OCTOBER 2023

Extending operations control with the cloud - AVEVA Insight

Elliott Middleton – Director of Product Management - AVEVA Insight

Elliott Middleton

Product Director – operations control

AVEVA

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Challenges for industrial operations

Accessibility for all teams

43% struggle making data more broadly accessible with the systems in place today.
IDC

Data-driven visibility

70-80% of time spent preparing and cleansing data as opposed to analysis.
LNS Research

Responsiveness to issues

Time and cost of break/fix repairs is three to five times the cost of pre-failure action.
Reliable Plant

Accelerating and scaling results

A responsive workforce is at least 20% more likely to overperform against corporate goals.
Gartner

"Long-held aspirations of optimizing business value while simultaneously reducing risk are now within reach as a result of technological advances in the areas of connectivity, cloud, and contextualization.

These technologies make data-driven operations possible."

IDC, 2023

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AVEVA

Additional challenges for supervisory systems

- Dominate staff attention
- Create systems for routine issues
- Find root cause of new problems

- Isolated from the Internet for security
- Availability & performance not dependent on Internet
- Not readily accessible to potential users

- Names unfamiliar to outside users
- Separated from broader operational context

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Deployment strategies

Online Solutions

- Consider for future
- Next refresh cycle

Hybrid

- Supplement on-premises
- Realize the value
- Minimize risk

Existing Investments

- Infrastructure
- Applications

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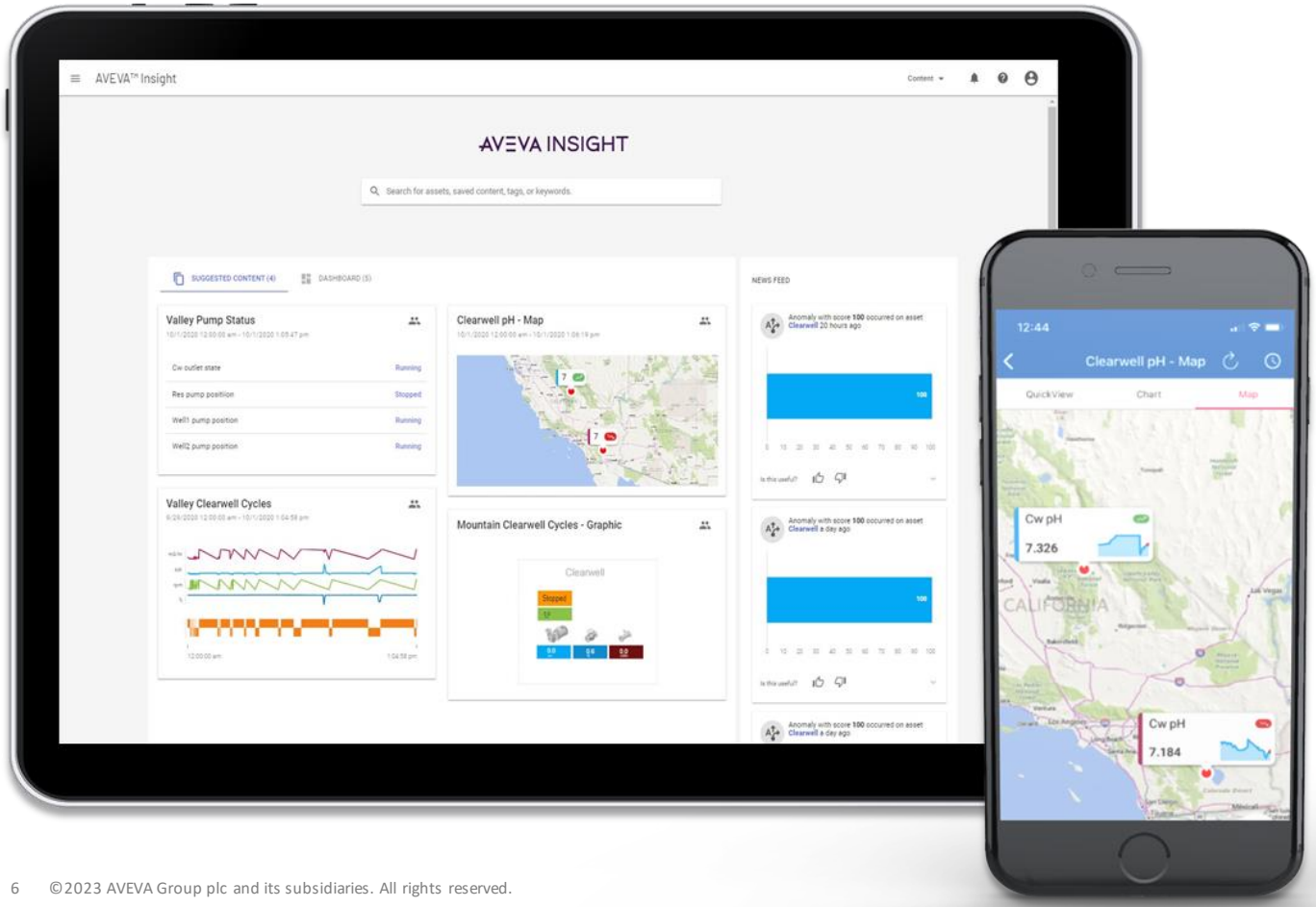
AVEVA Insight

Easy-to-use cloud-based solution, enabling your teams to collaboratively manage your operations and assets from anywhere, at any time



AVEVA Insight gives you easy access to actionable information in the cloud. Its no-code, self-service, fit-for-purpose analytics work for ordinary operations users—not just data scientists.

- Unlock and share critical data in the cloud
- Connect workers and increase collaboration
- Improve operational performance and asset reliability

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Analysis in AVEVA Insight

Ad Hoc	Dashboards	Utilization	Automated	Guided	Contextualized
Explore information in response to new problems & questions	Make routine information readily accessible	Track & monitor equipment utilization & OEE	Unsupervised, automatically draws inferences from data	Invest engineering knowledge for higher–value detection	Add operational context to detailed data
Detailed time-series data & summary reporting	Independent-of or based-on assets	Note reasons to see overall impact of problems	Detect anomalies, out of the box	Targeted infrastructure with repeatable failure patterns	Use BI tools for in depth analysis

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Capabilities

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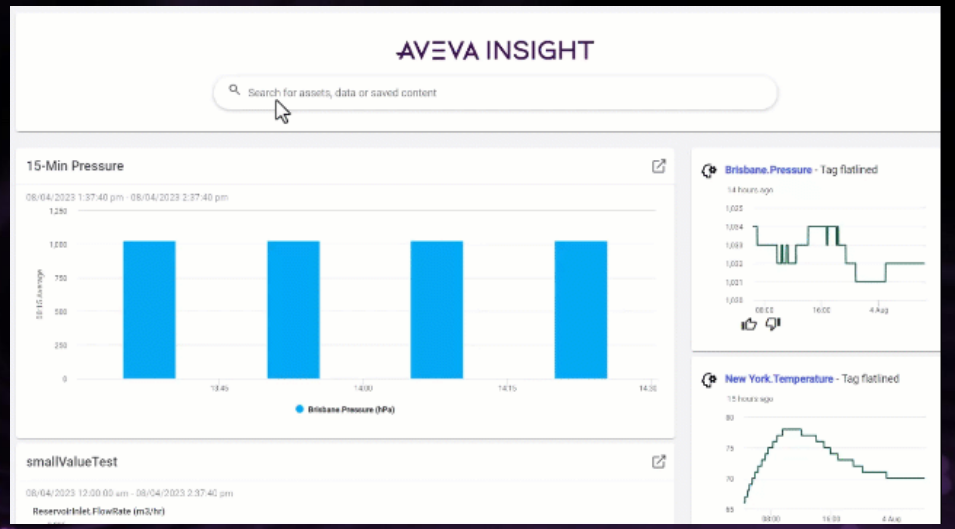
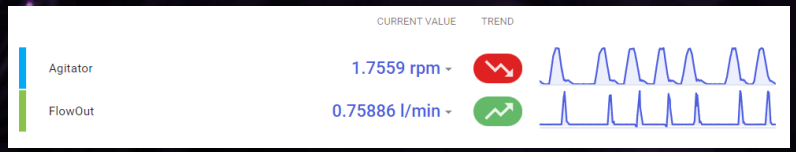
Ad Hoc Analysis

