



**Metris**

ANDRITZ Digital Solutions



**AUTOMATION & DIGITALIZATION**  
**METRIS DIGITAL TWIN**

**HIGHER PRODUCTION AND INCREASED REVENUES**



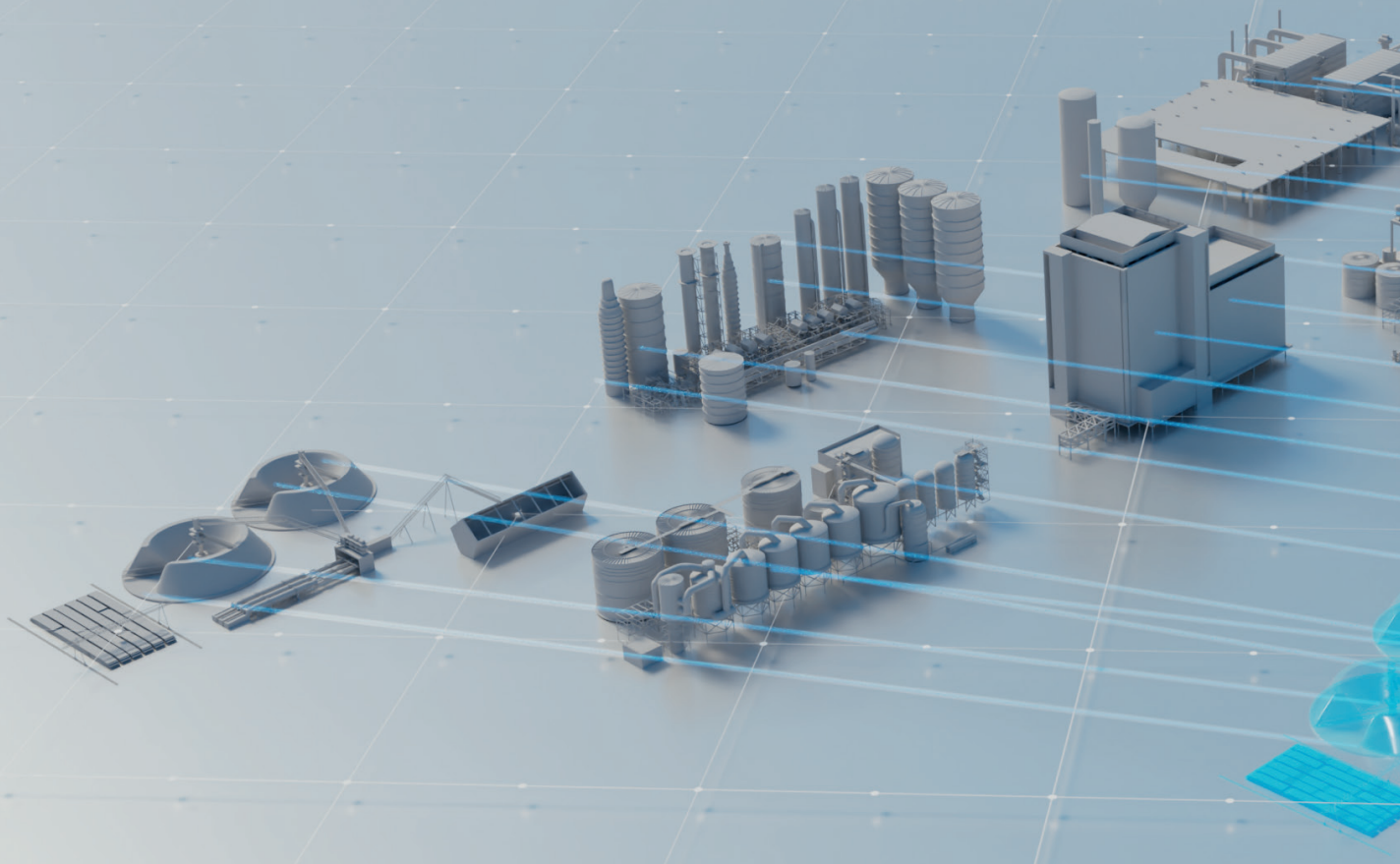
**ANDRITZ**

**ENGINEERED SUCCESS**

# Overview

Metris Digital Twin technology have evolved as an essential building block of digital transformation, unfolding the combined power of process simulations and Metris-all- in-one digitalization platform. Metris 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, Metris 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.

