ANDRITZ AUTOMATION
GLOBAL PRESENCE AND COMPETENCES

• 110 Automation locations
  (ANDRITZ GROUP: > 280 locations)

• 1,800 Automation employees
  (ANDRITZ GROUP: > 26,700 employees)

• Complete Automation and Digitalization solutions for
  • HYDRO
  • PULP & PAPER
  • METALS
  • SEPARATION
  • OTHER PROCESS INDUSTRIES

• REVENUE > 650 MEUR (included in business area figures)
ANDRITZ AUTOMATION
WHAT MAKES US DIFFERENT

35+ years Automation/Digitalization competence out of one hand

All-in-one / Turnkey solutions (AEI)  Plant Automation upgrades  Integrated engineering process  Providing cutting-edge technologies (eg. BigData, AI)  Global availability

Value adding life-cycle services  Plant-wide Optimization services  Integrated Asset performance management  Automation Academy  Global support structure (Performance Centers)

Extensive process know-how in various process industries  Integrated digitalization platform  Integrated Automation  Cyber secure solutions and services  Integrated production simulation

AUTOMATION & EPC COMPETENCE  TECHNOLOGY COMPETENCE  OPTIMIZATION & LIFECYCLE SERVICES
GLOBAL COMPETITION AND ENVIRONMENTAL CHALLENGES FORCES INDUSTRIES TO ACT

Heterogenous DCS landscapes
Increasing complexity for mature plants

Customers know-how protection
Cyber-security / IP right protection

Sustainable & environmental friendly production
Raw material reduction / optimize use of resources

Fully automated production
Too much manual interventions required

High demand for production flexibility
Intelligent & plant-wide production strategies

Automation & AI competencies
Joint expert approach with data scientists and Automation
METRIS – ANDRITZ DIGITAL SOLUTIONS FOR PROCESS INDUSTRIES AND ENERGY UTILITIES

One platform fits for all
METRIS UX – THE ALL-IN-ONE PLATFORM

01 CLASSIC AUTOMATION
• Distributed control system (DCS)
• Motors & drives (MMD)
• Automation, Electrification, Instrumentation (AEI)

02 ADVANCED AUTOMATION
• Asset Performance & Maintenance management
• Process analytics & Production information
• Process optimization
• Production management

03 ADVANCED PERFORMANCE SERVICES
• Production optimization (OPP)
• Performance Center & 24/7 Hotline
• Simulation & Digital Twin
• Cyber security & Managed services
• Smart services
• Mixed Customer service bundles (SYNERGY)
Hosts all data from all assets on a plant-wide scale

Metris Risk Based Management (RBM)

- **All-in-one database** hosts all asset information and process data
- Anomaly detection uses **complete database** to identify either clear asset problems or process related risks, or even a combination of both
- **Combined plant-wide analytics** of potential overall production risk calculating all risk vectors displayed in one App

- Condition monitoring for critical assets (motors, valves, pumps, e.t.c.)
- Calculation of individual production risks (single source, redundant equipment, e.t.c.)
- Embedding maintenance risks (maintenance routes, inspections, e.t.c.)
- Including cyber security risks (vulnerabilities, remote access, e.t.c.)
CYBER SECURITY BY DESIGN

CYBER SECURITY PORTFOLIO – Customer Journey

**ANDRITZ**

- Cyber security by „expert design“
- spOT™ cyber security SCAN @ FAT

**Customers production sites**

- ANDRITZ Aftersales service based on spOT™
- RAM² Plant wide – 24/7 cyber security orchestration platform

**Type test - once per process island / machine type**

- Automated CHECK for all ANDRITZ deliveries

- Periodic cyber security CHECK as a Service

- Continuous cyber security for a heterogeneous plant

remOT™ Secure remote connectivity management system
HIPASE – Automation - One platform – four different functions

- **Protection**
  - Initiate shut down in case of electrical fault
  - No active function during operation

- **Excitation**
  - Generator Voltage Regulator (AVR)
  - Control function (Start/Stop excitation, trip)

- **Turbine Governor**
  - Speed regulation
  - Load regulation
  - For all types of turbines

- **Synchronization**
  - Paralleling of unit – grid
  - Circuit breaker controls

250 SCALA – Complete control room applications

Metris DiOMera – Asset management

Cyber security solutions
... implementation underway...
METRIS DIGITAL SOLUTIONS – OPTIMIZATION OF PROCESS PERFORMANCE

Suzano Group (Brazil) - 11 million tons of pulp capacity being optimized by ANDRITZ

• Optimization contracts in various plants with references since 2007 and still there at Aracruz (3 lines), Três Lagoas (2 lines), Suzano, Jacareí, Mucuri (2 lines), Imperatriz and Veracel (1 line - 50% owned by Suzano)

• Mix of ANDRITZ and competitors' equipment

• Several Metris solutions provided to Suzano:
  • Metris OPP (Optimization of Plant Performance) agreements
  • Advanced Process Controls
  • Artificial Intelligence
  • Asset Performance Management
  • Digital Twins
  • Process Simulation

> EUR 200 million benefits provided to customer in production increase, minimizing chemical and fuel consumption, maximizing energy production and improving environmental parameters
Predictive System and Analytics for Global Hydro Operation

- Elaborating a predictive maintenance model to tackle potential faults in hydroelectric power plants
- Move from “preventive” to “predictive” maintenance strategies
- Detect significant changes of pace thanks to its data-based management strategy
- Schedule maintenance works before potential faults arise → process optimization

5 Countries (Argentina, Brazil, Chile, Peru, Colombia)
44 Plants
3 Year continuous plant optimization & advanced predictive services
9,850 MW equipped with Metris-DiOMera
250 SCALA as large Central Control System

- 250 SCALA, our innovative high-performance SCADA system
- Multi hierarchic system
- Backup systems for emergency situations
- Excellent scalability from
  - small local unit control, power plant control
  - up to central control systems
- Client benefits
  - One system for all control levels
  - Less engineering costs
  - Future-proof due to SW compatibility

Super vision and control of more than 125 hydroelectric power plants in one system
ROADMAP 2022-2024

Further strengthen ANDRITZ’s position as digital solution provider

• ANDRITZ Automation well positioned in ancestral industries (Pulp & Paper, Hydro, Metals, Separation)

• Metris digitalization platform is the solid foundation to support future growth of all ANDRITZ business areas

• Market launch of „holistic asset performance management“ (Metris RBM) including cyber security
MANY THANKS!

ANDRITZ CAPITAL MARKET DAY 2021

SEPTEMBER 15, 2021