Ad Hoc

- Ideal for New Scenarios
  - Newly created applications
  - New problems/questions in existing applications
  - New users, unfamiliar with naming conventions
- Search-based
  - Quickly discover available information
  - Immediate results encourage exploration
  - Forgiving for new users
  - Basis for 2/3 of usage
- Charts suitable for varied use cases





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AVEVA™ Insight

- Home
- Alerts
- Alarms
- Assets
- Lists
- Content
- Dashboards
- News
- Equipment Efficiency
- OEE Analysis
- Strategize
- Administration
- Classic Look

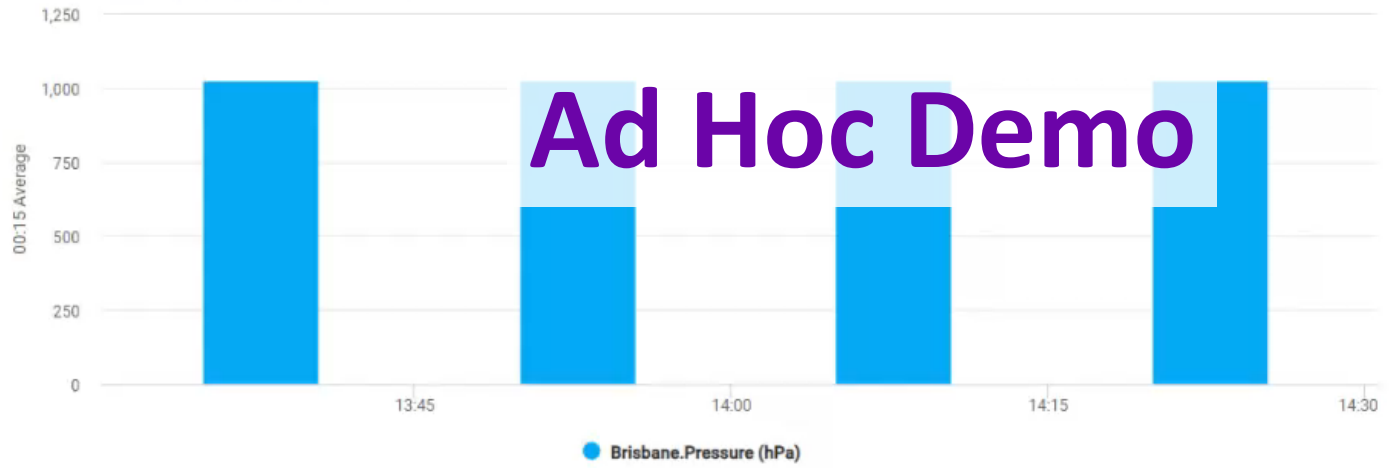
COLLAPSE

AVEVA INSIGHT

Search for assets, data or saved content

15-Min Pressure

08/04/2023 1:37:40 pm - 08/04/2023 2:37:40 pm



Ad Hoc Demo

smallValueTest

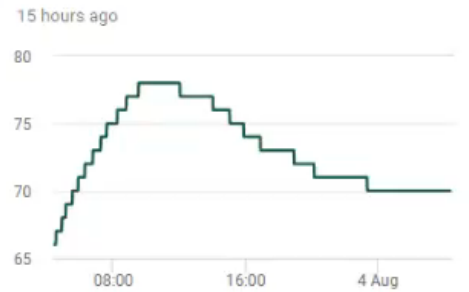
08/04/2023 12:00:00 am - 08/04/2023 2:37:40 pm