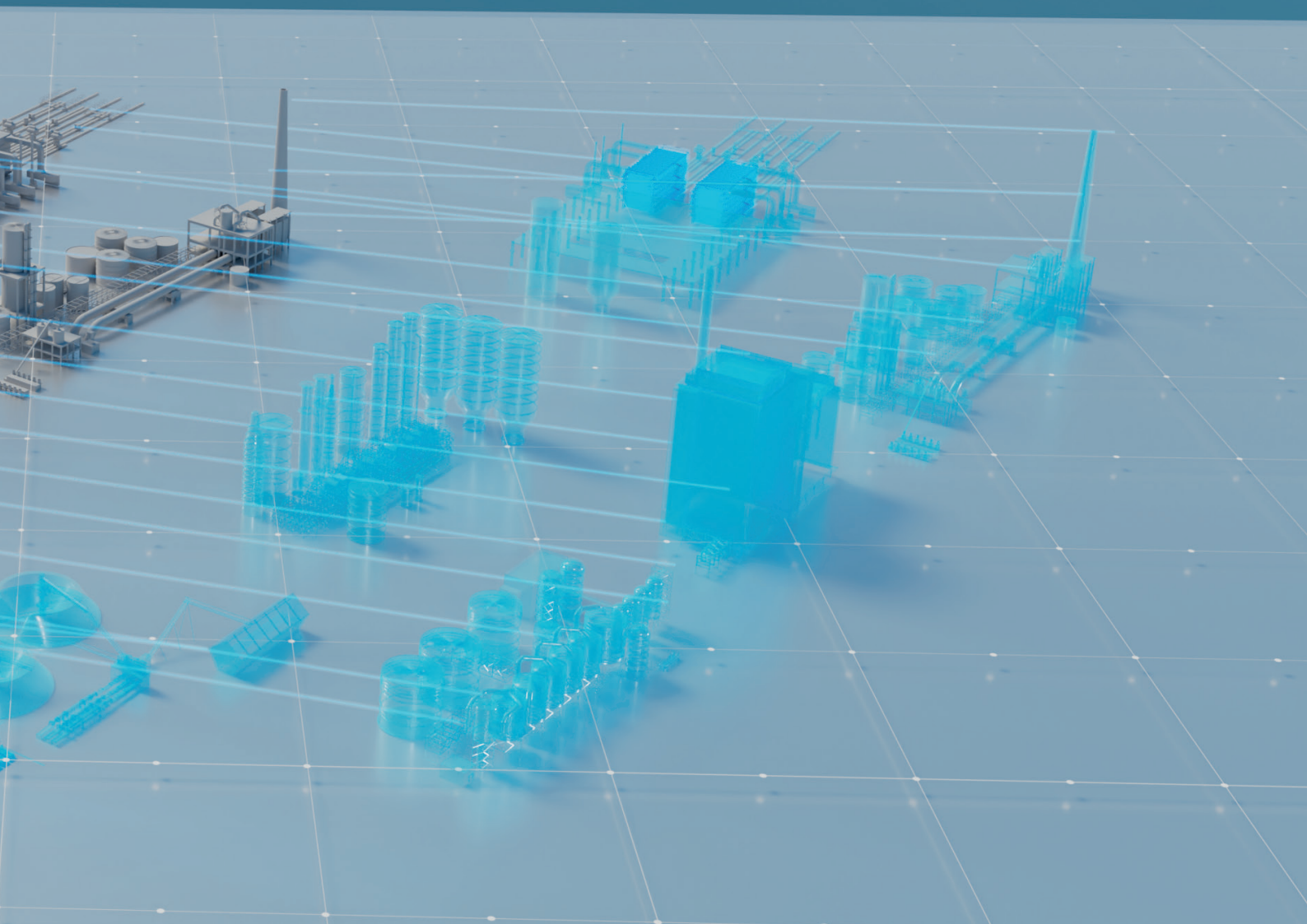




# What is a Digital Twin?

The Metris 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.

The Metris Digital Twins are powered by a mix of technologies ranging from asset-specific physics-based to data-based machine learning models to create a digital replica of the physical assets. These high-fidelity simulation models transform the real-time process data into meaningful and actionable steps while following the changes of its physical counterpart.

