



AVEVAWORLD

PARIS

AVEVAWORLD

OCTOBER 2024

Amcor Lighthouse for Optimization of Molding Operations

Nick Santucci - AVEVA

Ralph Gordon – Q-mation

Carlos Paredes - Amcor



AVEVA

Introduction by Carlos Paredes, Controls Engineering Manager, Amcor



Why Lighthouse?

The value of engagement



Prove value of new technology



Create library of use cases



Client receives:

- Pre-released software
- R&D technical support
- Program management



AVEVA receives:

- Solution feedback
- Public presentation or case study



Amcor provides packaging solutions for:



Beverages



Food



Healthcare



Home Care



Personal Care



Pet Care

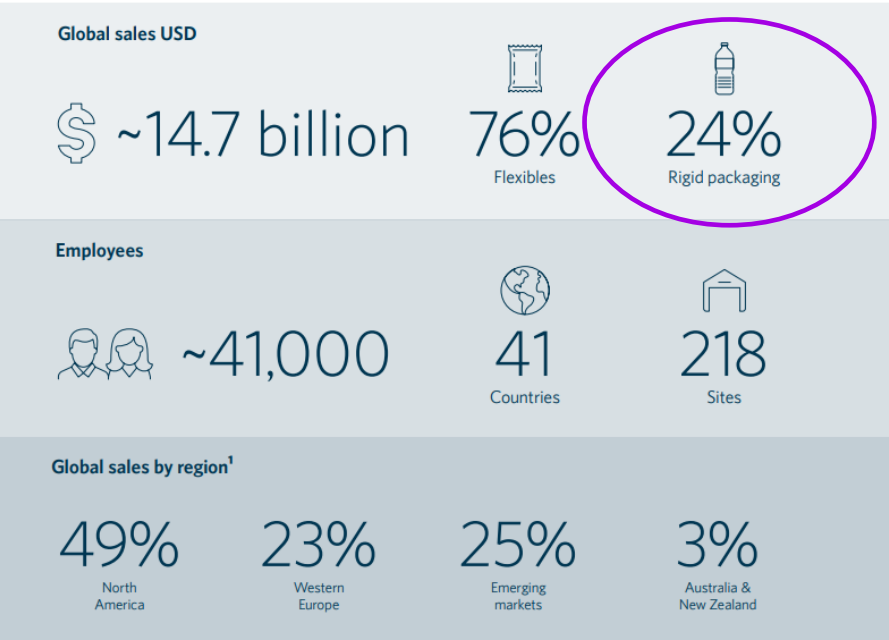


Specialty Cartons



Technical Applications

Amcor at a glance - fiscal year 2023



Amcor Locations

Lighthouse Sites

Ames, IA
Orlando, FL

2 Injection Molding
&
2 Blow Molding





Long Term Business Objectives

Optimize molder effectiveness and reduce downtime using a predictive modeling framework

Improve availability

Reduce any form of downtime by 2%.

Improve throughput

Improve Machine Efficiency by 5%.
This equates to quicker setup time.

Reduce Off Quality, scrap and re-work of any type

Improve scrap rate by 2%.

Achieve quality consistency

CPk > 1.33 for critical SKUs.



Lighthouse Engagement Roles and Stakeholders

AVEVA Engagement Leads

Khris Kammer – Solution Advisor
Paul Alcock – Solution Architect
Jessica Rammo – Product Readiness Software Developer
Fabio Laercio Dani – Product Readiness Software Developer
Vanessa Collins – Account Manager
Brandon Ekberg (from Twin Thread) – VP, Product Management
Ralph Gordon (from Q-Mation) – VP, Expert Solutions

Amcor Engagement Leads

Carlos Paredes – Controls Engineering Manager
Jason Lonergan – Senior Automation Systems Engineer

