DIGITAL TWIN

Higher production and increased revenues

ANDRITZ

Overview

ANDRITZ Digital Twin technology have evolved as an essential building block of digital transformation, unfolding the combined power of process simulations and ANDRITZ digital solutions. Digital Twin applications are designed to complement, assist, and elevate the performance of automation systems, making them more autonomous.

Harnessing the power of industry-leading simulation and digitalization platforms, advanced analytics, and Machine learning solutions, Digital Twins offers comprehensive insights for process performance and operational visibility. ANDRITZ has packaged its OEM knowledge and many years of process automation experience to create modern-day Digital Twins which ensure various real-world benefits. Our Digital Twin technology evaluates the asset condition, predicts future behavior, improves control, and optimizes plant operation.



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What drives us forward?

ANDRITZ's aim is to make the fully autonomous mill a reality because of the measurable outcomes it brings to our customers' industrial plants. These outcomes impact four strategic pillars that directly influence operational performance: process, asset, human, and sustainability.

PROCESS

ASSET

HUMAN

SUSTAINABILITY

These pillars make our value tangible, connecting solutions to what truly matters to our clients: real, measurable results.

How can we make a difference in your mill?

This is the question that guides the development of every ANDRITZ automation and digitalization solution for the pulp and paper industries. More than delivering technology, our commitment is to generate real and measurable impact on our customers' operations. We believe that true value lies in results you can measure. That's why we focus on outcomes that are tangible, trackable, and aligned with our customers' goals. In practice, this means connecting solutions that can act on:

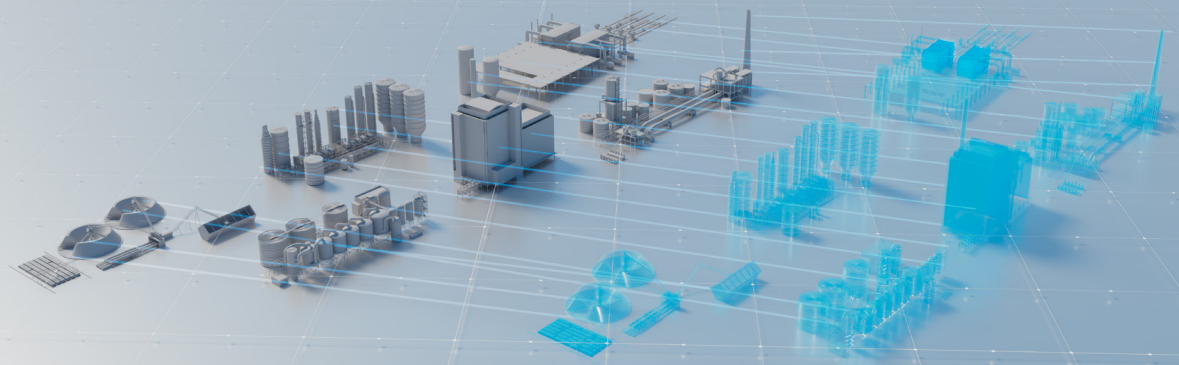


These are real gains, connected to each pillar, transforming technology into tangible results. By connecting solutions designed to solve specific industry challenges, we deliver new ways to make a difference and contribute to results. This is how we transform technology into real value.

What is a Digital Twin?

The Digital Twin represents an up-to-date digital replica of the physical asset – a process or a piece of equipment. The Digital Twin of a process plant is analogous to an MRI of the human body, providing otherwise invisible insights to assist operations with proactive and consistent decision-making.

These high-fidelity simulation/machine learning models transform the real-time process data into meaningful and actionable steps while following the changes of its physical counterpart. When connected to online plant data, the Digital Twin acts like a performance information tool, like an MRI of the human body.

