



AVEVA WORLD



AVEVA PI System

*Driving Manufacturing
Excellence with
Standardized
AVEVA™ PI System™
Data and AI*

April 9, 2025 / Kaarthi Govindaraju





Bayer is a life science company and a global leader in health care and nutrition. Our innovative products support efforts to overcome the major challenges presented by a growing and aging global population.

Health for all, Hunger for none



Bayer at a glance

Group key data



3 divisions

- // Crop Science
- // Pharmaceuticals
- // Consumer Health

Represented by
291 consolidated
companies in

80
countries

92.8k

employees worldwide
in 2024*

6.2 Mrd. €

investment in R&D
in 2024

46.6 Mrd. €

sales
in FY2024



Tackling two of the most
pressing challenges of our time:
health & nutrition



Diverse, international focus
with cross-border and cross-
division **people development**

*Health for all,
Hunger for none*

* As of December 31, 2024; employees in full-time equivalents



Bayer is a life science company with three divisions

Crop Science

Pharmaceuticals

Consumer Health



/// Crop Science

Regenerative cropping systems, innovative seed and trait technologies, effective and sustainable crop protection, and digital solutions

/// Pharmaceuticals

Prescription products for cardiology, women's healthcare, oncology, hematology, ophthalmology, radiology and other areas

/// Consumer Health

Non-prescription medicine in the categories of nutritional supplements, allergy, cough and cold, dermatology, pain and cardiovascular risk prevention, and digestive health

Enabling Functions

/// Enabling Functions

Support the operational business



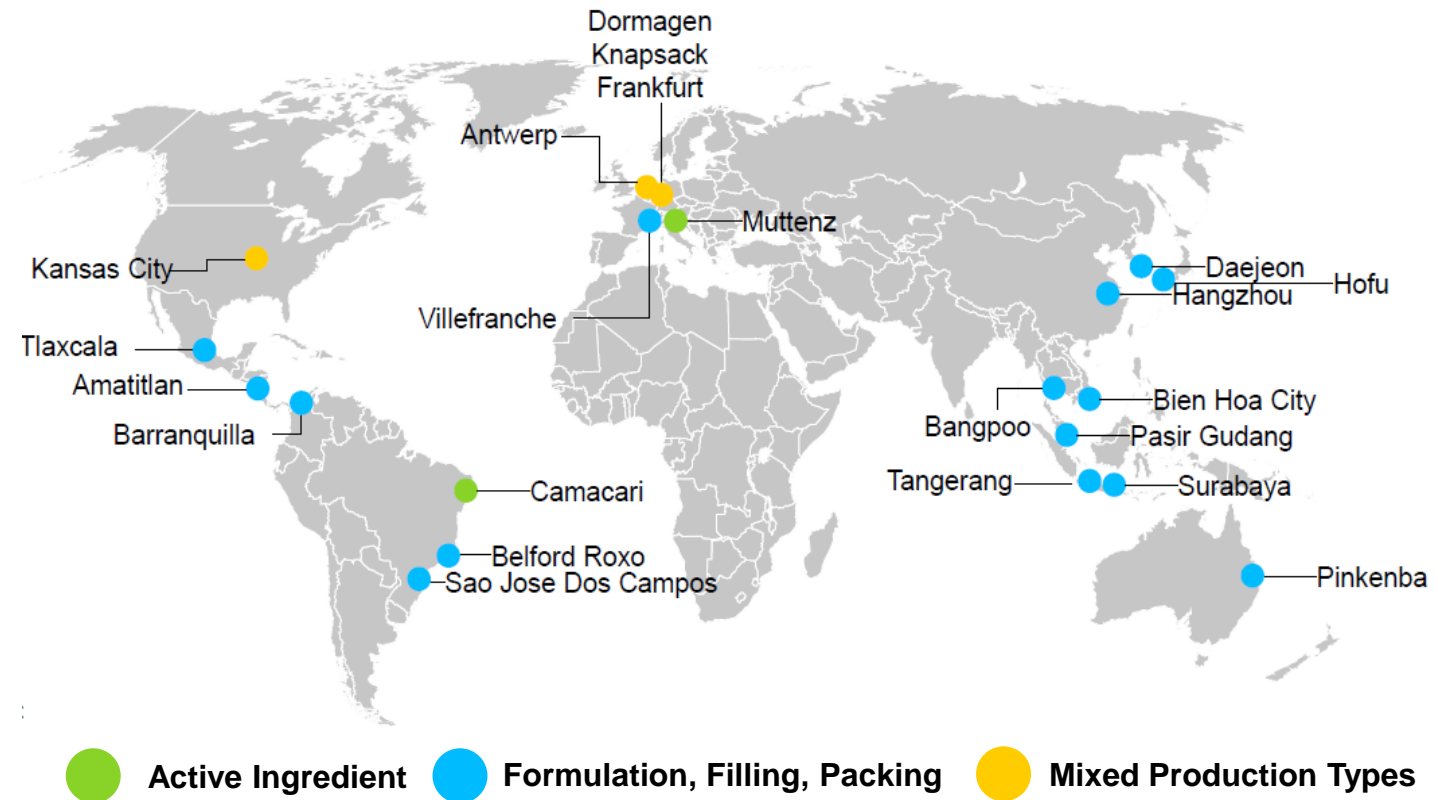
Required: A Global Solution That Adapts to Batch, Continuous and Discrete Processes