Stakeholders

Jeff Thede (from Amcor) – Plant Director, Ames
Silvio Rodrigues (from Amcor) – Plant Director, Orlando
Tom Troy (from AVEVA) – Director, Product Marketing
Lori Warda (from AVEVA) – AI Product Director
Elizabeth McErlean (from AVEVA) – Sr. Strategic Product Manager
Derek Endres (from AVEVA) – Senior Manager Product Readiness Guild
JP Caron (from AVEVA) – PM Senior Product Manager
Alicia Coppock (from AVEVA) – Sr. Technical Product Manager
Gene Szafranski (from Q-mation) – VP Global Sales



Amcor Use Cases

CONNECT data services

- Apply the AVEVA Connected MES data curation service
- Form asset data, master data and production execution history data
- Publish these data sets to CONNECT data services, which employs a graph database for MES and other data.
- Include manually-entered quality data (future and ongoing plan)

CONNECT visualization services

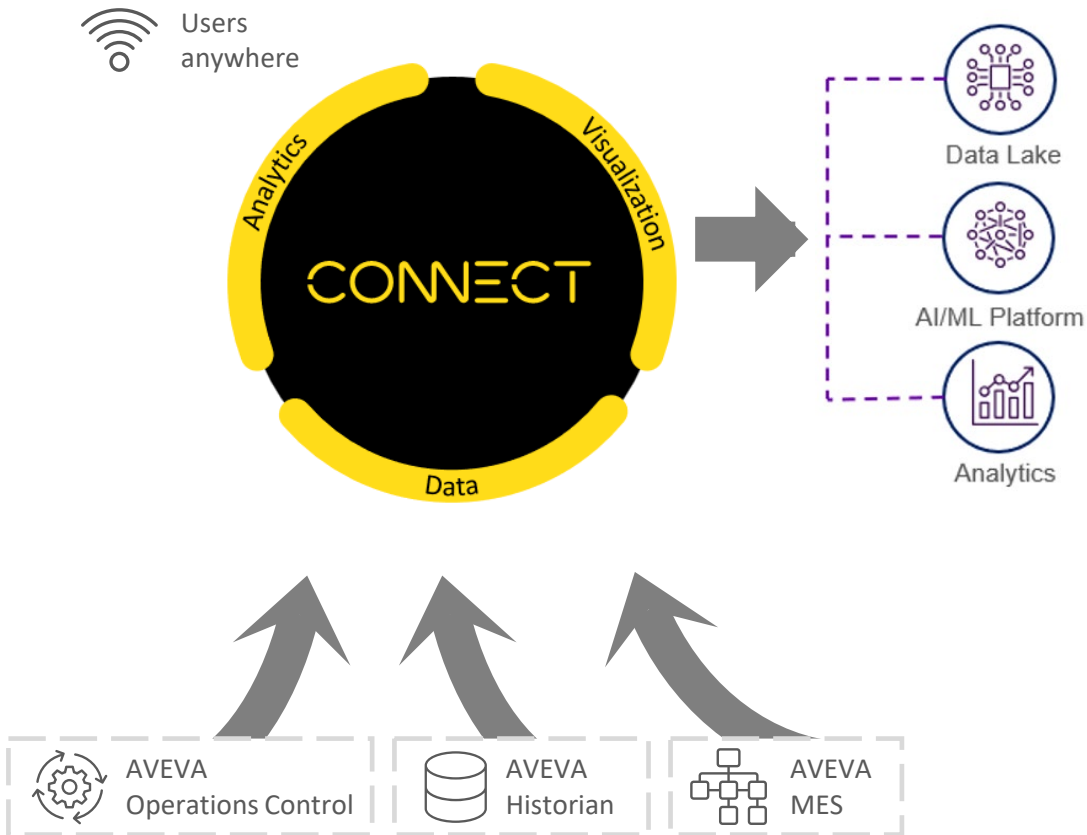
- Utilize CONNECT visualization services to provide users with operational and time series data from CONNECT data services.
- Employ the AVEVA AI Assistant to provide generative AI capabilities for Amcor operators, supervisors, and data scientists

AVEVA Advanced Analytics

- Apply the anomaly detection model on injection molding and blow molding machines to predict failure and failure modes.
- Write the anomaly score back to CONNECT data services for visualization
- Generate notifications via email based on anomaly detection
- When starting or running a specific SKU on a machine, provide recommended running parameters.