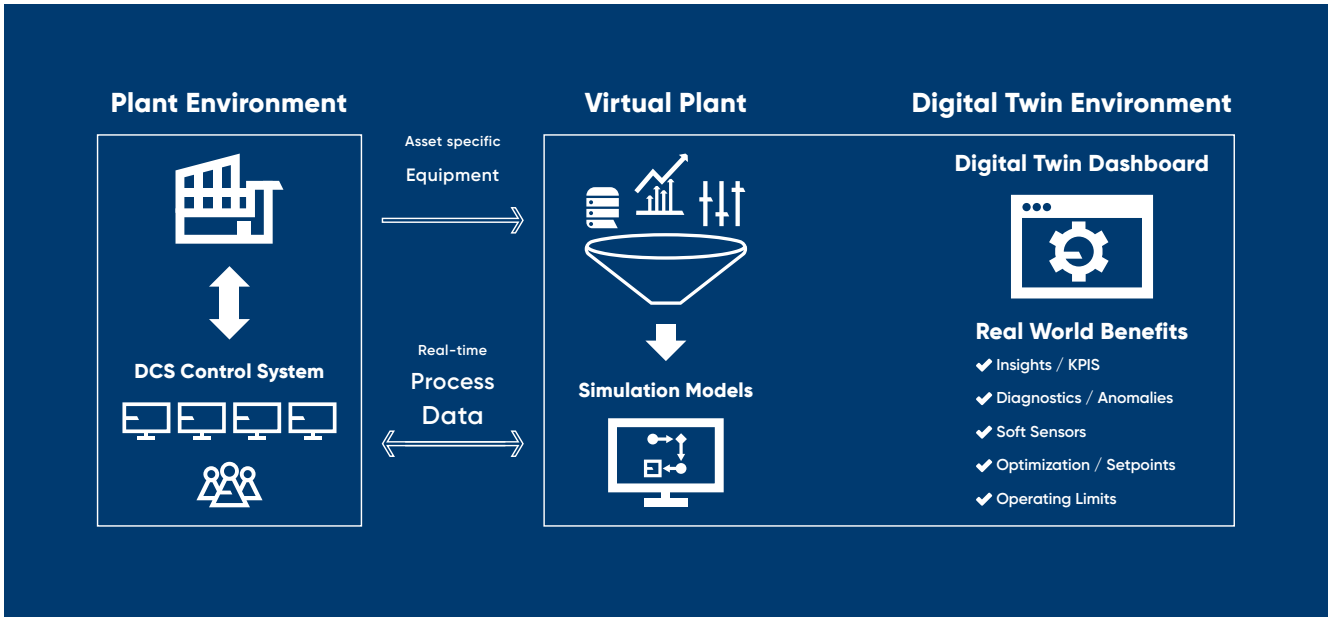


WATCH THE VIDEO
ANDRITZ IDEAS – Optimize the Performance of your Process

Modular approach and integration with existing automation ecosystem

This modular approach offers multiple benefits for meaningful integration depending on customers assets digital maturity. This also makes space for other digital solutions to coexist.

The applications are typically installed on-premises virtual machines within the same OT network, communicating with the plant DCS/PLC/Historian to read/write real-time plant data as an OPC Client. ANDRITZ provides the software, services, and process expertise to deploy and integrate Digital Twin solutions into your existing automation ecosystem. We offer a range of online and offline Digital Twin applications to pulp, paper, mining, power, and chemical industries involving continuous and discrete processes.



ANDRITZ Digital Twin approach.

Optimizer Twin

SOFT SENSORS
Important variables that are difficult and expensive to measure continuously, which could enable new control opportunities.

SETPOINTS OPTIMIZATION
Determine optimal operating conditions with a powerful optimization engine for user-defined targets, objectives, functions, and constraints.

OPERATING LIMITS
Determine process operating limits using the mass and energy balance models to help with effective process control.

KPIS
Insights for better equipment or process performance visibility, highlighting the gap between actual and optimal operation.

FORECASTING
Extrapolate the future process state based on the current conditions.

PRODUCT TRACKING
Follow process composition or quality characteristics based on material transport delays and vessel residence times.

COST OPTIMIZATION
Online/offline estimation of parameters, materials, costs, quality, etc.

Reliability Twin

INSTRUMENT HEALTH CHECK
Gross error detection by comparing the physical measurement with the expected values from online models.

EQUIPMENT HEALTH CHECK
Benchmark equipment performance against historical capabilities and theoretically optimal performance.

FAILURE ANTICIPATION
Identify certain failure scenarios based on historical and real time data before they turn into big incidents.

ANOMALY DETECTION AND FAILURE ANTICIPATION
Identify process anomalies by comparing the operation with normal operating ranges. Identify certain failure scenarios based on historical and real-time data before they turn into big incidents.

Virtual Plant Twin

Integrates engineering, construction, and service data into a centralized platform. It enables real-time access to plant documentation, interactive 3D models, and sensor data, enhancing collaboration, troubleshooting, and operational efficiency across teams and devices.

Measurable values to customers



MILL AVAILABILITY INCREASE UP TO 1%
through faster troubleshooting



MAINTENANCE COST REDUCTION
up to 0.5% via improved precision and reduced rework



PRODUCTIVITY INCREASE
up to 5% by enabling more efficient and specialized work

Dashboards with valuable information

The Digital Twin applications work as an advisory platform with custom dashboards feeding valuable insights or, in a closed loop, provide critical inputs and complement the other automation system at several levels of autonomy.

Take full advantage with ANDRITZ Digital Twins

ANDRITZ Digital Twins are designed to take full advantage of the latest technological advances and offer many ways to utilize them in process improvement, control, optimization, and asset condition and utilization. With many successful references, the real-world benefits of the Digital Twin applications ultimately result in higher production and increased revenues for our customers.

DIGITAL TWIN REAL-WORLD BENEFITS

- Soft sensors enable additional control handles
- Detect process anomalies well in advance
- Identify faulty measurements and replace them with the most plausible value
- Optimal setpoints for Regulatory or Advanced Control
- Provide operational limits for effective control
- Provide KPIs to highlight gaps between actual and optimal operation
- Forecasting of the key process variables
- Informative dashboard with warnings and alarms for proactive decision-making

CONTACT US FOR MORE INFORMATION

Advancing autonomous operations is our vision and is becoming an integral part of industrial processes. ANDRITZ is at the forefront of this transformation, leveraging digital innovations along with deep operational and technical expertise to improve process efficiency, quality management, and production reliability and availability.

We focus on developing autonomous pulp mills and process optimization, to support efficient and sustainable operations by combining automation, electrification, intelligent instrumentation, and digitalization to create measurable value throughout the full life cycle and the entire value stream.

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