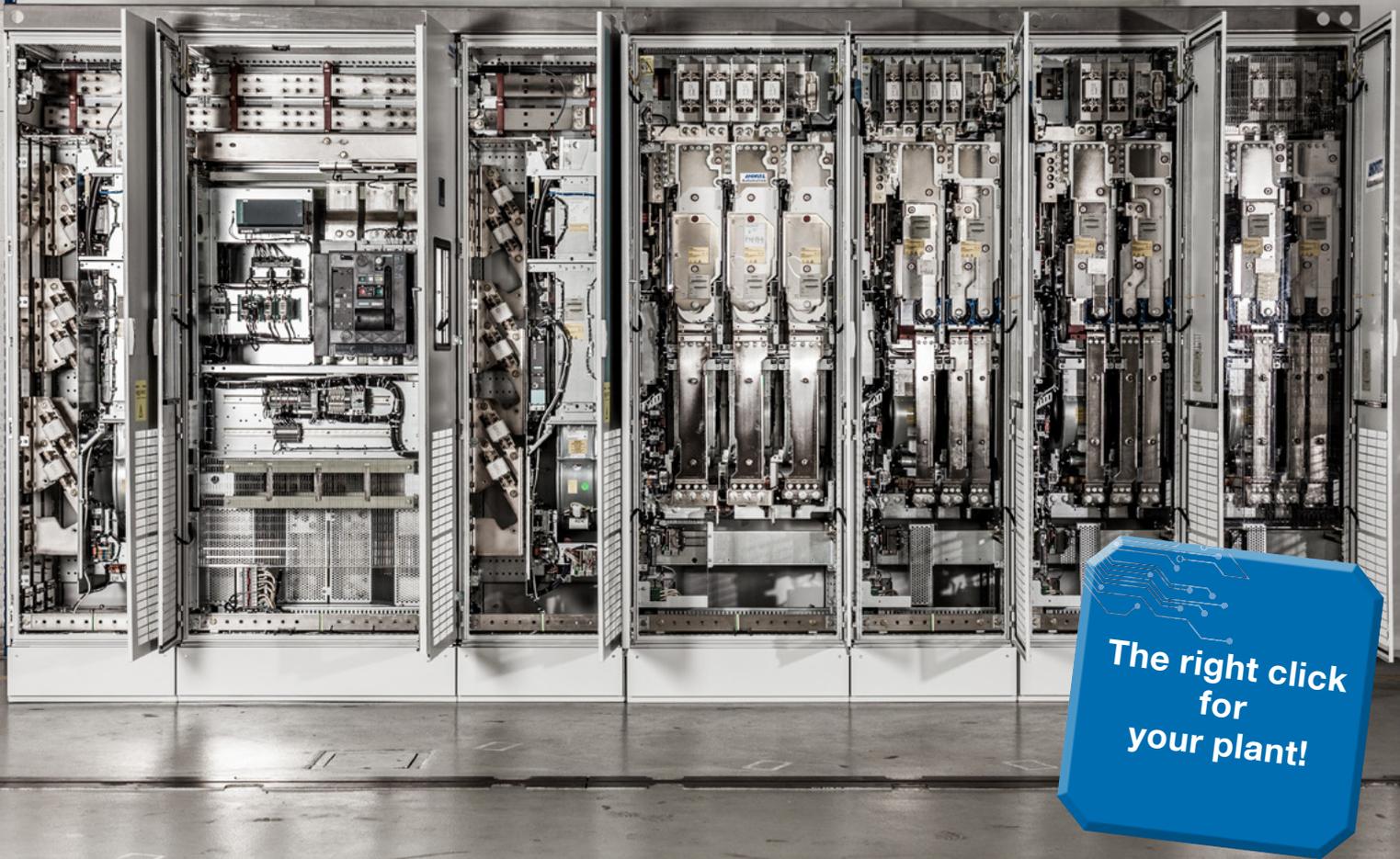# ANDRITZ AUTOMATION
Drive Technology

The right click
for
your plant!

ANDRITZ Drive Technology
System know-how spread across industries

ANDRITZ PULP & PAPER is bringing process synergies into complete mills, enabling advantages throughout the entire drive system.

ANDRITZ METALS and also **ANDRITZ Schuler** combine to provide leading automation solutions for drive system progression in the metal production and processing industry.

Drive technology from ANDRITZ AUTOMATION forms pulp & paper machine deliveries into a consistent mill solution. Depending on each plant's needs, individual equipment and complete EPC packages are available, serving processes with up to 40 motors and 5 MW motor power.
Motor drive solutions from ANDRITZ PULP & PAPER come as integrated systems:

- Optimized interfaces between different systems
- Common human machine interface for all panels, from wetend to bale finishing
- Process panels include sectional drive functionality

▲ Board machine at KBK, Naberezhnye Chelny, Russia

Success story at KBK

"By including ANDRITZ's technologically advanced solutions, we have increased speed, production, quality and efficiency. Productivity has improved by a large measure due to the sheet formation, web stabilization, and the closed draws between wire, press, and press section. Sheet breaks are a rare event now," explains KBKs general director. Scope of delivery:

- Drive for complete wet end up to the existing dryer
- Two-ply wire section, long nip press, shoepress
- Interface to remaining drive system
- Field panels and DCS HMI integration

- One engineering environment for a complete mill
- Optimized commissioning & startup time due to synergies between process and sectional drive

As a single-source supplier for industrial plants, ANDRITZ also provides state-of-the-art automation technology for metal production plants.
In terms of drive applications, latest developments improve energy efficiency, motor technology and performance of multi-drive systems within the fields of automation, electronics and instrumentation.