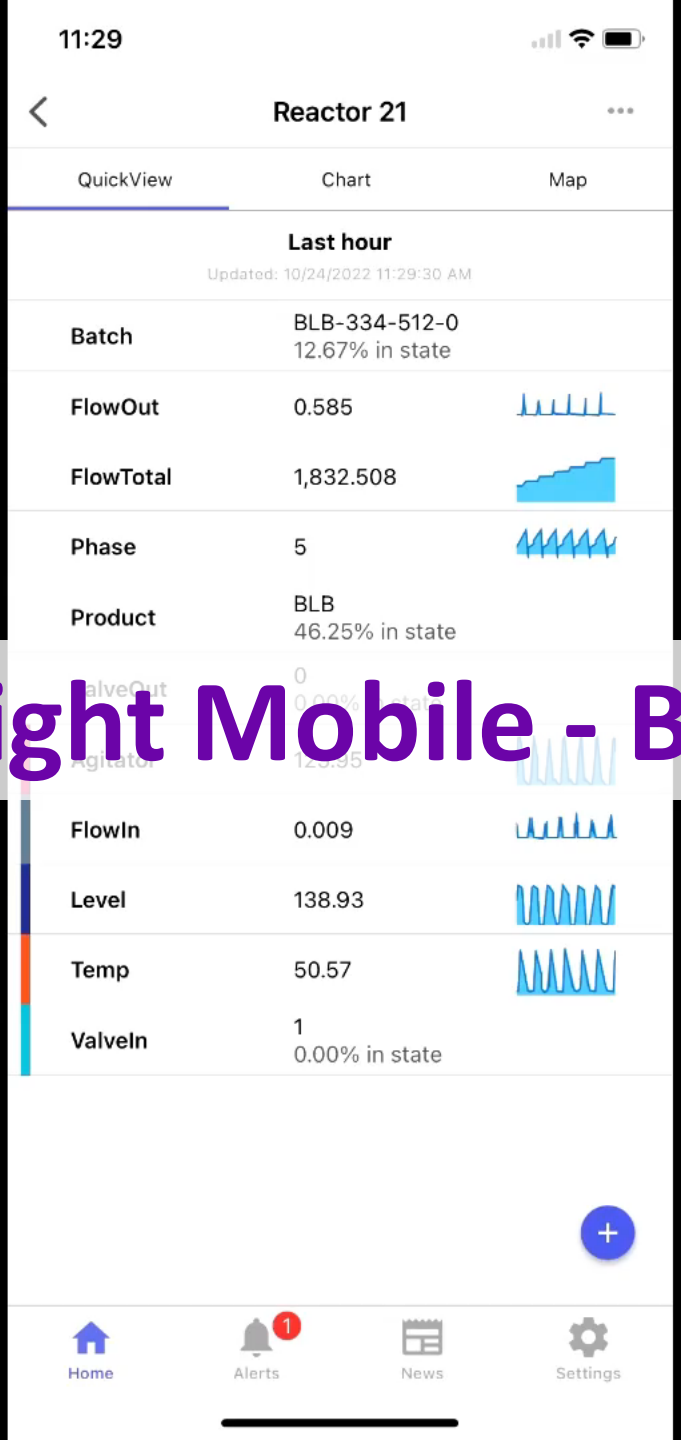
Brisbane.Pressure - Tag flatlined

14 hours ago

New York.Temperature - Tag flatlined

15 hours ago



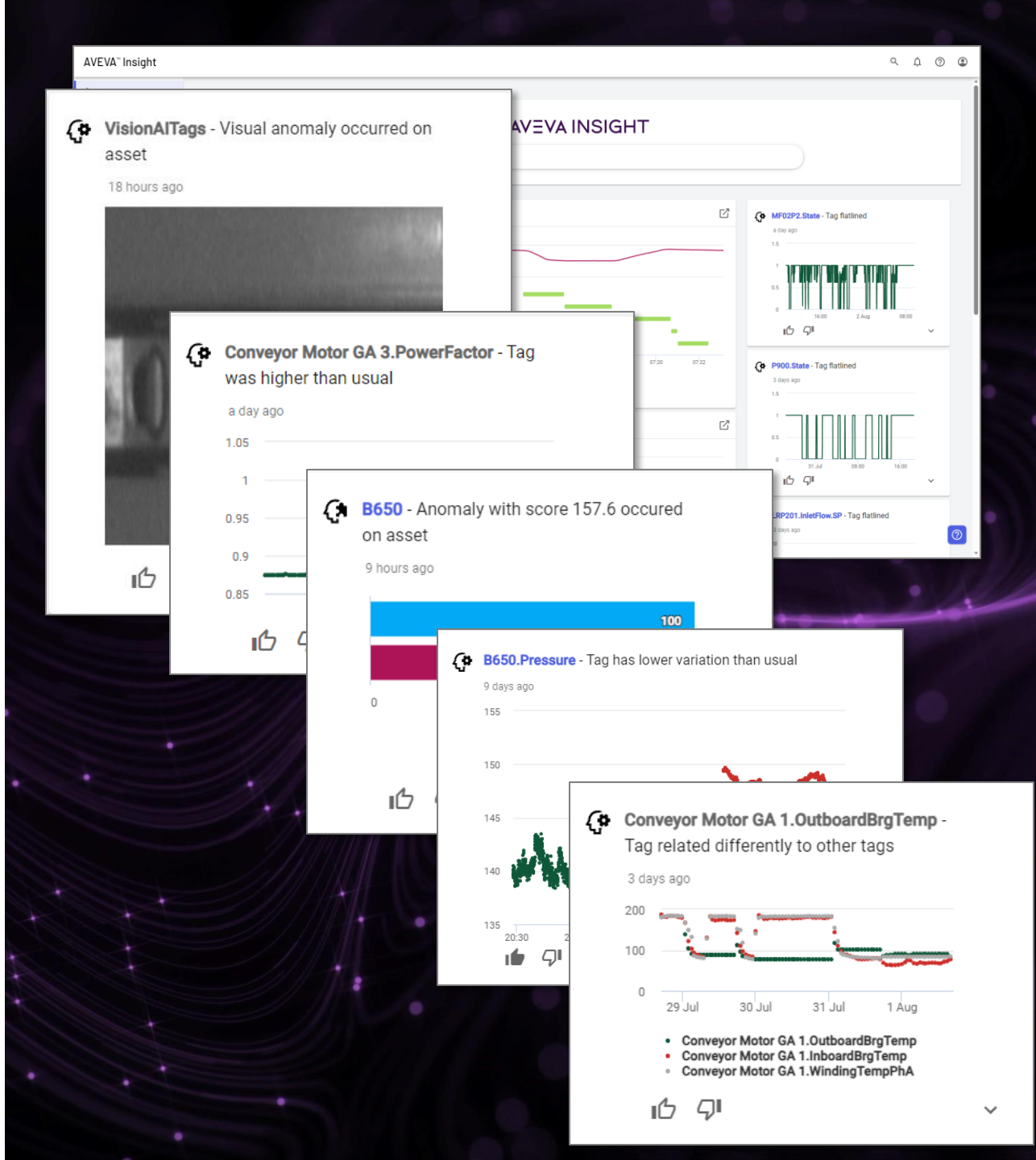


AVEVA Insight Mobile - Basic Demo

Automated Analytics

Automated

- Fully Automatic
  - No configuration required, just publish data
  - Learns “normal” behavior, including some interactions
- Newsfeed
  - Built into home page
  - Curated based on significance, feedback & volume
- Limitations
  - May report insignificant discoveries
  - No direct tuning
  - Not as powerful as engineered analytics



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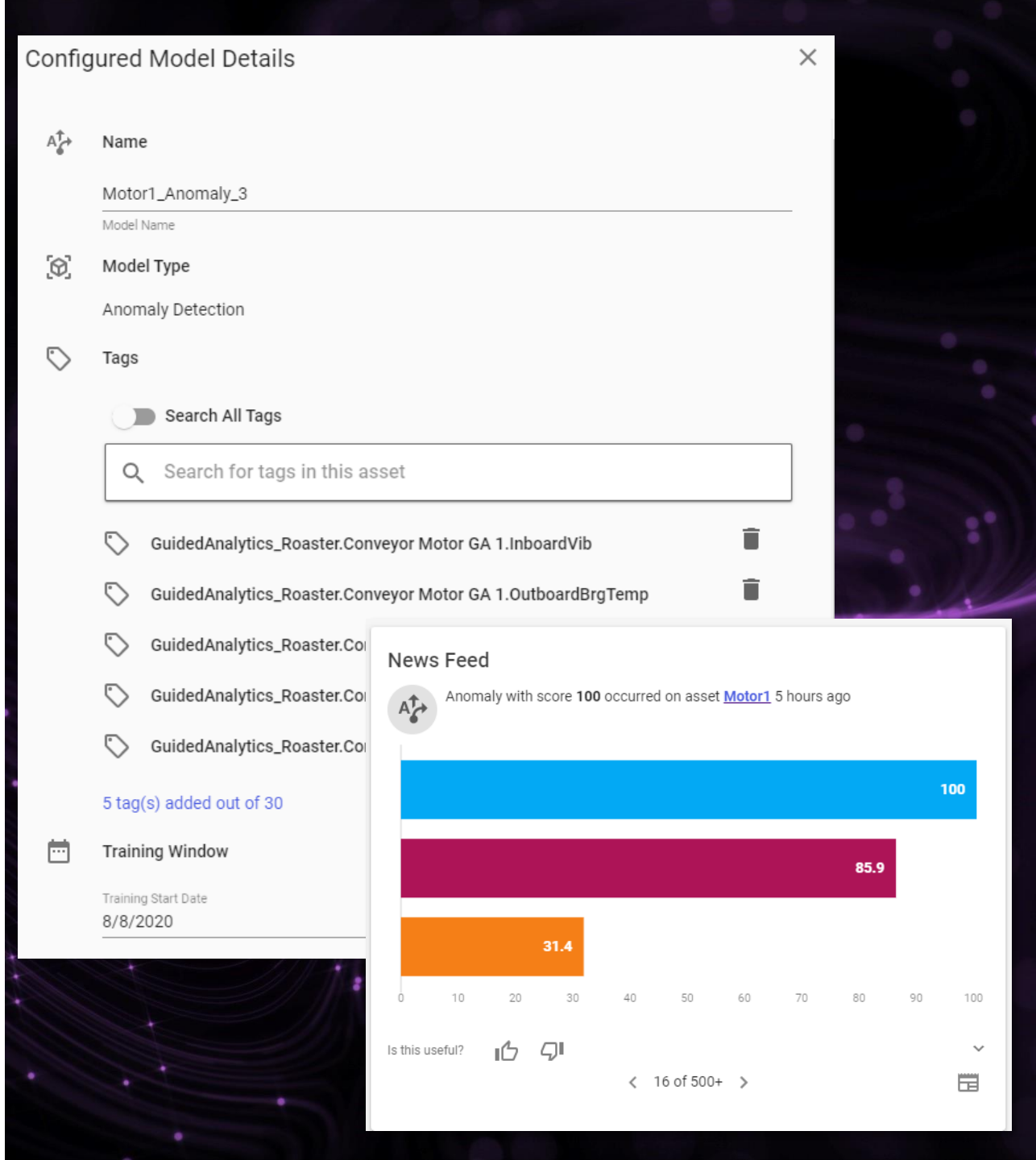
AVEVA Insight – Guided Analytics

Guided

- Easy, self-service AI models for Anomaly Detection on assets or production for reliability
- Use simple, step-by-step workflow to:
  - Select tags
  - Define Training Window
  - Define operational modes and filter (option)
  - Train
  - Automatic execution and publishing of News
- Guided Analytic model types and use cases will grow in the future



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Motor1

New York Plant

ASSET ACTIONS

Asset Info

New York Plant

Electric Motors - Alterna...

