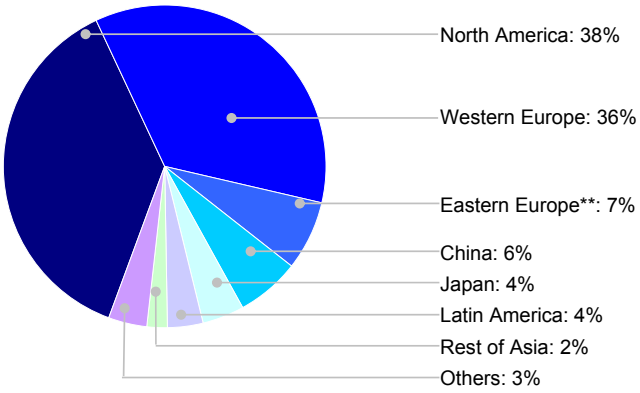
* Northern hemisphere: North America, Western Europe, Japan
Southern hemisphere: Asia (excl. Japan), Latin America, Eastern Europe, Others
** Announced = decided and planned with start-up 2012+
Source: Poyry, Oct. 2008

Mechanical pulp: strong growth in China and Eastern Europe

Mechanical pulp capacity 2008 and announced growth:

Capacity

- Mechanical pulp capacity 2008: 44.8 mill. t.
- Mechanical pulp capacity 2008 by region:



Announced growth*

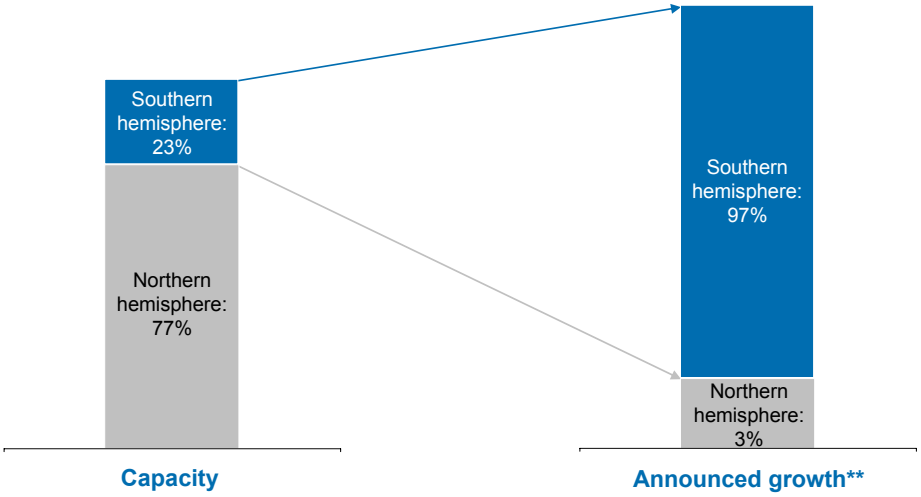
- Announced growth: 4.4 mill. t (+10%).
- Announced growth by region:

North America:	-2%
Western Europe:	+4%
Eastern Europe**:	+19%
China:	+36%
Japan:	0%
Latin America:	+6%
Rest of Asia:	+16%
Others:	+22%

* Announced = decided and planned with start-up 2012+
** incl. Russia
Source: Poyry, Oct. 2008