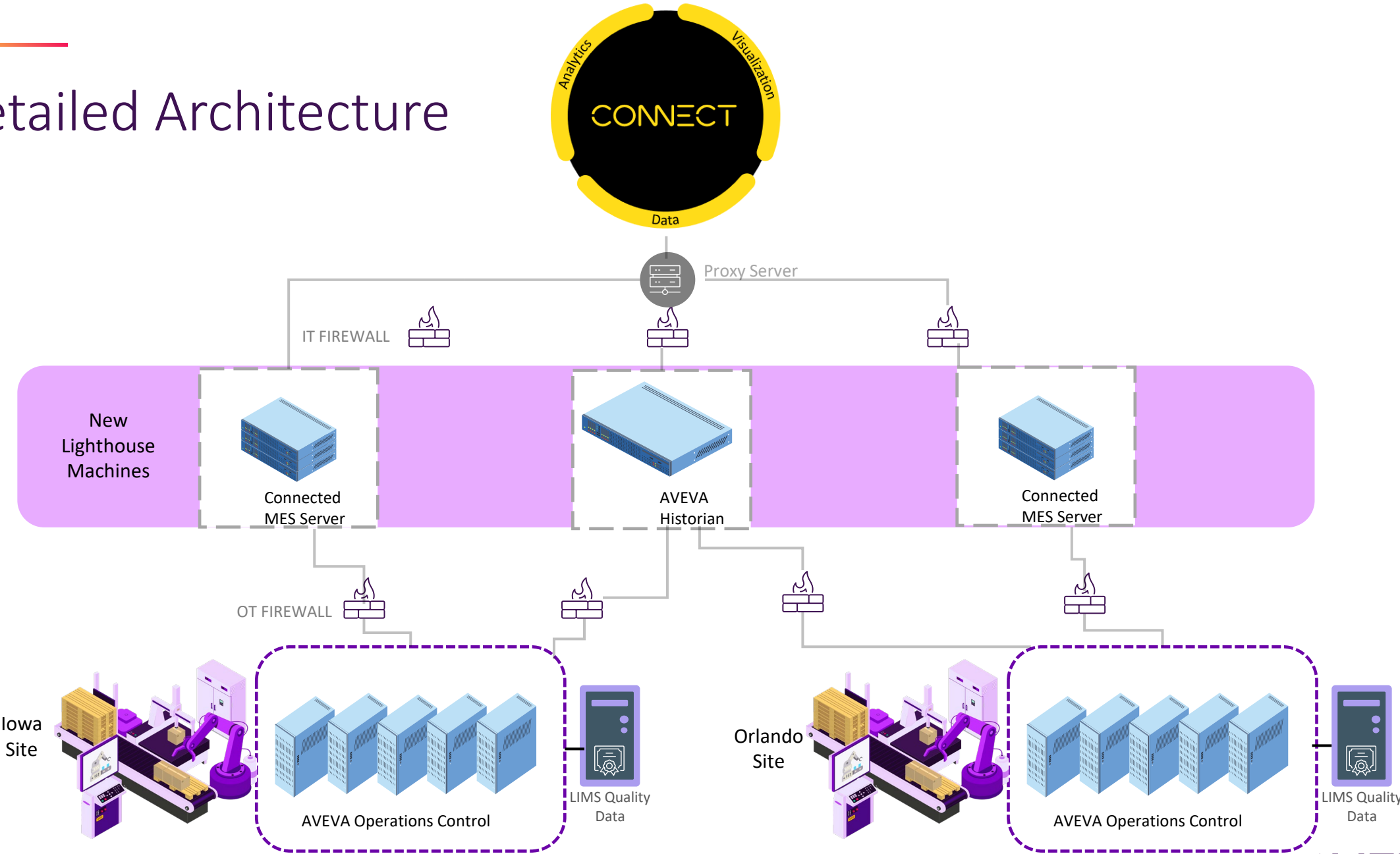
Unlocking the value of data and AI in the cloud