Multi-drive systems

High-performance metal-forming systems – like press lines – require:

- High dynamic torque drive systems on all presses
  - High-speed realtime communication between all presses and the connected handling systems
- An efficient energy management system to avoid power grid overloads
- An intelligent line master control to guarantee high output rates, lowest energy consumption and shortest die change times

Schuler's innovative press line technology – now in its 3rd generation – also fulfills these requirements. Outperforming high torque servo motors in combination with an effi-

▲ Installed servomotors

cient energy management and the newest realtime line control system allows best-in-class output rates with up to 23 strokes per minute and a die change time of the whole press line in 3 minutes or less!
The recently developed "Schuler Smart DC Grid" lowers the energy consumption again by more than 20%. This innovation was recognized by the state government of Baden-Württemberg/Germany in the category Energy Efficiency.

- ANDRITZ Schuler: servo-direct technology for highest quality
- ANDRITZ METALS: performance for large metal mills
- Simulation and continous development

From single machinery to large-scale separation mills, ANDRITZ SEPARATION and Feed & Biofuel Technologies enable precise specialization for individual needs.

ANDRITZ HYDRO comprises high-power medium-voltage multidrive systems for power generation.

Drive technology is key for each single machine.
In decanter centrifuges, for example, drive technology determines the overall efficiency of the separation process. Power and resource consumption, for example, is optimized by recycling of breaking energy. Effectiveness of the process is being increased.
It also has the potential to reduce hardware costs, for example infeed power requirements:

- Secondary motor in generator operation
- VFDs are DC-bus connected, therefore braking energy is recycled
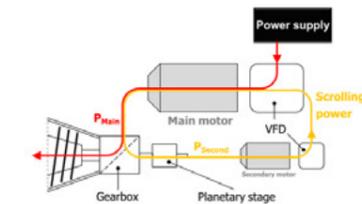
▲ Centrifuge back drive configuration

- Power required from the AC grid is equal to main motor power minus screw motor power

- Reduction of resource consumption at highest accuracy
- Individual solutions depending on machinery and scale

Taking the feed & biofuel industry as a second example, different scales for drive solutions are also required.

Variable Frequency Drives (VFD) are delivered for single motor drives, reversing, servo or multiple motor drives.
Just as machinery and equipment commit to perfom at top level, always considering the most efficient solution.
As an example, the implanted servo drive for belt dryers enables a correct product distribution dependent on different material conditions.

Tomorrow's hydropower plant reacts to changing hydraulic conditions and additional grid requirements by variable speed operation provided via drives between grid and generator.

Pumped storage plant

Drives have been in use for starting the pumped storage plant in pump mode for many years. Starting frequency converters range between 5 MW and 30 MW. The higher the converter rating, the faster the pump start. A fast pump start is one entry point to financial earnings from ancillary grid services, while variable speed opens up several more entry points.

Due to the steady reduction in base earnings from storing and releasing energy according to daily energy price fluctuation, additional earnings are essential for the further profitability of pumped storage plants. Variable speed pumped storage plants use either rotor side AC/AC drives (AC excitation with converter size approximately 25% of generator) or stator side AC/AC drives (full-size converter with converter size 100% of generator).
Demanding ancillary grid services like the implementation of virtual inertia requires full-size converter configuration.

Tidal energy power plant

Generating energy from tidal flow requires a wide operating range with variable speed on turbine and generator. The plants consist of several single systems: Corresponding drives can be a set of parallel drives or a multi-drive system with one grid converter and many generator converters.

- Starting of pumped storage plant in pump mode
- Variable speed operation of pumped storage plants
- Multi-drive tidal energy generation

ANDRITZ Multi Motor Drive (MMD)
Process control solutions

ANDRITZ AUTOMATION drive technology combines mechanical design expertise integrated into electrical inverter-based systems and control strategies tailored for multi motor drive systems.

ANDRITZ Multi Motor Drive (MMD) is based on state-of-the-art inverter technology (vendor-independent) and complemented by integrated safety elements that adhere to current laws and standards. Extended diagnostic features and seamless integration with ANDRITZ Distributed Control Systems (DCS), offer customers considerable benefits.

Characteristics

MMD	Included
Control cabinets with uninterruptible power supply (UPS) and central IO modules in combination with safety input for e-stop	✓
Safety functions according to IEC 61800-5-2 to SIL2	✓
Infeed cabinets with performance measurement and consumption analysis (400V/690V)	✓
Rectifier cabinets (backfeeding optional)	✓
Inverter cabinets with high-speed system bus and cable marshalling space	✓
ANDRITZ project workflow	✓
ANDRITZ process library with advanced fastloop integration for highest performance and precision	✓
Prearrangement for process simulator integration	✓
Prearrangement for continuous remote support service and lifecycle assistance with integrated web documentation	✓
Test and approval according to EN 62381	✓

Benefits

- Innovative solutions due to independent hardware sourcing
- Fast and optimal scaling for all applications
- Flexible and favorable hardware selection according to individual requirements and budget
- Reduced energy and power consumption

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