Virtual Sensor
Industrial AI Application

Manufacturers face blind spots in process monitoring because many critical quality parameters cannot be measured inline, and lab analyses are time consuming. This leads to reactive operations, variability, and waste, making it harder to ensure consistent quality and efficiency.

Orise Virtual Sensors fill the gaps by delivering continuous predictive quality insights and actionable guidance, transforming operations from reactive to proactive, and ultimately to autonomous.

Main benefits

Early Detection
Interventions at the first signs of deviation keep processes under control, giving operators time to stabilize production before quality loss.

Consistent Quality
Predictions and guidance ensure output stays stable and closer to specification across production runs.

Higher Throughput
Fewer interruptions and less rework enable lines to run more efficiently, with greater capacity and reduced downtime.

Knowledge Transfer
Advisory recommendations capture best practices, making expertise explicit and reducing reliance on individual experience.

Efficient Resource Use
Operators and engineers focus on targeted actions instead of troubleshooting and late corrections.

Scalability
New parameters, assets, or sites can be added seamlessly without rebuilding the system from scratch.

Our technology

Orise Virtual Sensor is a platform-based AI algorithm that continuously estimates parameters which cannot be measured directly at high-frequency. Waiting for slow, costly, or destructive lab results are a thing of the past.

Beyond prediction, Orise Virtual Sensor can enable a custom Advisory System that transforms insights into clear, plant-specific setpoint recommendations tailored to each plant's operating conditions, constraints, and objectives, ensuring guidance is both accurate and practically usable on the shop floor.

Orise digital

www.orise.com/digital-products/virtual-sensor/

How Orise Virtual Sensor works

Easy to deploy and simple to use, Orise Virtual Sensor requires no expert setup yet delivers immediate value. The Advisory System add-on converts predictions into plant-specific setpoint recommendations, tailored to each facility's conditions and priorities.
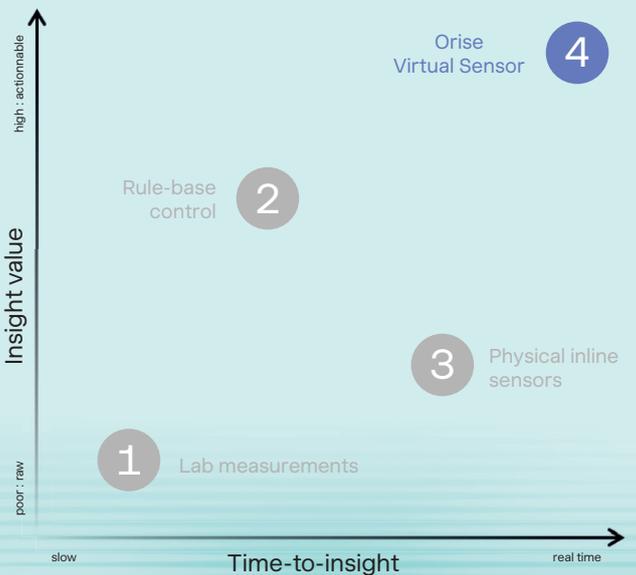
For plants seeking more automation, these recommendations can be executed directly in the control system, enabling a smooth shift from predictive visibility to autonomous optimization.

Step 1 → **Step 2** → **Step 3** → **Step 4** → **Step 5**

Identify and model the measurement gap

Train the AI model using historical data

Predict output parameters in real time

Optional
Advisory System provides guidance for setpoints

Optional
Automated feedback loop in the process system

Orise Virtual Sensor transforms raw plant data into both predictive visibility and targeted guidance, enabling manufacturers to run processes more efficiently, consistently, and profitably.

Why Orise Virtual Sensor Outperforms

Orise Virtual Sensor combines the strengths of existing methods while eliminating their limitations, giving manufacturers real-time quality insight, yield improvement, and operational performance.

Insight value — high : actionable / poor : raw

Time-to-insight — slow / real time

4 — Orise Virtual Sensor
2 — Rule-base control
3 — Physical inline sensors
1 — Lab measurements

Criteria	1 Lab Measurements	2 Rule-based Control	3 Physical Inline Sensors	4 Orise Virtual Sensor
Continuous quality visibility	No	No	Only available where a physical sensor exists	Yes
Predicts unmeasurable parameters	No	No	No	Yes
Timeliness of information	Information delayed by hours or days	Yes	Sensor output only for a limited set of parameters	Yes
Actionable setpoint guidance	No	Provides basic rules to increase or reduce setpoints, but no accuracy	No	Yes
Integration with operations	No	Yes	Requires high maintenance and is not broadly usable	Yes
Adaptability to process changes	No	Rules must be reprogrammed whenever process changes	Hardware bound and costly to adapt	Yes
Scalable across assets	No	No	Must be installed individually for each parameter	Yes

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