Mechanical pulp: shift from northern to southern hemisphere*

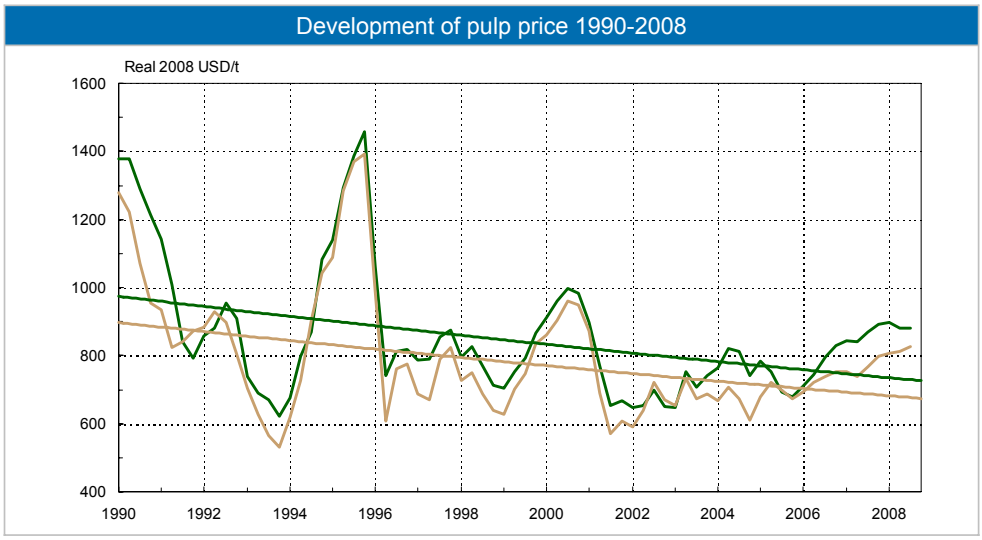
Mechanical pulp capacity 2008 and announced growth:



* Northern hemisphere: North America, Western Europe, Japan
Southern hemisphere: Asia (excl. Japan), Latin America, Eastern Europe, Others
** Announced = decided and planned with start-up 2012+
Source: Poyry, Oct. 2008

Long term decreasing pulp prices

- USD led to pulp prices rises in 2005 until early 2008.
- Further price increases in Q3 2008 initially successful, but finally failed due to weakening demand and stronger USD.



Source: Poyry, Sept. 2008
* Prices CIF North Atlantic/North Sea port. Deflator used for real prices US WPI

Contents

Andritz Pulp & Paper – overview

Pulp market

GROWTH DRIVERS

Strategy and outlook 2009

Main trends in the pulping industry (I)

Average wood costs are coming down

- Share of cheap plantation wood used for chemical pulping is increasing.
- Negative cost trend for mills using wood from natural forests, and other high cost resources.
- Rising demand for bio-fuel might lead to higher wood prices.

Environmental legislation and society development

- On short term, new mills are the first for which compliance is required.
- On long term, when permits for established mills are up for renewal, investments are required. If the mill does not get additional capacity, costs/t will increase.

Economies of scale

- Production line sizes, especially for hardwood pulp, have grown to 1.0-1.5 million tons of pulp/year.

Main trends in the pulping industry (II)

