ANDRITZ GROUP

INNOVATIVE TECHNOLOGIES IN ANDRITZ SEPARATION CHINA

A GLOBAL PARTNER FOR SEPARATION THAT SHAPE THE WORLD

MAY 2019
THE ANDRITZ GROUP

ANDRITZ is a globally leading supplier of plants, equipment, systems 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 as well as for animal feed and biomass pelleting.

Global presence
Headquarters in Graz, Austria; over 280 production sites and service/sales companies worldwide

KEY FINANCIAL FIGURES:

<table>
<thead>
<tr>
<th></th>
<th>UNIT</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order intake</td>
<td>MEUR</td>
<td>55,795</td>
<td>66,462</td>
</tr>
<tr>
<td>Order backlog (as of end of period)</td>
<td>MEUR</td>
<td>63,830</td>
<td>70,843</td>
</tr>
<tr>
<td>Sales</td>
<td>MEUR</td>
<td>58,891</td>
<td>60,315</td>
</tr>
<tr>
<td>Net income (including non-controlling interests)</td>
<td>MEUR</td>
<td>2,630</td>
<td>2,220</td>
</tr>
<tr>
<td>Employees (as of end of period; without apprentices)</td>
<td>-</td>
<td>25,566</td>
<td>26,397</td>
</tr>
</tbody>
</table>

SALES BY REGION 2017 (%)

- Europe & North America: 58%
- Emerging markets: 42%

5,889 MEUR
A WORLD MARKET LEADER WITH FOUR BUSINESS AREAS

**HYDRO**
22%

PRODUCT OFFERINGS
Electromechanical equipment for hydropower plants (turbines, generators); pumps; turbo generators.

**PULP & PAPER**
39%

PRODUCT OFFERINGS
Equipment for production of all types of pulp, paper, tissue, and board; energy boilers.

**METALS**
29%

PRODUCT OFFERINGS
Presses/press lines for metal forming (Schuler); systems for production of stainless steel, carbon steel, and non-ferrous metal strip; industrial furnace plants.

**SEPARATION**
10%

PRODUCT OFFERINGS
Equipment for solid/liquid separation for municipalities and various industries; equipment for production of animal feed and biomass pellets.

* Share of total Group order intake 2018
In our chosen markets, we are global leaders with a passion for innovative engineering solutions.

As technology and quality leader, we create sustainable value for our customers and shareholders, thus ensuring the continuation of our long-term profitable growth.

ANDRITZ is committed to China, its Chinese customers and the Chinese people. By transferring and localizing our key technologies and by developing our local team, our commitment and support to China is recognized by the Chinese leadership on all political levels.
Overview

ANDRITZ (China) Ltd., headquarter in Foshan, was established in 2002

Registered capital: 22.2 M€

The 100% ANDRITZ owned company

Employees: approx. 1,748 in China

### Key Financial Figures 2018

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order intake</td>
<td>MRMB</td>
<td>5,525</td>
</tr>
<tr>
<td>Sales</td>
<td>MRMB</td>
<td>4,092</td>
</tr>
<tr>
<td>EBITA</td>
<td>MRMB</td>
<td>430</td>
</tr>
<tr>
<td>Employees</td>
<td>-</td>
<td>1,748</td>
</tr>
<tr>
<td>ANDRITZ IN CHINA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td><strong>ANDRITZ (China) Ltd.</strong></td>
<td><strong>ANDRITZ-Wolfensberger Special Alloy Foundry Co., Ltd.</strong></td>
<td><strong>ANDRITZ (Shanghai) Equipment &amp; Engineering Co., Ltd. (Shende)</strong></td>
</tr>
<tr>
<td>Employees</td>
<td>1,748</td>
<td>81</td>
</tr>
</tbody>
</table>
| Locations | Foshan  
Beijing  
Shanghai  
Wuxi  
Chengdu  
Sanshui  
Sanshui (Foshan) | Shanghai  
Shanghai  
Tianjin  
Dalian  
*Yangzhou | Kunshan  
Changzhou  
Xi’an |

- 2018 Values
- Overview excludes several small representative offices
- ANDRITZ in China also includes: ANDRITZ Technologies H.K. Limited
- Yangzhou Yadon includes 1,008 employees
1997
ANDRITZ-Kenflo Foshan Pump Co., Ltd. (AKFP) founded, providing high quality pumps for the pulp and paper industry.

2002
ANDRITZ Technology Ltd. (ATC) founded, focusing initially on environment and process business, stock preparation, water pumps, and pumps for the paper industry.

2004
ATC manufacturing base (workshop phases 1 and 2) set up in Tianbao Rd. Chancheng, Foshan.

2006
ANDRITZ Pump Technology Center opened in Sanshui Industrial Park.

2009
ANDRITZ HYDRO business integrated into ATC. ATC Investment in Chengdu Tianbao Heavy Industry Co., Ltd. which became the manufacturing base and Chengdu branch for ANDRITZ HYDRO.