Business Challenges

- **Standardize OEE** as a key metric across a **diverse production network**
- **Empower shift teams** to drive operational excellence
- Implement a time usage model to better **understand production losses**

IT/OT Challenges

- Integrate data from diverse batch systems with **no unified structure**
- Standardize data at the Historian level **for broader application use**
- Ensure scalability for **fast and efficient OEE rollout**



Map shows current scope of implementation in production network



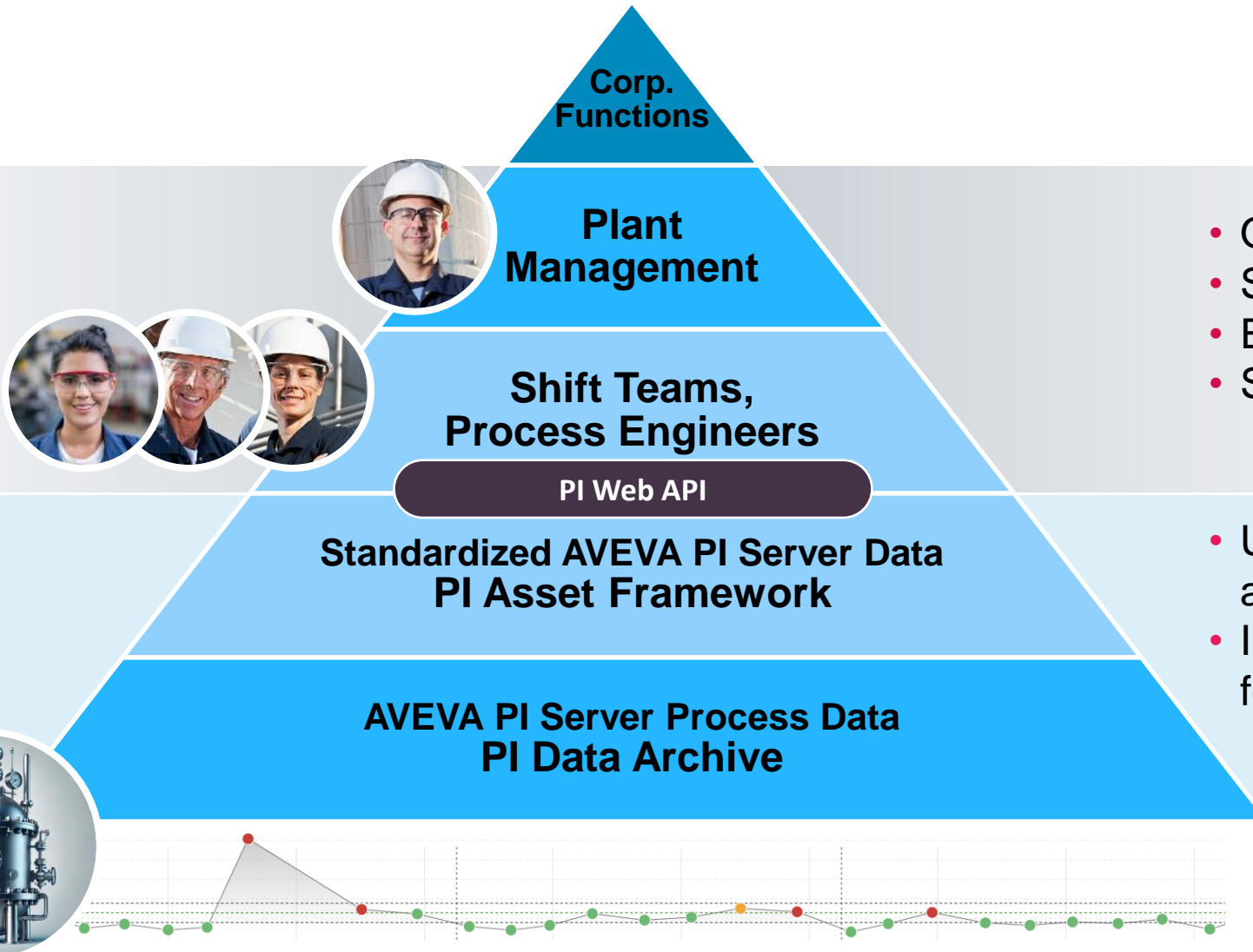
Solution Architecture: Enhancing AVEVA PI System Data with a Collaboration Layer