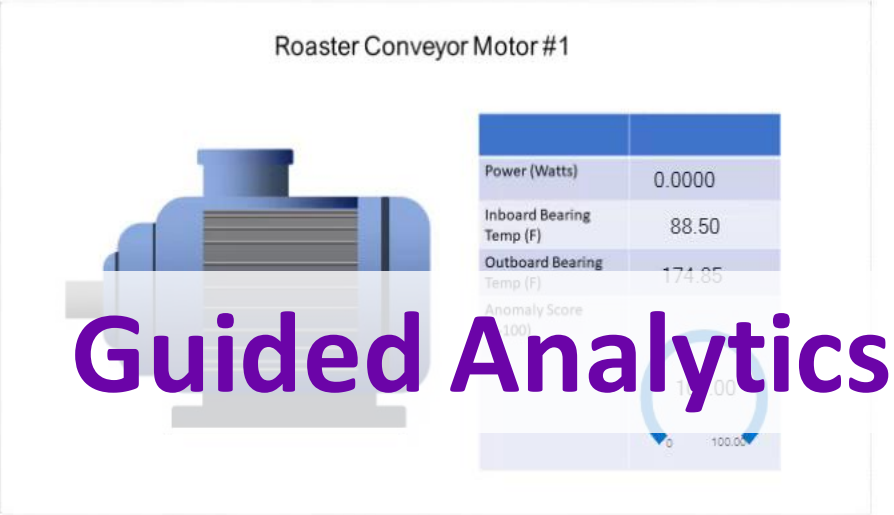
Conveyor | Motor | Motor1

Description not defined

40.981633, -73.917178, 15

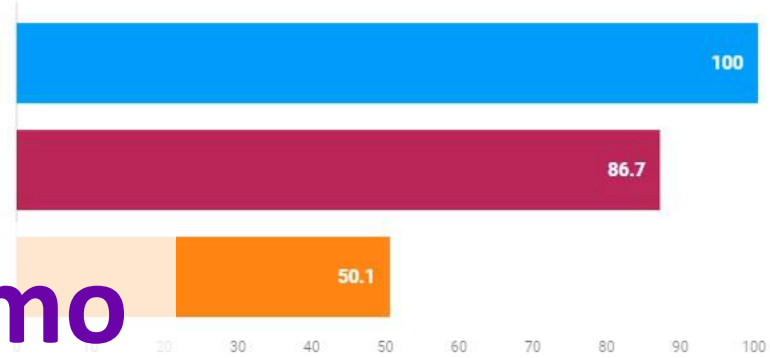
(GMT-05:00) Eastern Time - Iqaluit

Conveyor Motor 1



News Feed

Anomaly with score **98.4** occurred on asset Motor1 a day ago



Is this useful?

7 of 500+

Active Alarms

0

1 min

Journal Entries

Last 7 Days

0

1 hr

Equipment Efficiency

Last 24 hours

0%
OEE
for 1 asset

1 hr

Associated Content

Conveyor Motor 1

Roaster Conveyor Motor 1

Roaster Conveyor Motor 1 Status Board

1 - 3 of 3

Location

Guided Analytics Models

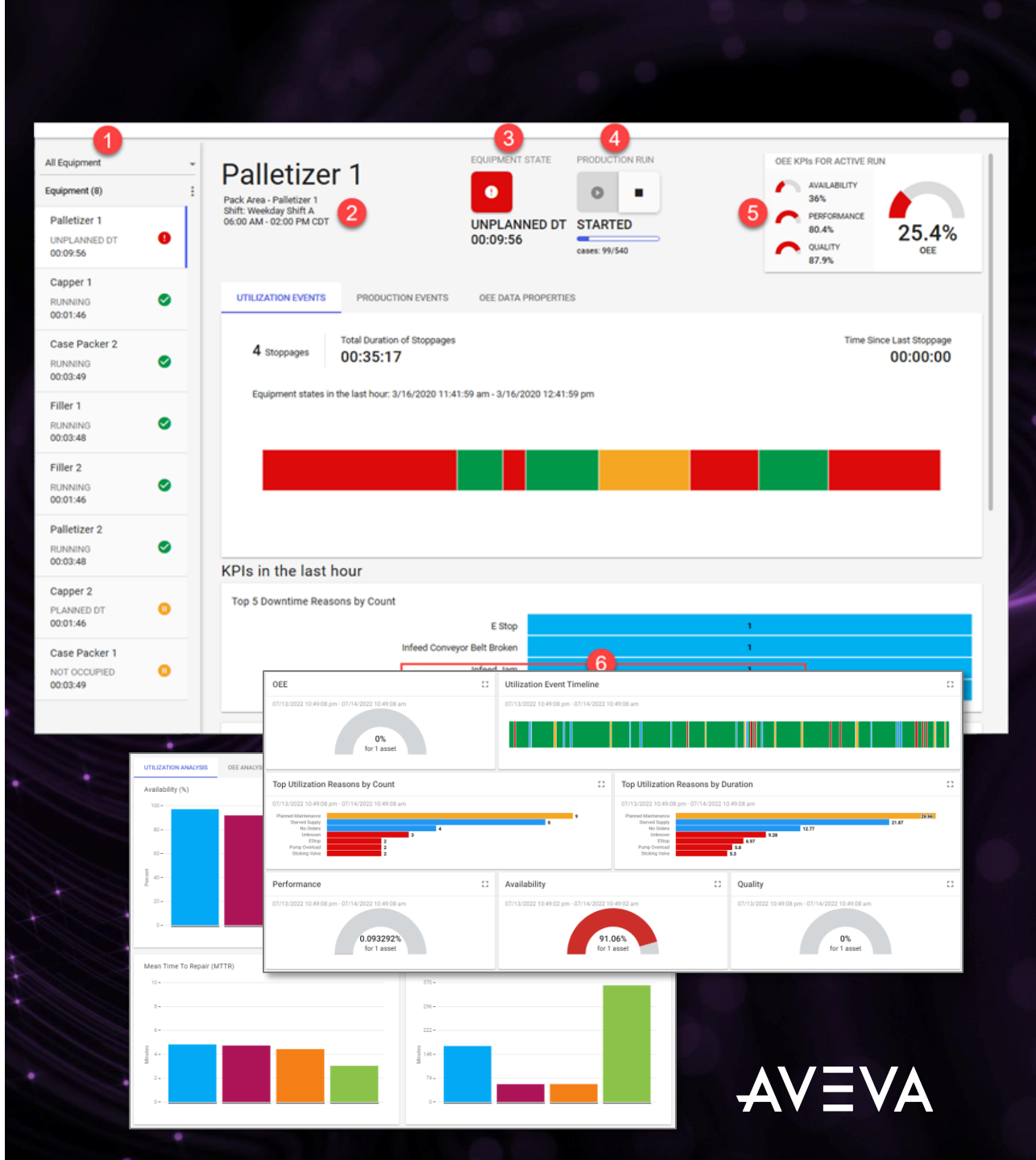
Model Name	Last Detected	Last Score	Status
Motor1_Anomaly_4	12 hours ago	100	Completed