2011
ANDRITZ Technologies Ltd. (ATC) acquires ANDRITZ Kenflo Foshan Pump Co., Ltd.(AKFP), which is now part of the ANDRITZ Pumps division.

2012
ANDRITZ Technologies Ltd. officially renamed ANDRITZ (China) Ltd.
Workshop phase 3 built in Chancheng, Foshan.
Acquisition of Shanghai Shende Machinery Co. Ltd.
ANDRITZ CHINA HISTORY

2013

ANDRITZ China sets up first pulp lab.

ANDRITZ Biax Center (workshop phase 4) opens in Foshan with an area of 8,494 m².

2016

ANDRITZ Environmental Engineering (Shanghai) Co Ltd. is merged into ANDRITZ China business, which formed as air pollution control division and located in ANDRITZ China Shanghai branch.

ANDRITZ (China) Ltd. Wuxi branch opens.

2015

New workshop opens in Foshan Zhangcha European Industrial Park (EIP) with premises covering approx. 10,000 m².

New steel Yankee business center opens with an area of 4,200 m².

2018

New pilot plant for recycled fiber/separation/kitchen waste established.

New ANDRITZ China Headquarters Building opens

Cooperation with SUST for ANDRITZ R&D lab.
ANDRITZ CHINA – ORDER INTAKE

ATC+ ATHK CAGR 2003-2018: 34%

ATHK order intake (MRMB)  ATC Order intake (MRMB)

2002  8  70
2003  237  306
2004  306  603
2005  1,231  939
2006  939  2,403
2007  2,403  3,002
2008  2,939  2,793
2009  2,724  2,846
2010  2,695  3,720
2011  3,525  2,845
2012  2,803  2,846
2013  2,762  3,454
2014  3,307  3,854
2015  3,784  5,525
2016  5,391  5,525

MRMB

WORKSHOPS AND OFFICES IN FOSHAN

All workshops are own-invested by ANDRITZ. Since the establishment of the first workshop in Foshan in 2004, ANDRITZ has invested new workshop and facilities in almost yearly bases.

<table>
<thead>
<tr>
<th>Foshan Tianbao Road</th>
<th>Foshan EIP</th>
<th>Foshan Sanshui ALC</th>
<th>Foshan Sanshui Yankee workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 38,000 m² total area</td>
<td>• 12,044 m² total area</td>
<td>• 53,000 m² total area</td>
<td>• Workshop area: 5,500 m²</td>
</tr>
<tr>
<td>• 26,000 m² manufacturing buildings and warehouse</td>
<td>• 11,000 m² manufacturing buildings</td>
<td>• 18,000 m² manufacturing buildings</td>
<td>• Production capability: 10-15 pcs per year</td>
</tr>
<tr>
<td>• Up to 26 m high, 24 m wide and 120 m long</td>
<td>• Total staffs: ~300</td>
<td>• Up to 10 m high, 36 m wide and 90 m long</td>
<td></td>
</tr>
<tr>
<td>• Crane capacity: max 100 tons</td>
<td></td>
<td>• Crane capacity: max 16 tons</td>
<td></td>
</tr>
</tbody>
</table>
ANDRITZ CHINA MANUFACTURING PLANT SET UP

Foshan, Chancheng, workshop 1-3
ANDRITZ CHINA MANUFACTURING PLANT SET UP

Foshan, Chancheng, workshop 4
ANDRITZ CHINA MANUFACTURING PLANT SET UP

Foshan, Chancheng, EIP (European Industrial park)
ANDRITZ CHINA MANUFACTURING PLANT SET UP

Foshan, Sanshui, ANDRITZ Logistic Center and pump technology center
ANDRITZ CHINA MANUFACTURING PLANT SET UP

Foshan, Sanshui, Yankee production workshop
ANDRITZ CHINA NEW HEADQUARTERS
CHAPTER OVERVIEW

01 ANDRITZ GROUP OVERVIEW
02 ANDRITZ CHINA OVERVIEW
03 SEPARATION CHINA
04 SEPARATION TECHNOLOGIES
05 SUCCESSFUL STORIES
SUSTAINABLE GROWTH THROUGH SMARTER SEPARATION SOLUTIONS

As the world’s leading separation specialist, ANDRITZ SEPARATION is home to the deepest knowledge, broadest technical resources, and most comprehensive service solutions in the field of separation.