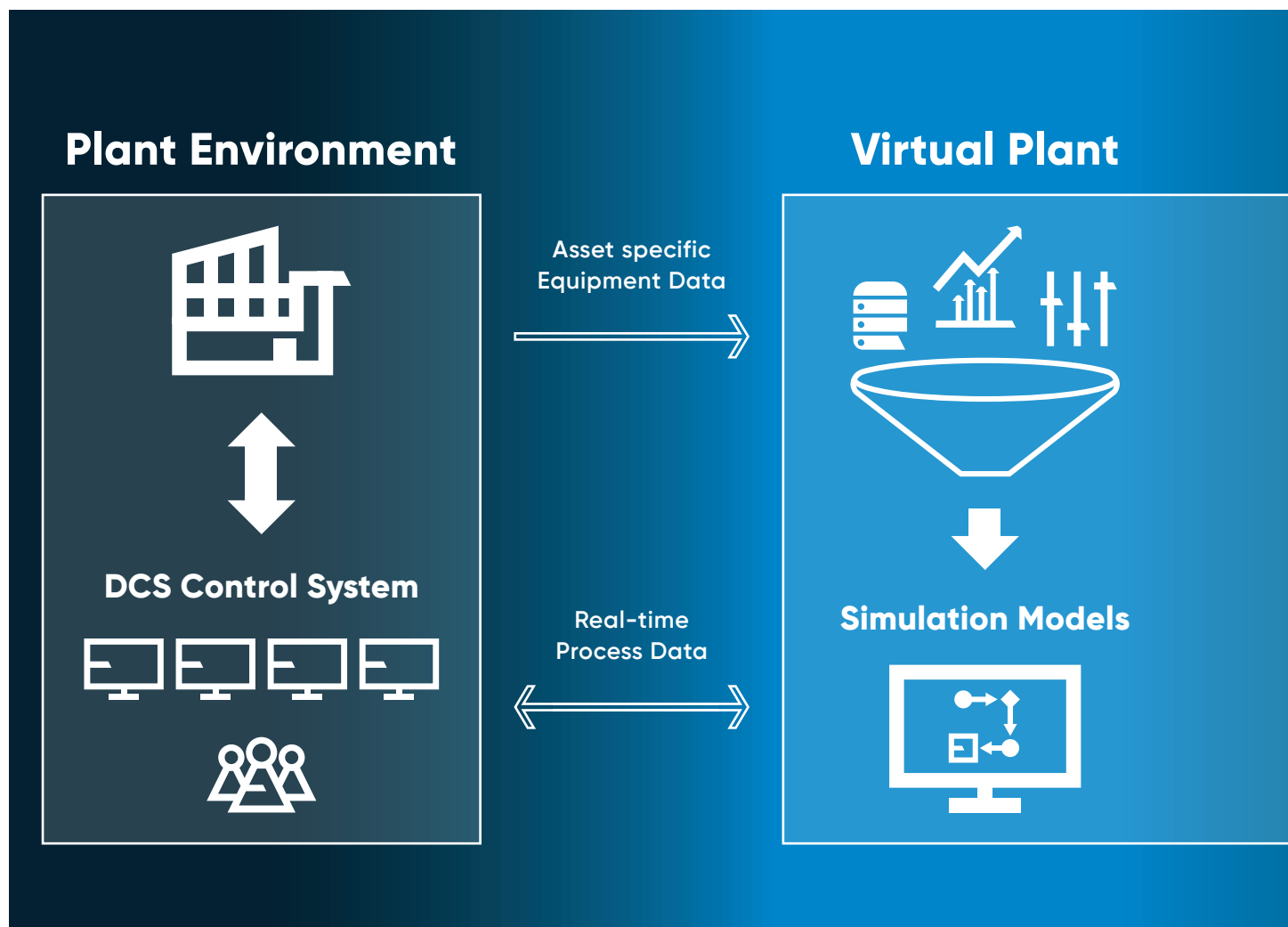


# Modular approach and integration with existing Automation ecosystem

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 Metris Digital Twin 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.



# 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.

The applications are modular and come with two different options – **Metris Digital Twin Optimizer** and **Metris Digital Twin Foresight**.

## **METRIS DIGITAL TWIN OPTIMIZER**

The Optimizer module is designed to improve the process performance based on current conditions.

## **METRIS DIGITAL TWIN FORESIGHT**

Foresight module predicts future process behavior and anomalies.

## Digital Twin Environment

### Digital Twin Dashboard

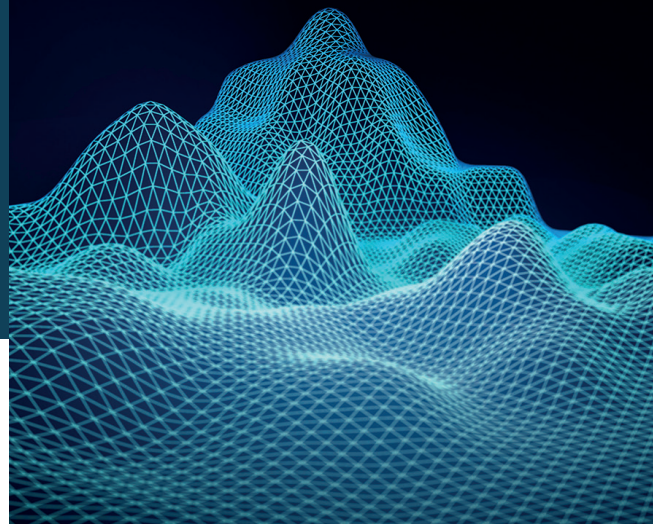


### Real World Benefits

- ✓ Insights / KPIs
- ✓ Diagnostics / Anomalies
- ✓ Soft Sensors
- ✓ Optimization / Setpoints
- ✓ Operating Limits

### **METRIS 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



# The Metris Digital Twin Optimizer Module

**SOFT SENSORS:**

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

**INSTRUMENT HEALTH CHECKS:**

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

**OPERATING LIMITS:**

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

**OPTIMAL SETPOINTS:**

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

**KPIS:**

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



# The Metris Digital Twin Foresight Module

**EQUIPMENT HEALTH CHECK:**

Benchmark equipment performance against historical capabilities and theoretically optimal performance.

**ANOMALY DETECTION:**

Identify process anomalies by comparing the operation with normal operating ranges.

**FAILURE ANTICIPATION:**

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

**WHAT-IF SCENARIOS:**

Runs multiple scenarios to evaluate the consequences of operational choices and operator inputs.

**FORECASTING:**

Extrapolate 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.

**OPERATOR GUIDANCE:**

Alerts, alarms & warnings for abnormal operating conditions.

## TAKE FULL ADVANTAGE WITH METRIS DIGITAL TWINS

Metris 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.

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