SHIFTCONNECTOR®

AVEVA

PI System



- OEE Loss Accounting
- Shift Communication
- Escalations & Actions
- SAP PM Interface

- Unified AF Structure across sites
- ISA-88 Event Frames for Batch Processes



Solution: PIC (Production Information Center)

As of March 2025



1
DA server
+ redundancy

1
AF
server

1
AF
database

2000
users
(approx.)

54
interface
nodes

348
interface
instances

695k
tags
in use

80 m
Event
Frames

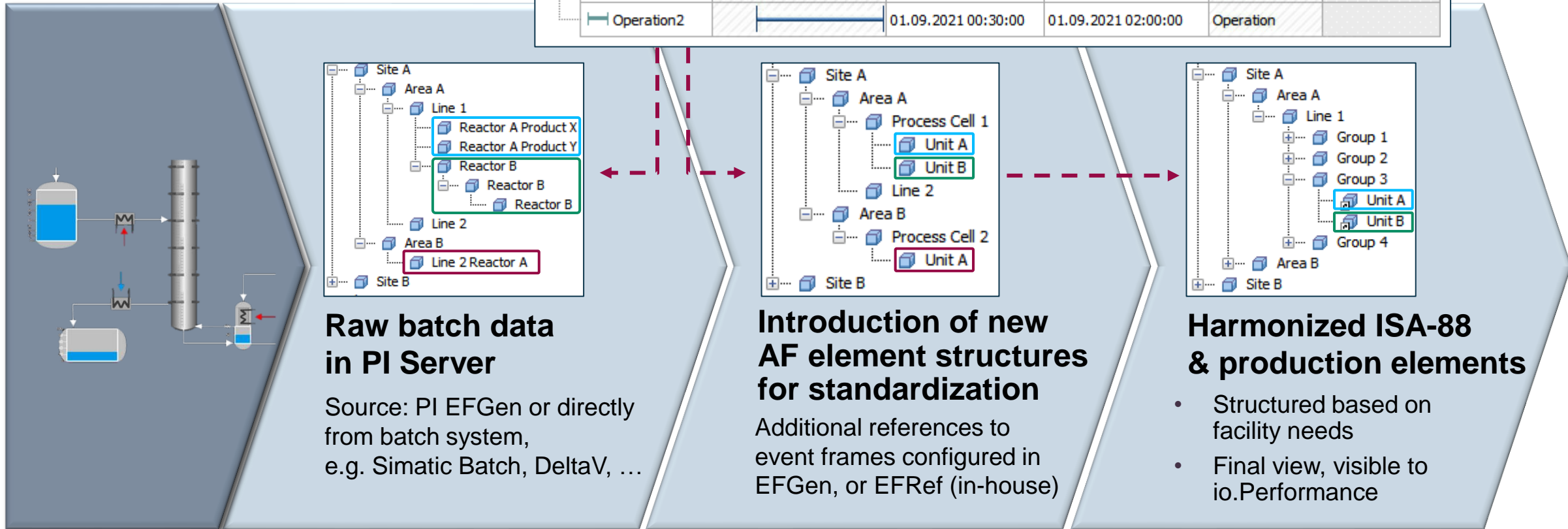
- Global configuration for 15 sites and 55 plants
- Central system- and site support
- Central License- & IT-Security Management
- Central App Development



Solution: How We Standardize Batch Data in AVEVA PI System

From shopfloor data...