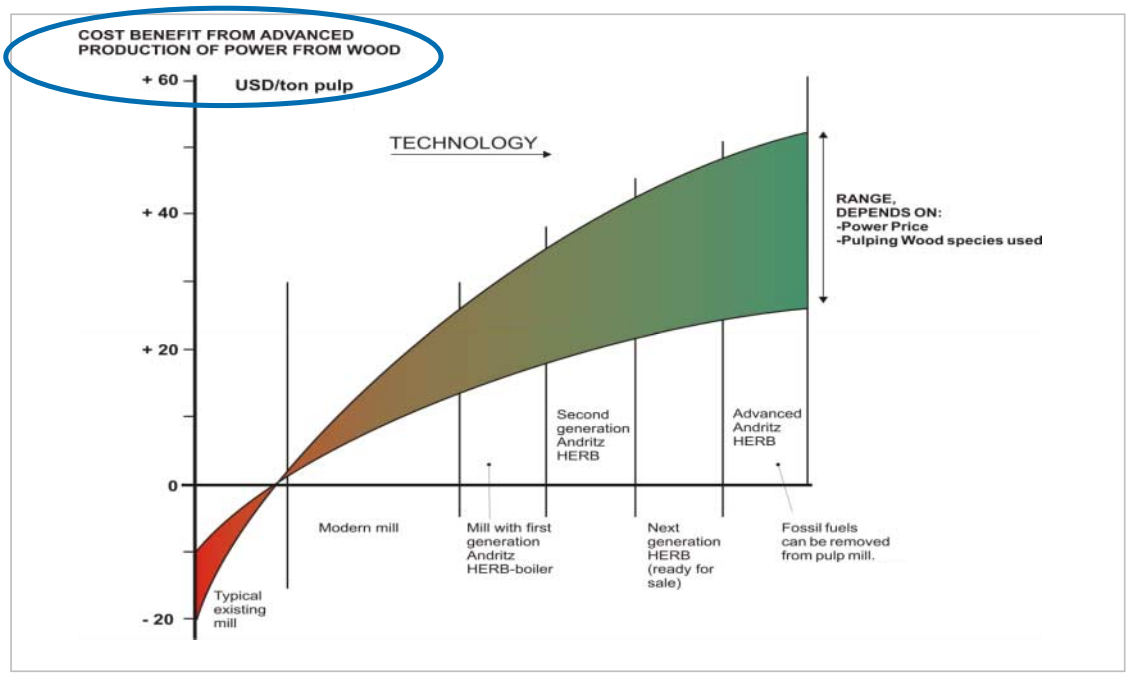
Operative costs

- Wood costs per ton of pulp reduced due to higher yield and minimized fiber losses in the debarking, chipping and washing stages.
- Chemicals usage is lower in new mills as an effect of technical development; negative cost trend for established mills.
- Chemical pulp mills can be operated with an energy surplus. New technology offers co-production of green energy adding to the surplus; opportunity especially for established mills located in densely populated northern hemisphere.
- Less personnel in new mills; negative cost trend for established mills.
- Most personnel in established mills are in maintenance.

Bio energy/fuels

- Offer additional income streams for pulp mills starting with established technologies in recovery boilers (HERB) as well as in bio boilers (fluidized bubbling bed allowing flexible fuel use) and – in the developing stage – synthetic bio diesel.
- Depending on subsidies, revenues from sale of green energy amount to 20-50 EUR/t pulp (in case of HERB with black liquor as bio-fuel).

Green power without greenhouse gases



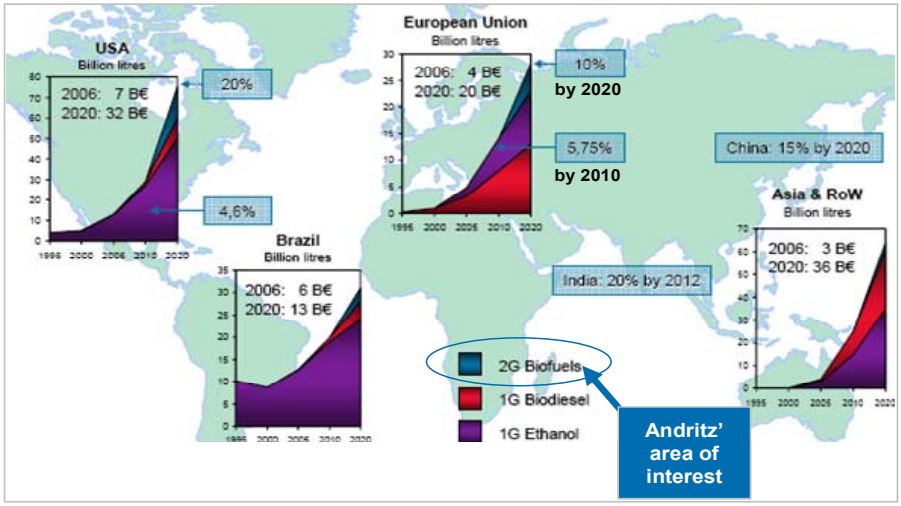
Key variables affecting customers' profitability

- Besides the product price, the capital investment has the largest effect on the company performance.
- Andritz can influence this as well as wood, chemicals, personnel, and energy variables.

Key variables	Andritz's solutions
Capital investment	Mill-wide solutions enable simplifications as process steps are under the responsibility of one single supplier.
Wood costs/ton pulp	Higher yield with Andritz Lo-Solids® cooking.
Chemicals costs/ton pulp	Lowest bleaching chemicals consumption with Andritz washing technology.
Energy costs/ton pulp	Higher electricity production with Andritz HERB recovery boilers.
Personnel costs/ton pulp	Mill-wide maintenance contracts with Andritz. Botnia Uruguay is the benchmark in the industry.