For more than 150 years our technologies and services have been driving the evolution of industries ranging from food and beverage production to mining and minerals, chemicals, organic waste, biomass, and wastewater management.
THE RIGHT SOLUTION FOR EVERY SEPARATION CHALLENGE

With the world’s most comprehensive portfolio of solid/liquid separation technologies, ANDRITZ SEPARATION is well positioned to provide the right solution for any type of mechanical or thermal separation challenge.

It all starts with your specific process requirements, and ends with a system that gives you the best results – day in and day out, for decades to come.
ANDRITZ SEPARATION TECHNOLOGIES

ANDRITZ SEPARATION is proud to be the **OEM of a wide** range of trusted technology brands, including:
FULL-LINE CAPABILITIES

Dewatering

Power Boilers

Flue Gas Cleaning

Drying

Automation / Metris
Modern production facilities all over the world, guaranteeing availability of machines and spare parts as well as first class service.
TEST CENTERS

Availability of well equipped test centers to support your research and development activities.

Your benefits
• Pilot scale
  • Project safety by process guarantees (output, energy consumption etc.)
  • Product properties assessment
• Lab scale
  • Budgetary info for ROI studies
  • Feasibility check
• Extensive know-how
  • Experienced team and routines
  • More than 5,000 different applications tested
  • Large reference lists
At **ANDRITZ SEPARATION**, we see every new challenge as a welcome opportunity. Sometimes it involves designing and installing the world’s largest municipal wastewater drying plant or the industry’s highest-capacity hyperbaric disc filter for iron ore processing. But more often than not, it’s about working in close collaboration with our customers to optimize complete processes and innovate new solutions that lead to significant productivity gains.

With profound expertise and an absolute passion for what they do, our employees support you worldwide in the implementation of your visions.
CHAPTER OVERVIEW

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05 SUCCESSFUL STORIES
To save and reuse as much water as possible, we needed both, the right technology and a close collaboration partner. ANDRITZ gave us both, working as one team with our engineers to install a superior solution on time and on budget.

BAASANDORJ TSOGOO
SENIOR VICE PRESIDENT
ENERGY RESOURCES MONGOLIA
As a trusted partner we provide our customers with innovative single machines, complete systems, and comprehensive services all around the world.
SEPARATION CHINA SERVICE

24-hour hotline: 4001034188

Worldwide service and support
Our installed base of more than 55,000 solid/liquid separation solutions and systems means we take service extremely seriously. Whether it’s consulting, process optimization, repairs, upgrades, spare and wear parts, operator training, or service agreements, we work closely with all of our customers to ensure a lifetime of efficiency and reliability.

A true full-service provider
Many of our customers know us as the OEM behind world-renowned brands like Bird, Netsch Filtration, Royal GMF Gouda and more – all of whom have been acquired by the ANDRITZ Group over the years. But fewer realize that we can service and supply spare and wear parts for nearly all brands of solid/liquid separation equipment on the market.
Your trusted partner
For more than 150 years, we’ve specialized in the development of key separation technologies and expertise. To continuously expand our portfolio, **ANDRITZ SEPARATION** has also acquired well-known global brands for technologies ranging from presses, centrifuges, and separators, to decanters, drying/cooling systems, filters, screens, and more.

Put our expertise to work
Every year our specialists install more than 2,000 machines worldwide, including everything from the most reliable industry standards to the most advanced automation systems. This sheer depth of experience guarantees that you get the latest specialist expertise for any machine and any process, anywhere in the world.

Global strength close to you
At the heart of **ANDRITZ SEPARATION** are more than 2,000 separation specialists located in 40 countries. Add to this some 250 ANDRITZ GROUP production sites, service, and sales companies, and you can rest assured that a local team is always available to support your individual needs.
**Showcase REFERENCES**

- **Liede WWTP in Guangzhou, China**
  - Total 16 units of decanters since 2000

- **Bailonggang**, one of Asia’s largest wastewater treatment plants
  - 3 units of filter presses and 3 lines of fluidized bed dryers

- **Daliuta CPP**, owned by Shenhua who’s the biggest Coal Group
  - 10 units of filter presses, 7 units of thickeners and 8 units of HBF
### ORDERS AND REFERENCES SELECTED

<table>
<thead>
<tr>
<th>D-type decanters</th>
<th>Filter presses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1278</strong> D-type decanters installed at <strong>580</strong> locations</td>
<td><strong>532</strong> FPs (side-bar) installed at <strong>215</strong> locations</td>
</tr>
</tbody>
</table>

- Liede WWTP
- Beijing Qinghe Reuse water treatment
- Jiaxing II WWTP
- Beijing Gaobeidian WWTP
- Xinxiang Jiatun WWTP
- Shanxi Linfen WWTP
- Changchun Beijiao WWTP
- Malaysia Pantai 2 Sewage Treatment Plant
- Nanning Langdong WWTP
- Huayang Mengjin power plant phase 1
- ...  