Name	Start time	End time	Template	Product
202101	01.09.2021 00:00:00	01.09.2021 02:00:00	UnitProcedure	X
Operation 1	01.09.2021 00:00:00	01.09.2021 00:30:00	Operation	
Operation2	01.09.2021 00:30:00	01.09.2021 02:00:00	Operation	



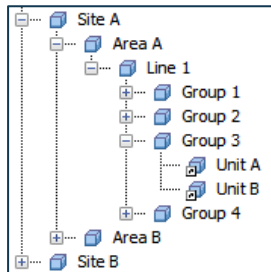


Empowering Manufacturing Teams for Operational Excellence

1

Data

Backbone with AVEVA PI System (PIC) and Standardized Process Data in PI AF



2

Context

Shift teams account for losses, use data in Shift Handovers and Morning Meetings



3

Insights

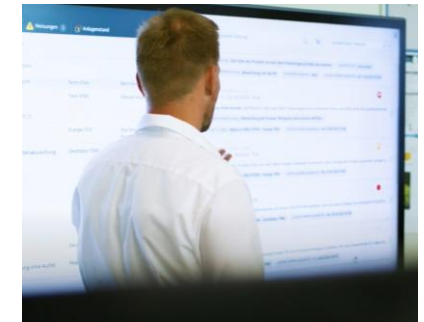
Automated OEE reports and KPIs to empower manufacturing teams



4

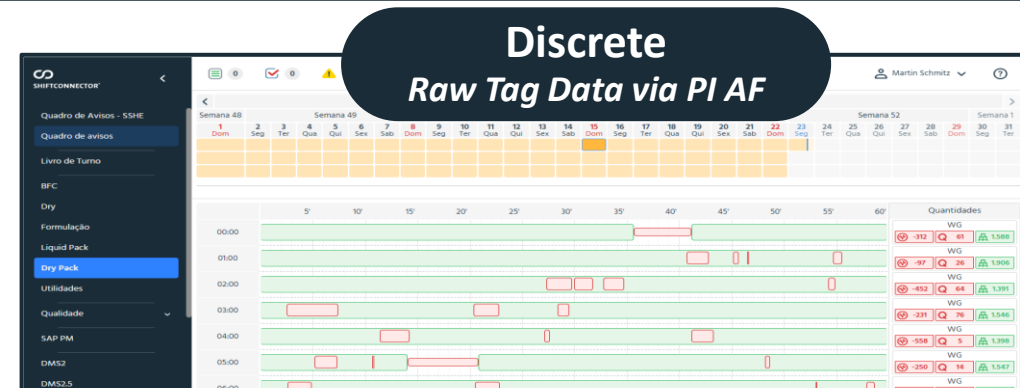
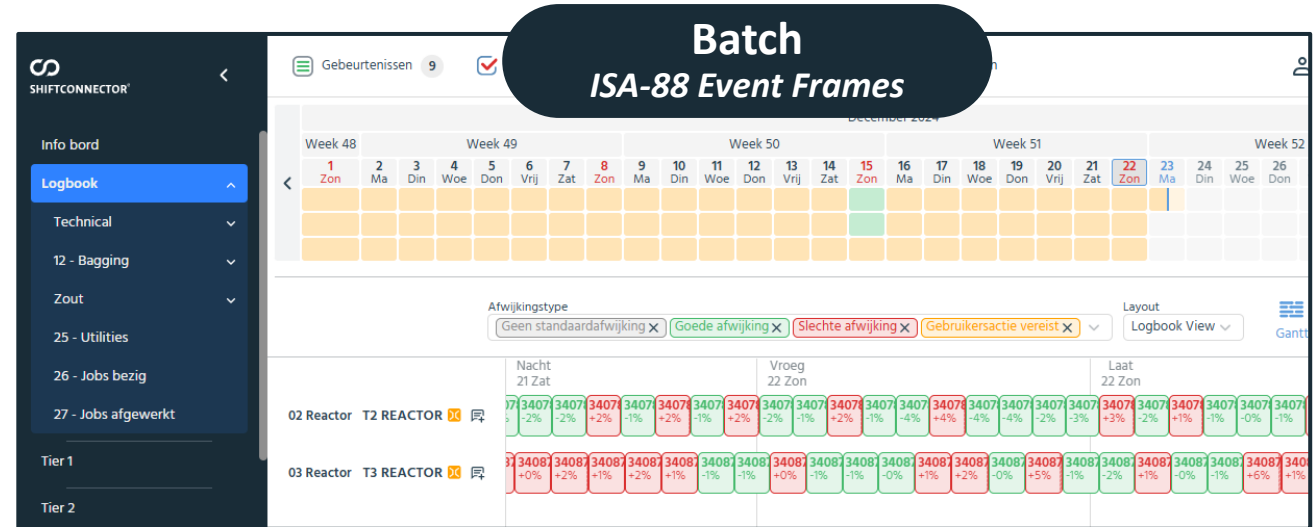
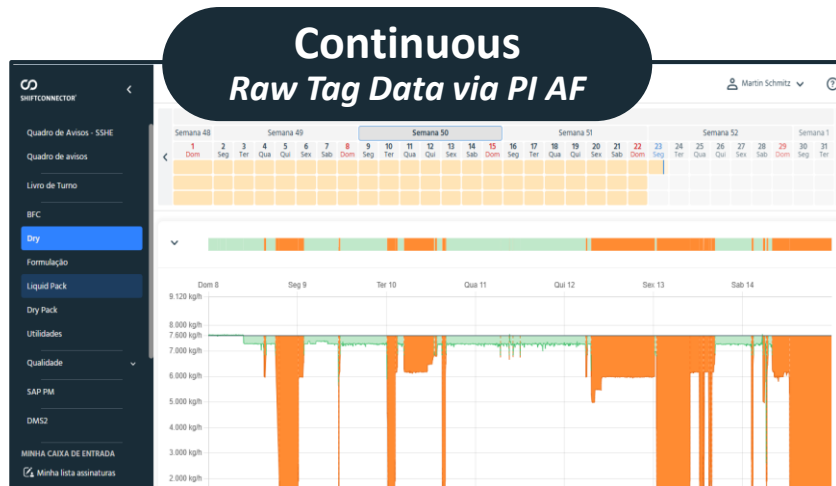
Intelligence