Guided Analytics Demo

AVEVA Insight Performance

Utilization

- **Manual & Automated Data Collection**
  - Utilization & Production Events
- **Equipment and Line Monitoring**
  - Utilization Events & KPIs
  - OEE, Availability, Performance, & Quality KPIs
  - Production Run Status vs. Plan
  - Additional Context Events
- **Reporting & Analysis**
  - KPI Comparison Across Equipment
  - Detailed Root Cause Analysis



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AVEVA BI Gateway

Contextualized

- Make better use across the organization of valuable operational and IIoT data
- Provide contextualized insights combining both industrial, time-series and business data
- Easy deployment of analytics throughout the enterprise

- Automate the extraction, transformation and storage of operational KPIs and metrics
- Use preferred IT/BI tools to query data from the operational space, removing the need to work with REST APIs

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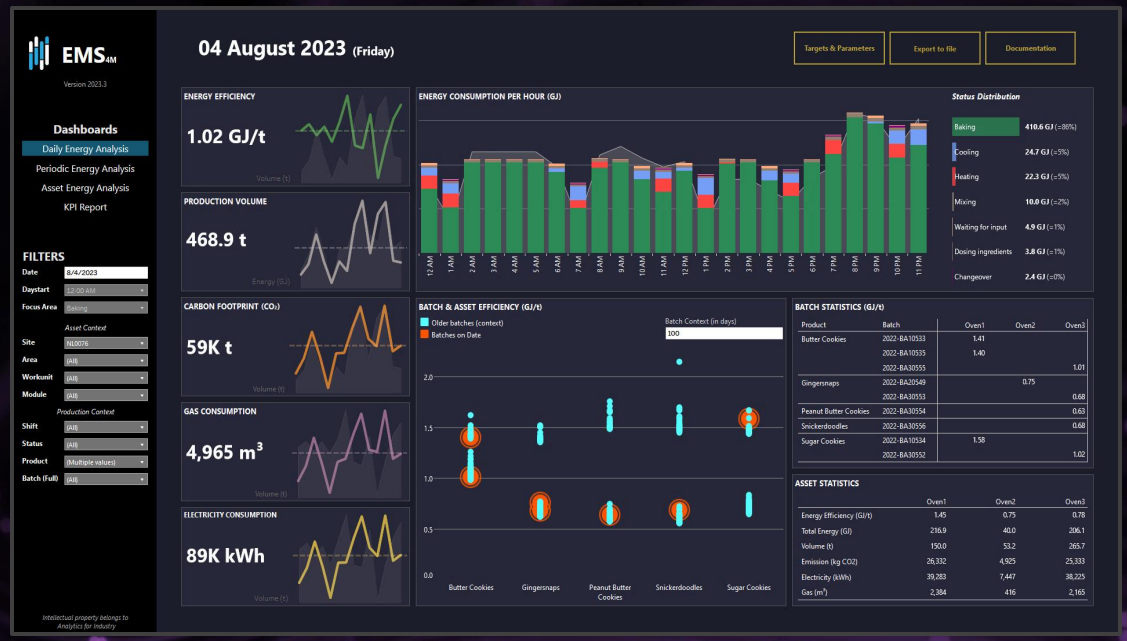
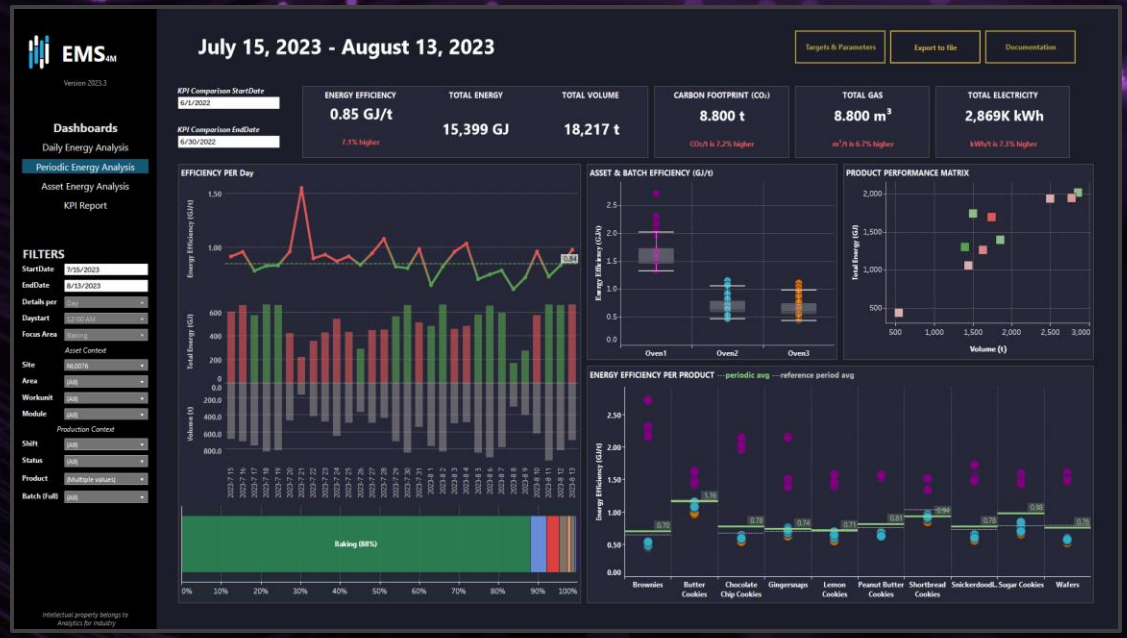
Analytics for Industry

Contextualized

- Energy Management Solution Built On
  - AVEVA Insight
  - AVEVA BI Gateway
  - Microsoft Power BI





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EMS4M

Version 2023.3

04 August 2023 (Friday)

Targets & Parameters | Export to file | Documentation

Dashboards

- Daily Energy Analysis
- Periodic Energy Analysis
- Asset Energy Analysis
- KPI Report

FILTERS

Date	8/4/2023
Daystart	12:00 AM
Focus Area	Baking
Asset Context	
Site	NL0076
Area	(All)
Workunit	(All)
Module	(All)
Production Context	
Shift	(All)
Status	(All)
Product	(Multiple values)
Batch (Full)	(All)

ENERGY EFFICIENCY

1.02 GJ/t

PRODUCTION VOLUME

468.9 t

CARBON FOOTPRINT (CO_2)

59K t

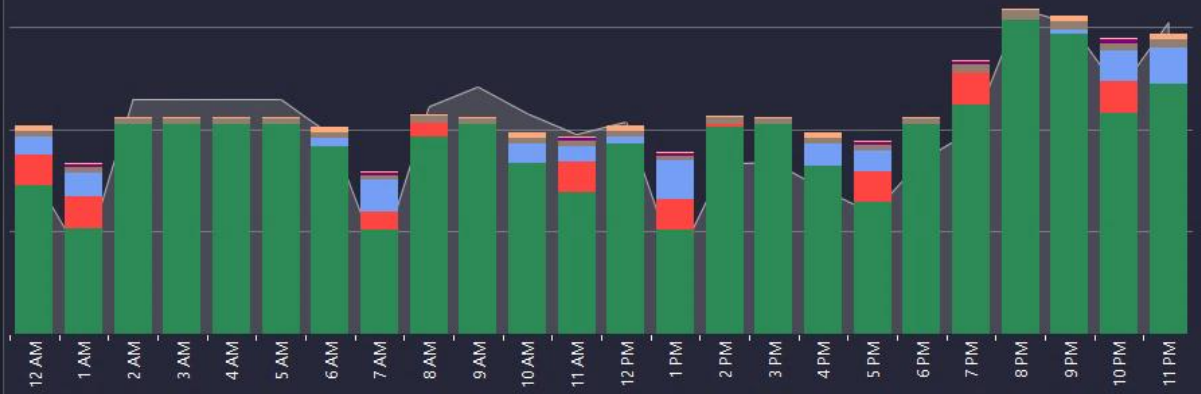
GAS CONSUMPTION

4,965 m^3

ELECTRICITY CONSUMPTION

89K kWh

ENERGY CONSUMPTION PER HOUR (GJ)