Biofuels*: world demand 2006 + 2020

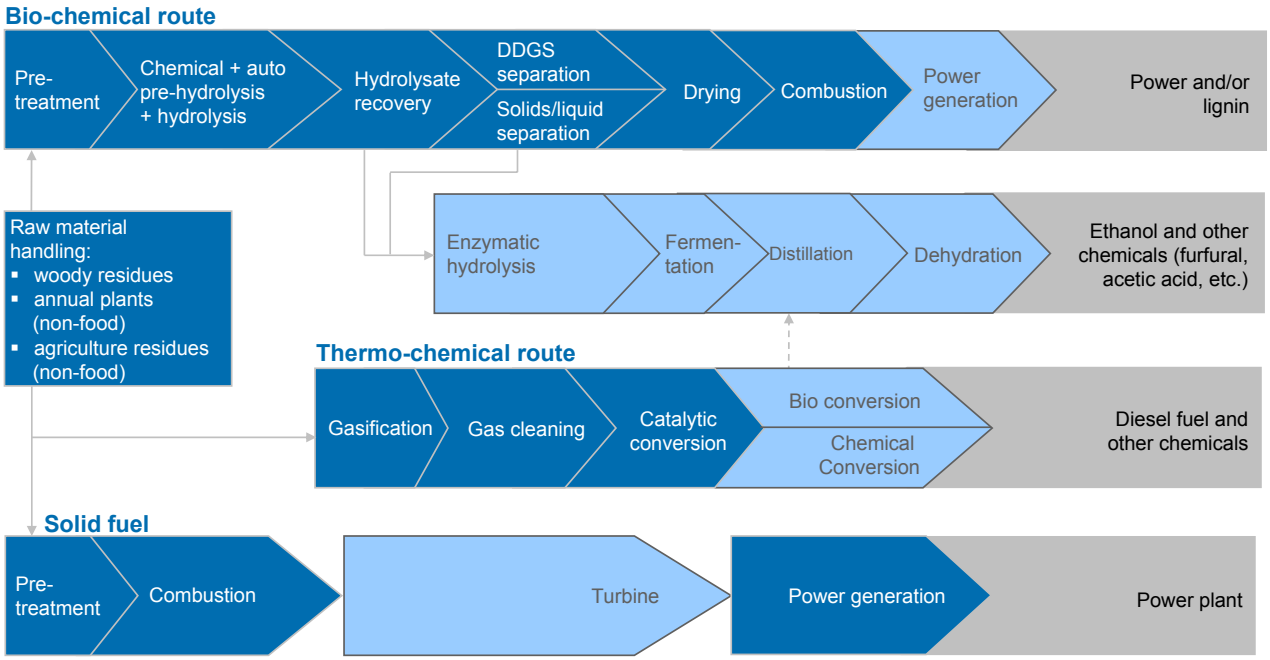
- World demand 2006: 20 bn. Euro.
- Estimated world demand 2020: ~100 bn. Euro.
- Europe represents ~20%.



Source: Nordea Sept. 2008
* fuels for the transportation sector

Biofuel capabilities of Andritz

Andritz today: systems and processes for production of biofuel*.



* mainly fuels for the transportation sector and pellets; processes offered by Andritz

Andritz biomass boilers

New business with BAT technology for the green electricity markets.

- Andritz started biomass boiler business in 2006.
- Applications in Pulp & Paper and power industry:
  > high pressure steam generation,
  > electric power generation,
  > combined heat and power (CHP) production.
- Rapid business start-up:
  > close to 200 MEUR of orders in 2007-2008.

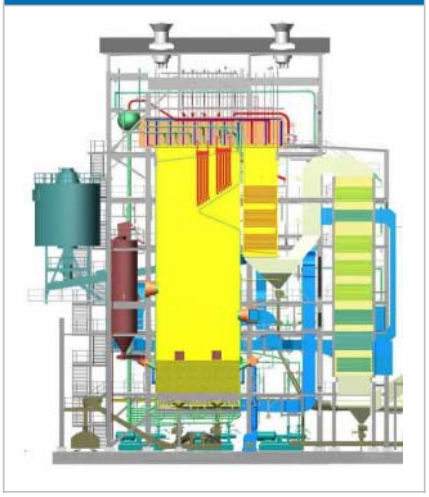
Power boiler completes the Pulp & Paper package

Power boiler benefits

High quality products for the customer needs.

- **Fuel flexibility:**
  > mill residues: bark, chips, screening rejects
  > forest residues
  > short rotation coppice
  > recycled fuels
  > peat
- **Good environmental performance:**
  > green energy production with no net CO_2 output
  > low CO, NO_x and other gaseous emissions
  > high thermal efficiency
- **Low operation and maintenance costs:**
  > simple, reliable construction
  > high level of automation
- **High availability and long operating time:**
  > conservative design, high quality components

Biomass boilers utilize local fuels



Growing reference base for green energy production

First boilers start operation in fall 2008.