AI-powered Search and Chat to build knowledge base and solve problems faster





Examples: Detecting and Visualizing Production Losses from AVEVA PI System Data in Shiftconnector





Domain-Specific AI Powered by Years of Production Loss Insights & Shift Log Data

SAMI

Shiftconnector® Advanced Manufacturing Intelligence

product dark color



brown spots



... rust residues



... color variation

... looks darker

... brownish tint



... color issue



SHIFTCONNECTOR®

> Search results Solutions

Product Dark Color

Relevance

Check and Adjust the Mixing Ratio

- After mixing the components, the product exhibits a brownish tint, which may i...
- Checked the mixing ratio and adjusted it slightly to get the usual transparent color.
- The finished product is of a slightly brownish color, indicating potential quality ...
- The quality of the raw materials will be checked, and if necessary, suppliers will be c...

Flush the pump and tank

- The product color is darker than expected after the pumping into Tank T-4788. ...
- Solved the problem by flushing of the pump and comprehensive cleaning of the syst...
- Color of the product is different than usual.
- Flush the tank
- Tank completely depleted and cleaned before adding new product.

Send a sample to the laboratory for quality control

- The product in the tank L1.4788 exhibits a noticeably deeper coloration than e...
- The product in the tank L1.4788 exhibits a noticeably deeper coloration than expect...

"Saves us a lot of time, sometimes several hours" - Bayer Supervisor, MuttENZ, Switzerland



Bayer increases OEE across multiple sites with peak improvements of up to 10%

Challenge

- Lacked unified data structure across diverse batch systems for extracting OEE insights
- Required scalable OEE tracking to support shift teams in driving operational excellence
- Needed to leverage multiple years of OEE loss data and shift log context with AI

Solution

- Empowered shift teams with AVEVA PI System data and Shiftconnector to identify production losses in real-time, integrate their deep operational knowledge to uncover root causes, and leverage AI-powered insights

Results

- **Increased OEE across sites, with peak improvements reaching up to 10%**
- **Saved site process engineers up to 2 days per month on manual loss research**
- **Resolved ad-hoc problems faster during shifts—cutting downtime by hours**





Thank you!