- Shanghai Bailonggang Project
- Wuxi Xidong DWP
- Xiamen Shiweitou WWTP
- Chengdu No.6 DWP
- Shanghai Nanhu Binghe WWTP
- Hongkong Aotou DWP 2nd Phase
- Shenhua Dliuta CPP
- Shenhua Bulianta CPP
- SDIC Kouzidong CPP
- Shenhua Erdos CTL
- Huainan Mining Dingji CPP
- SDIC Liuzhuang CPP
- ...
## ORDERS AND REFERENCES SELECTED

<table>
<thead>
<tr>
<th>A-type Decanters</th>
<th>Pusher Centrifuges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>191</strong> A-type decanters installed at 60 locations</td>
<td><strong>129</strong> Pushers installed at 36 locations</td>
</tr>
<tr>
<td>Xinjiang Zhongtai Fukang</td>
<td>Guangzhou Pure Sea Salt</td>
</tr>
<tr>
<td>Sinopec Anqing Petrochemical</td>
<td>Anda Longxin Chemical</td>
</tr>
<tr>
<td>SCCG Xiqu CPP</td>
<td>SINOPEC Shijiazhuang</td>
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<td>SCCG Dongqu CPP</td>
<td>Liaoyang Petrochemistry</td>
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<td>SCCG Tunlan CPP</td>
<td>Nanhua Group Lianyungang Soda Plant</td>
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<tr>
<td>Yankuang Jining No. 3 CPP</td>
<td>Nanya Epoxy Resin Kunshan</td>
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<td>Xinglong Zhuang CPP</td>
<td>Chongqing Yihua Chemical</td>
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<tr>
<td>Yankuang Zhaolou CPP</td>
<td>Shanghai Baosteel Chemical</td>
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<tr>
<td>Shenhua Shenxin Wudong CPP</td>
<td>Sichuan Leshan Hebang Chemical</td>
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<tr>
<td>Nantong Mining Nantong CPP</td>
<td>Qinghai salt lake magnesium</td>
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<tr>
<td>Chinacoal Pingshuo Anjialing CPP</td>
<td>Xinjiang Union Chemical</td>
</tr>
<tr>
<td>…</td>
<td>…</td>
</tr>
</tbody>
</table>
ORDERS AND REFERENCES SELECTED

**Hyperbaric Disc Filters**

- 70 HBFs installed at 21 locations
  - Shenhua Daliuta CPP
  - Pingmei Group Tianzhuang CPP
  - Shenhua Zhungeer CPP phase 1
  - Datong Coal Mine Group Tanshan CPP
  - Shenhua Jinjie CPP
  - Lu’an Mining Gaohe CPP
  - Shenhua Daliuta CPP
  - Huadian Buliangou Project
  - Shenhua Bulianta CPP
  - Shenhua Halagou CPP
  - …

**Fluid Bed Dryers**

- 115 FBDs installed at 57 locations
  - Xinjiang Zhongtai Fukang Energy
  - Nanjing DSM-Orient Chemistry
  - Shanxi Ruiheng Chemical
  - Qinghai Salt Lake
  - Chinasalt Jintan
  - Zhanjiang Chenming
  - Fujian Shenyuan Advanced Materials
  - …
If we’ve learned one thing serving customers in all industries across the globe, it’s that no two separation processes are exactly alike.

This is why we’ve devoted more than a century to ensuring that we can offer the best solution for any application, product, or process.
Sludge Fired Steam Boilers – Exes

**Adiabatic design**
- Thicker refractory lining → more erection and maintenance works;
- longer start-up time of approx. 14-16h
- More space/building volume required

**Integrated design**
- Thin refractory lining → less erection and maintenance works;
- shorter start-up time of approx. 8h
- More compact design

Vienna 1980  
Hamburg 1995  
HONG KONG 2011
Sludge Drying  
Sludge Incineration  
Flue Gas Cleaning

SHANGHAI BAILONGGANG SLUDGE TREATMENT
TUEN MUN, HONG KONG

Combustion of 2000 wet tons per day (760 t DS/day) of municipal sewage sludge in the biggest sludge incineration ever

Scope: Engineering and supply of 4 bubbling fluidized bed boilers, system EcoFluid for the Hong Kong Sludge Treatment Facility

- Fuel heat input: 4 x 27,5 MW_{fuel}
- Fuel: Sewage sludge
- Treatment capacity: 2000 t/d
- Water content: 70%
- Low heat value: 3,0 – 5,8 MJ/kg
- Steam parameter: 4 x 31,5 t/h ; 43 bar(a) ; 383 °C
- Year: 2013~2015
XU Xuequn (Shawn XU)

National Sales Director (China) - Capital Vice General Manager

SEPARATION

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徐学群

全国销售总监 - 整机

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