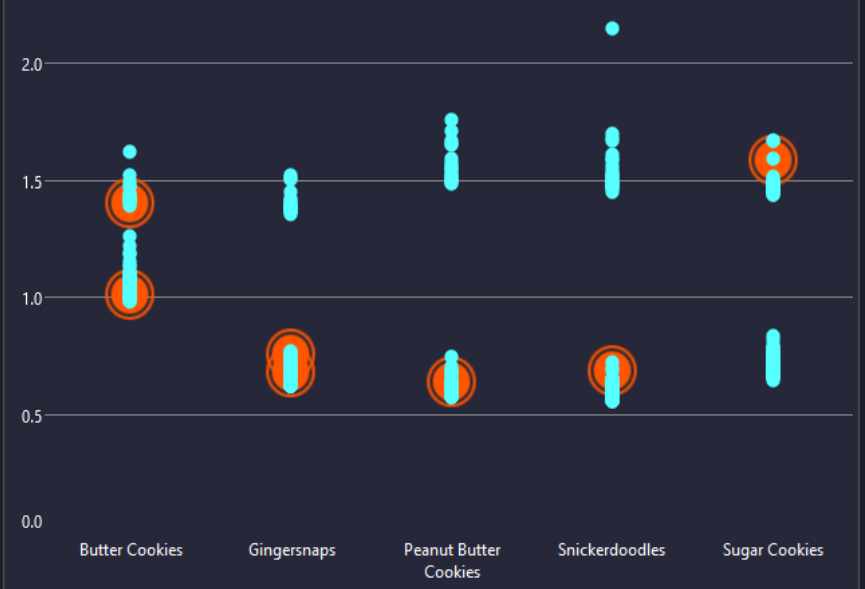
Status Distribution

Baking	410.6 GJ (=86%)
Cooling	24.7 GJ (=5%)
Heating	22.3 GJ (=5%)
Mixing	10.0 GJ (=2%)
Waiting for input	4.9 GJ (=1%)
Dosing ingredients	3.8 GJ (=1%)
Changeover	2.4 GJ (=0%)

BATCH & ASSET EFFICIENCY (GJ/t)

Older batches (context)
Batches on Date

Batch Context (in days): 100



BATCH STATISTICS (GJ/t)

Product	Batch	Oven1	Oven2	Oven3
Butter Cookies	2022-BA10533	1.41		
	2022-BA10535	1.40		
	2022-BA30555			1.01
Gingersnaps	2022-BA20549		0.75	
	2022-BA30553			0.68
Peanut Butter Cookies	2022-BA30554			0.63
Snickerdoodles	2022-BA30556			0.68
Sugar Cookies	2022-BA10534	1.58		
	2022-BA30552			1.02

ASSET STATISTICS

	Oven1	Oven2	Oven3
Energy Efficiency (GJ/t)	1.45	0.75	0.78
Total Energy (GJ)	216.9	40.0	206.1
Volume (t)	150.0	53.2	265.7
Emission (kg CO2)	26,332	4,925	25,333
Electricity (kWh)	39,283	7,447	38,225
Gas (m^3)	2,384	416	2,165

Intellectual property belongs to Analytics for Industry

Sounds good, but how much work is this?

AVEVA™ Application Manager

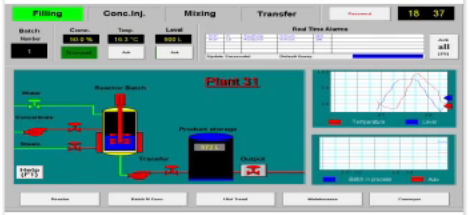
File View Tools Help

Node properties | OPC UA configuration | Find | Insight publisher

Tools

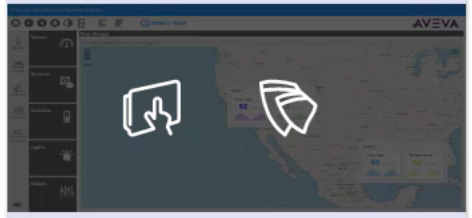
InTouch OMI Web Client

Demo Application 1280 x 1024



Standalone 1663 x 964

InTouch Introductory Demo 1080p



Standalone 1920 x 1080

AVEVA Insight - Getting Started Demo

InTouch Introductory Demo 1080p - Demo application with an all around overview of the capabilities of InTouch.

11:26 AM
10/24/2022

On-premises HMI/SCADA to Insight

Publish from existing AVEVA HMI/SCADA system to the cloud

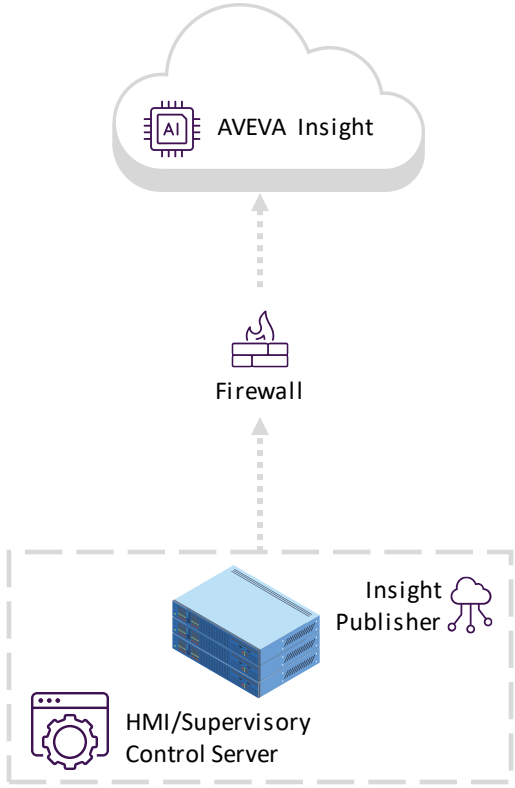
- No assembly required
- Easily import existing HMI applications
- Frictionless to find & present the right information

Cost-effective even for very small applications

- HMI-only embedded (OEM) applications
- Vertical applications (e.g. water, coal seam gas)
- Small applications in large companies
  (e.g. containerized "plant" in emerging economies)

Remove obstacles to capturing & using historical data

- De-skill setup (5-minutes or less, zero training)
- Make information readily accessible
- Eliminate routine maintenance (disk, backups, etc.)