Increase operational efficiency, productivity and sustainability at scale



- **Build a connected ecosystem of data** - Securely share data and information views with internal teams or trusted external partners - combine OT and IT data
- **Improve Productivity and Sustainability** by leveraging AI and ML to increase plants throughput, predict quality, and optimize energy consumption.
- **Enable supply chain agility and resilience** with real time visibility into distributed plant operations and resources

Detailed Architecture





Pre and Post Lighthouse Scenarios

Pre-Lighthouse architecture

No central cloud environment – Analysis of data requires access to local MES and SP Historian environments.

Custom SSRS Reports used locally. Not dynamic, requiring IT support to make changes.

Lack of analytics tools connected to the process and plant operations staff.

Lighthouse architecture

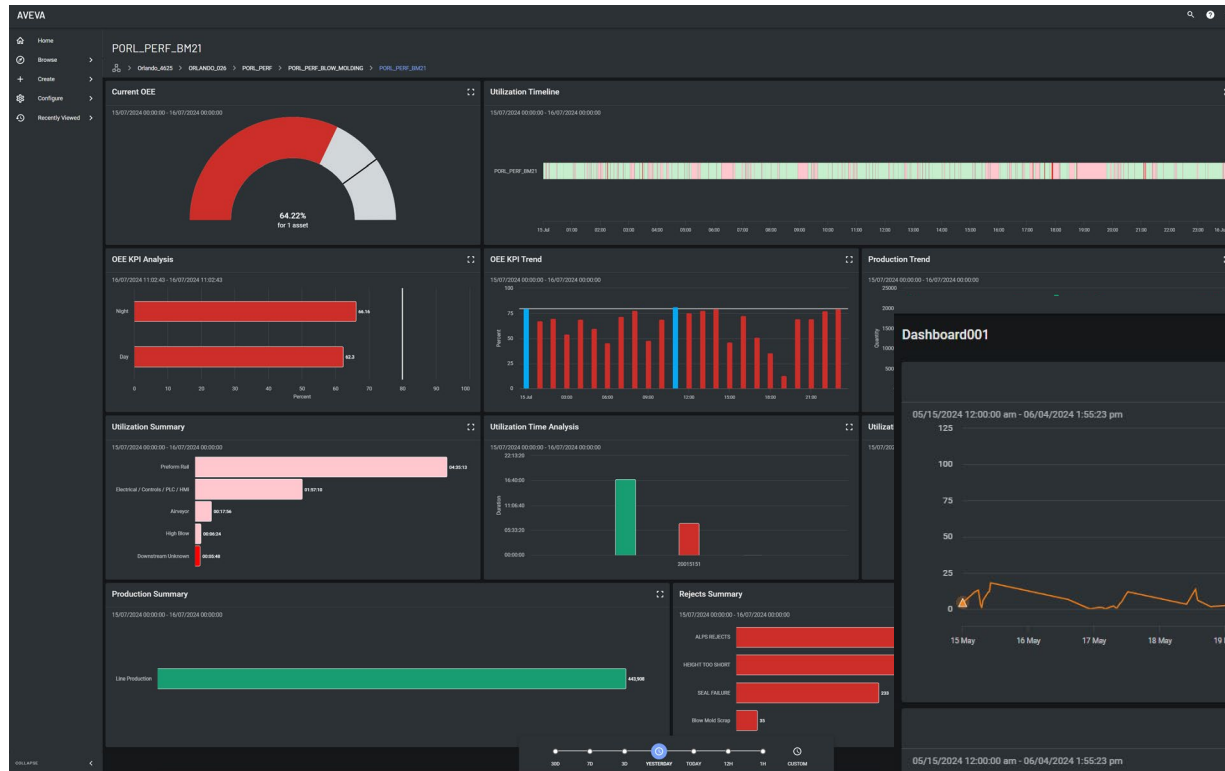
Central SaaS cloud environment using CONNECT for storage, visualization, and analytics of process and MES event data.