- Ence Navia, Spain, start-up 2008:
  > steam flow 120 t/h
  > power output 30 MWe
- Ence Huelva, Spain, start-up 2008:
  > steam flow 195 t/h
  > power output 50 MWe
- Portucel Cacia, Portugal, start-up 2009:
  > steam flow 58 t/h
  > power output 15 MWe
- Portucel Setubal, Portugal, start-up 2009:
  > steam flow 58 t/h
  > power output 15 MWe
- Pulp mill in SA, start-up 2010:
  > steam flow 126 t/h
  > power output 32 MWe
- CHP plant in Estonia, start-up 2010:
  > steam flow 94 t/h
  > power output 18 MWe

Most applications use steam from power boiler for green electricity generation

Andritz Carbona gasifiers

CARBONA

Specialists in biomass gasification processes

- Andritz (previously Ahlstrom) has been successfully developing gasifiers for lime kiln fuel.
- Carbona has developed advanced gasification technologies.
- Andritz has acquired 32% stake in Carbona in 2006.
- Targeting biomass gasification plants for:
  - > fuel gas production for pulp mill energy needs (lime kiln, power boiler, recovery boiler steam trimming furnace);
  - > synthetic gas production for Biomass-to-Liquid (BTL) motor fuels.

BTL development program: Andritz Carbona participates in UPM's BTL program with the following schedule:

- Gas Technology Institute (GTI) - pilot modification, 2007.
- GTI-Pilot testing program, 2008.
- Development of fuel supply and handling, 2008.
- Process development and BTL plant design, 2008.
- Plant operation, 2011.

ANDRITZ

SKIVE biomass gasification

Demonstrates Andritz gasifier competence suitable for power generation from renewable biofuels.

CARBONA

Plant configuration:

- Low pressure fluidized bed gasifier, tar reforming, gas cooling and scrubbing, gas engines, district heating system.

Plant capacity:

- biomass feed 110 t/d,
- power generation max. 5.5 MW,
- 11.5 MW district heat, supply at 94/50° C.

General:

- annual operation 8,000 hours,
- technical life time >15 years.

Gas engine CHP plant, Denmark

ANDRITZ

Contents

Andritz Pulp & Paper – overview

Pulp market

Growth drivers

STRATEGY AND OUTLOOK 2009

Strategy

Energy

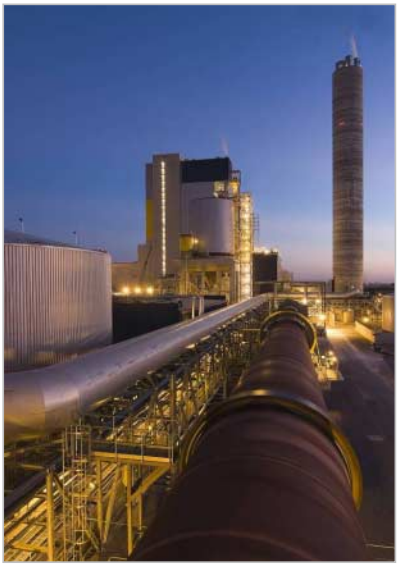
- Continue HERB development to next generation/s.
- Expand product portfolio for bio-boiler markets.
- Expand presence in process and equipment markets.

Increase presence in high growth markets

- Brazil, China, and India.
- Concentrate on service in areas with less growth.

Focus on products with high growth potential

- New lines in developing countries.
- Modernizations/refurbishments in developed countries.



Outlook 2009

- Good overall project pipeline.
- Project realization schedule depends on further development of global financial crisis.

Major planned or announced new chemical pulp mill/expansion projects until 2012:	
Ence, Uruguay	Gunns, Australia
VCP, Brazil	Huatai, China
Suzano, Brazil	Cenibra, Brazil
Veracel, Brazil	Oji, China
Borea (UPM), Russia	Nine Dragons, China
Stora Enso, China and Russia	
Segezha rebuild, Russia	

OUR VISION:
World market leader for high-tech production systems and services for pulp, paper, hydropower, steel, and other specialized industries.