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AVEVA Insight: data connectivity

Built-in publishers

Cloud-enabled AVEVA products

AVEVA Edge
AVEVA InTouch HMI
AVEVA Plant SCADA
AVEVA System Platform
AVEVA Enterprise SCADA
AVEVA Historian
AVEVA Communication Drivers

Standalone drivers

18 Industry standard protocols

Allen Bradley – ABCIP
Allen Bradley – ABTCP
Beckhoff – TWINCAT
General Electric – GESRTP
Mitsubishi – MELSEC
Modicon – MBTCP
Omron – OMRONFINS
Schneider Electric – SOMAC
Siemens – SIDIRECT
Standards – BACLITE
Standards – CODESYS
Standards – Gateway – OPC
Standards – Gateway – OPC UA
Standards – Gateway – SuiteLink
Standards – MQTT
Standards – SNMP
Standards – WebSvc
Texas Instruments – TI500

REST API

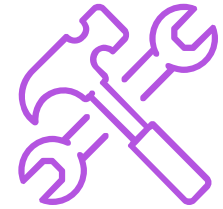
Open internet standards

RESTful API

OData
Open Data Protocol

SDK

Custom connectivity



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AVEVA

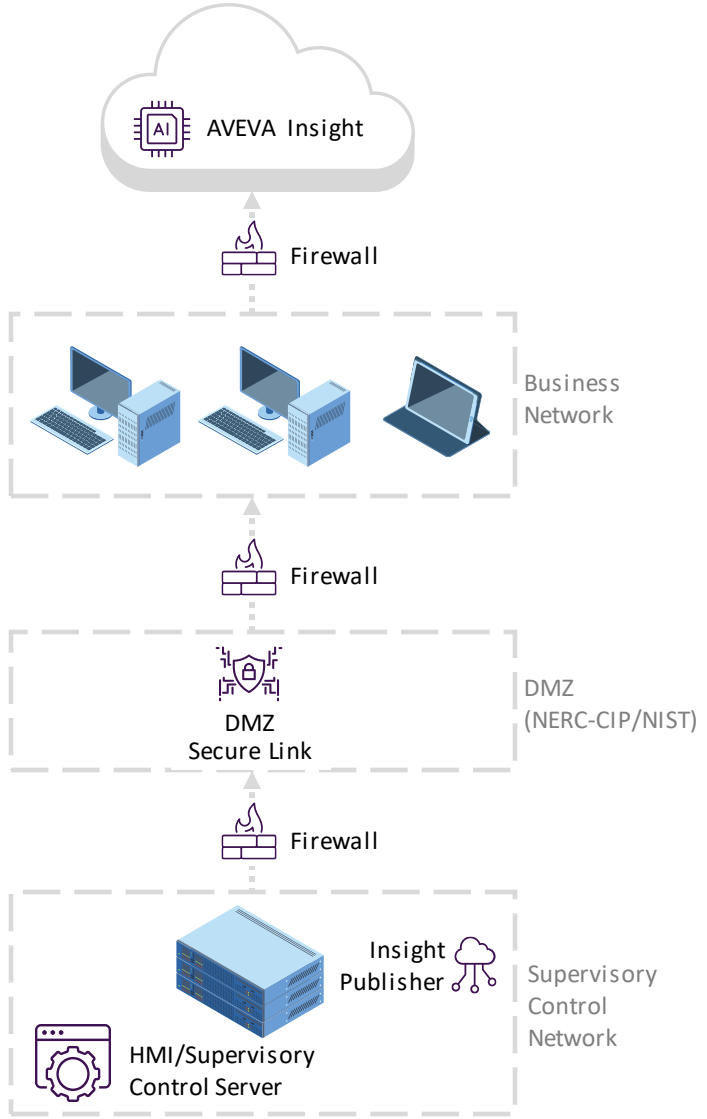
Network Segmentation

- Supervisory systems fully isolated from Business, Internet
- Narrowly limited access via DMZ

Method

- Deploy DMZ Secure Link into DMZ
- Open outbound connection at firewall (HTTPS port 443)
- Narrowly limited “allow list” of AVEVA Insight endpoints
- Supports corporate web proxy & other DMZ Secure Link instances
- All connections one-way (outbound) from Supervisory

Watch the video to learn more



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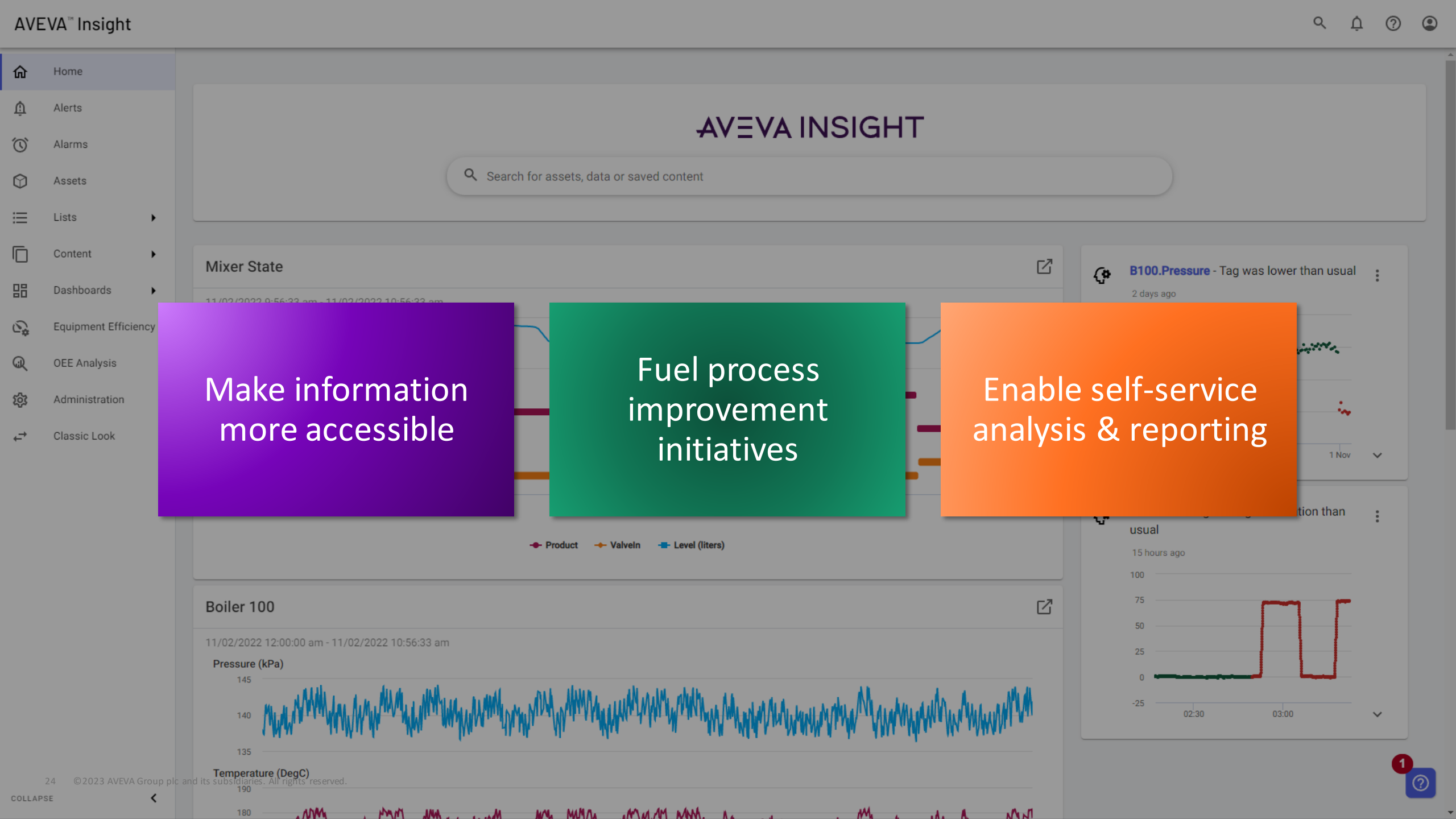
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AVEVA INSIGHT
Search for assets, data or saved content
Mixer State
Product
ValveIn
Level (liters)
B100.Pressure - Tag was lower than usual
2 days ago
1 Nov
usual
15 hours ago
100
75
50
25
0
-25
02:30
03:00
Boiler 100
11/02/2022 12:00:00 am - 11/02/2022 10:56:33 am
Pressure (kPa)
145
140
135
Temperature (DegC)
190
180
Make information more accessible
Fuel process improvement initiatives
Enable self-service analysis & reporting
24
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City of Ashland, Oregon

Enabling field technicians with real-time information

The City of Ashland Water Department is responsible for water source, treatment, and distribution of 7 millions gallons of water a day to 21,000 residents along the Oregon-California border. The distribution system consists of over 70 miles of water lines, 5 pump stations, 29 pressure reducing stations, 925 fire hydrants, and over 6,700 individual services and meters.