Users are able to access and modify visualizations without the need for IT help.

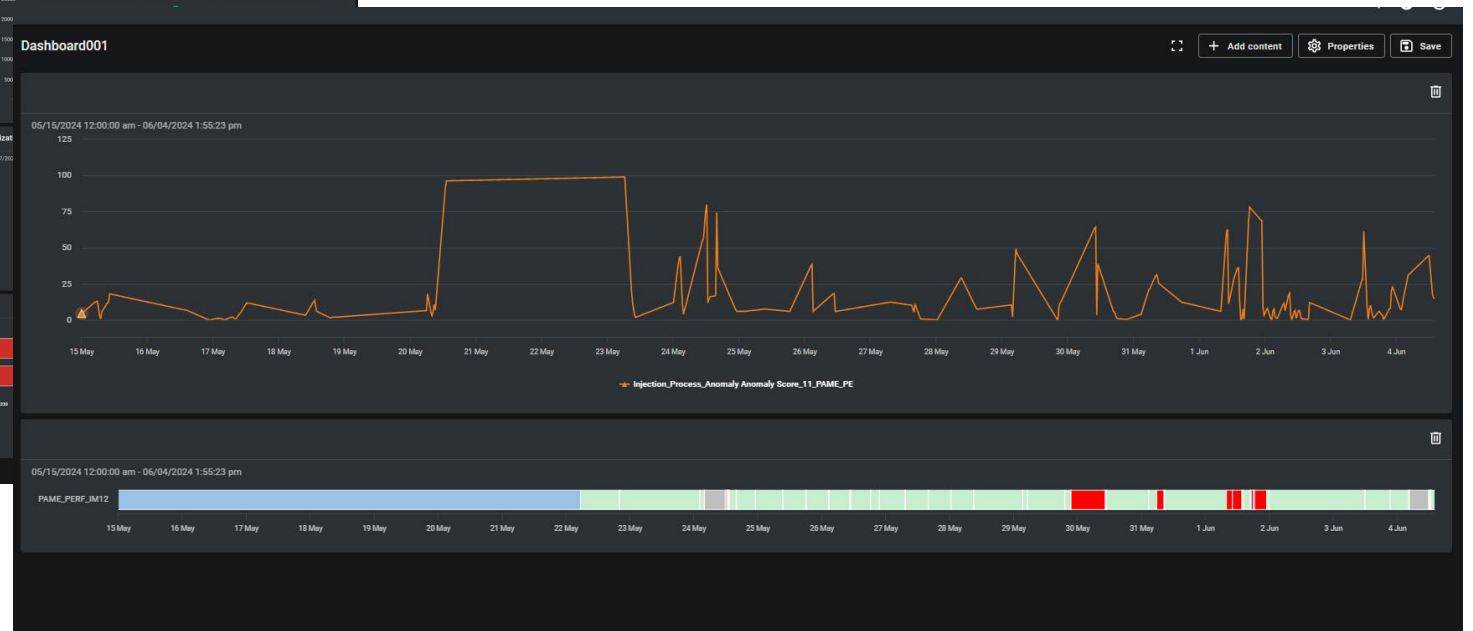
AVEVA Advanced Analytics tools are used for calculations, notifications, and the application of AI/ML models.