Challenges

- Needed a mobile solution that would give in-field water technicians real-time information to monitor the system without laptops and VPNs

Goals

- Utilize AVEVA Insight to make data from historian and SCADA system instantly available to field technicians.

Results

- Reduction in manpower needed to support water operations.
- Automated system notifications, including on mobile devices.
- System access control / security built-in, with no additional overhead required.
- Field Technicians now have information at hand, ready for them, so they can interact, anytime day or night, and from anywhere with cellular activity

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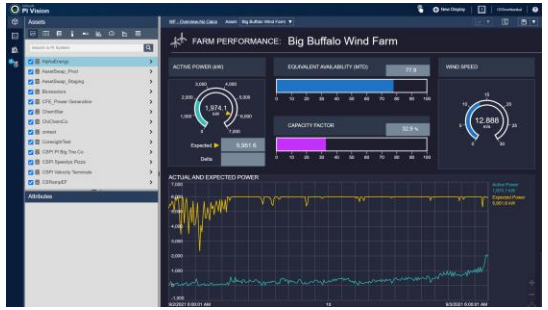


AVEVA PI Vision

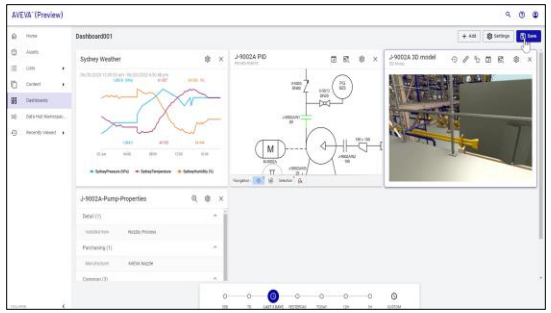
- On-premises
- Browser-based
- Operations-user focused
- Self-service dashboard creation
- Uses data from PI Server

AVEVA Unified Operations Center

- On-premises
- Desktop and browser
- Enterprise-user focused
- Pre-defined application, with navigation contextualization
- Uses Historian, PI Server, and third-party data sources

AVEVA Insight

- Cloud native
- Browser and mobile app
- Operator-user focused
- Self-service dashboard creation
- Built-in data storage, data sources are primarily HMI/SCADA or standard protocol based



AVEVA Data Hub + visualization services

- Cloud native
- Browser-based
- Enterprise-user focused
- Self-service and pre-defined dashboard creation
- Self-service uses Data Hub data
- Pre-defined can use Data Hub and third-party data sources

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AVEVA Insight: process analytics

Simple to start, simple to use, out-of-the-box

- Secure access from any location, any device
- Search-based navigation, time series analysis, process graphics, geolocation / mapping, and customizable dashboards
- Utilization and efficiency analysis, condition management, alerts and notifications
- Automated analytics using unsupervised machine learning
- Connectivity to AVEVA HMI/SCADA products, 18 industry standard protocols, and REST API
- All designed with security in mind. Learn more https://trust.aveva.com

Unlock trapped data and make it accessible from the cloud in minutes

Break down data silos with industrial analytics for everyone

Kickstart your digital transformation with a simple-to-use system and fast adoption

Reduce “windshield time” with mobile access to operational data

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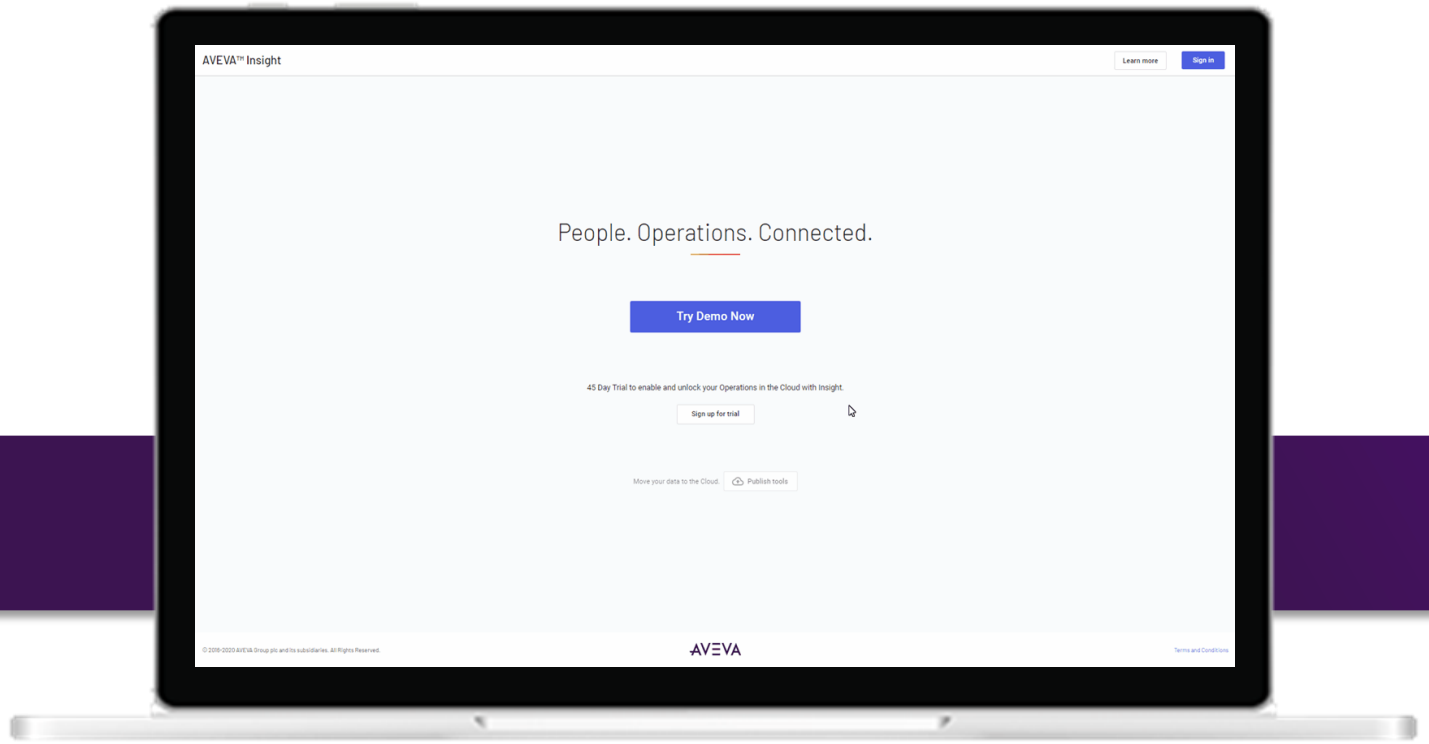
Easy to get started

Unlock your operations in the cloud with AVEVA Insight



- Register for the live demo
- Start your FREE 45-day trial
- Use your own data
- Prove it for yourself!

https://aveva.com/aveva-insight-demo

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Questions?

Please wait for the microphone.

State your name and company.

Please remember to…

Navigate to this session in the mobile app to complete the survey.

Thank you!

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ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

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