CONNECT visualization services

MES Data – Asset Efficiency

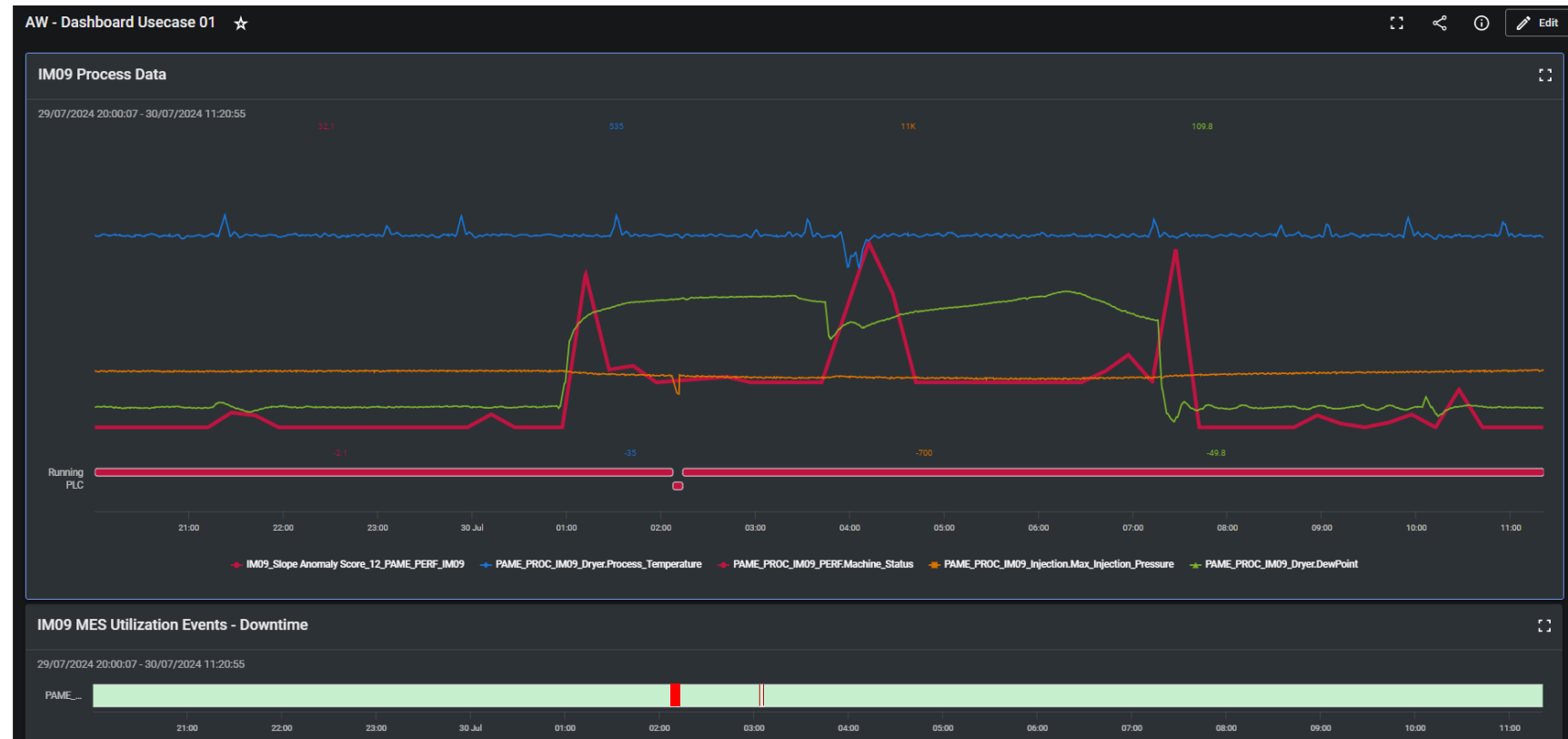


Advanced Analytics – Anomaly Score with Utilization



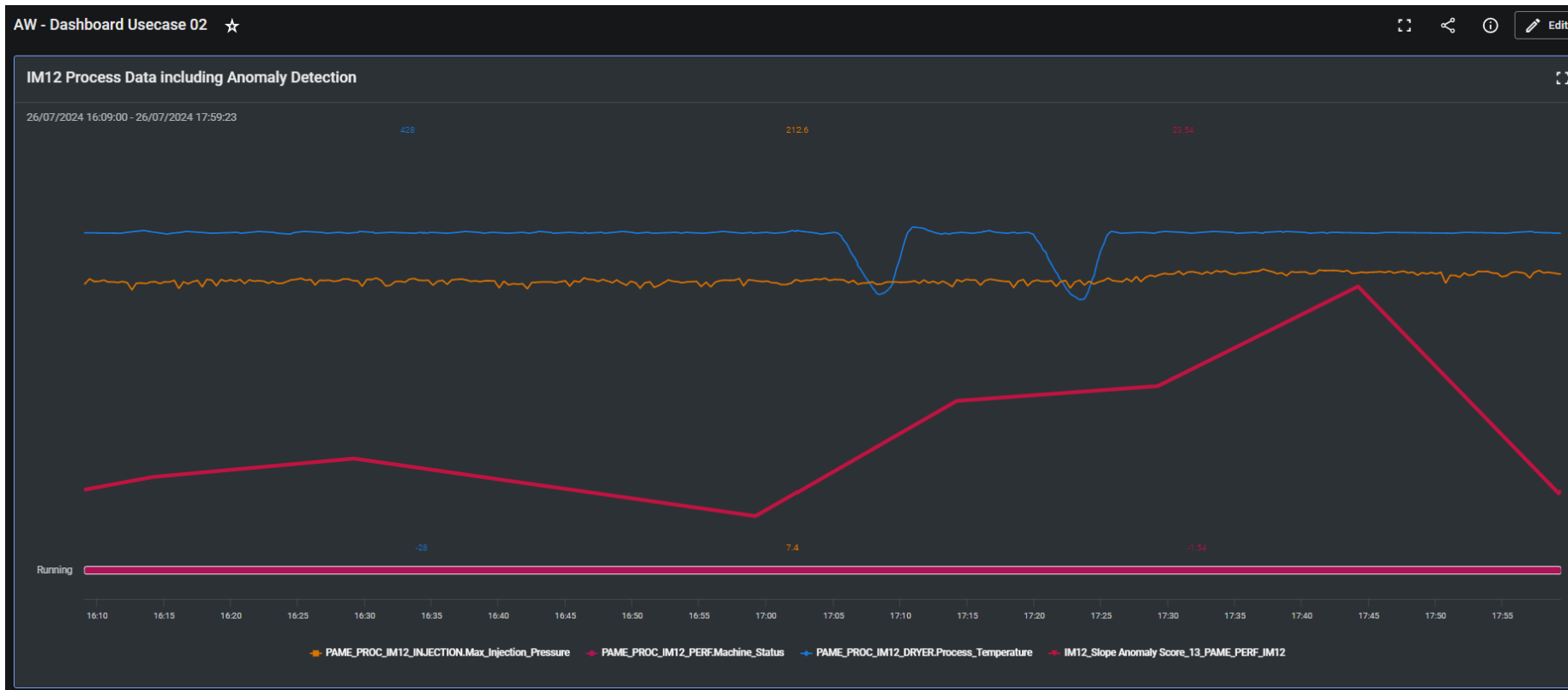
Advanced Analytics Use-Cases Enabled by CONNECT

- A High Anomaly Score was identified by Advanced Analytics, and a notification email was sent at 7:20 PM local time
- Dryer regenerative heaters tripped a breaker. The Injection machine was interrupted due to the change in viscosity at 9:00 PM
- At the time of this event, notifications were only sent to daytime personnel (Lighthouse testing)
- Additional notifications could have saved an hour of downtime.



Average cost of downtime for an IM is \$3K per hour, not including cost of customer delays. Breakdown limit for BMs averages 10% and less for IMs. Based on the number of molders (166 – all connected to AVEVA MES), a savings of 1-2% downtime would be “astronomical” – potentially \$XXMM per year across the enterprise considering a complete scale-out.

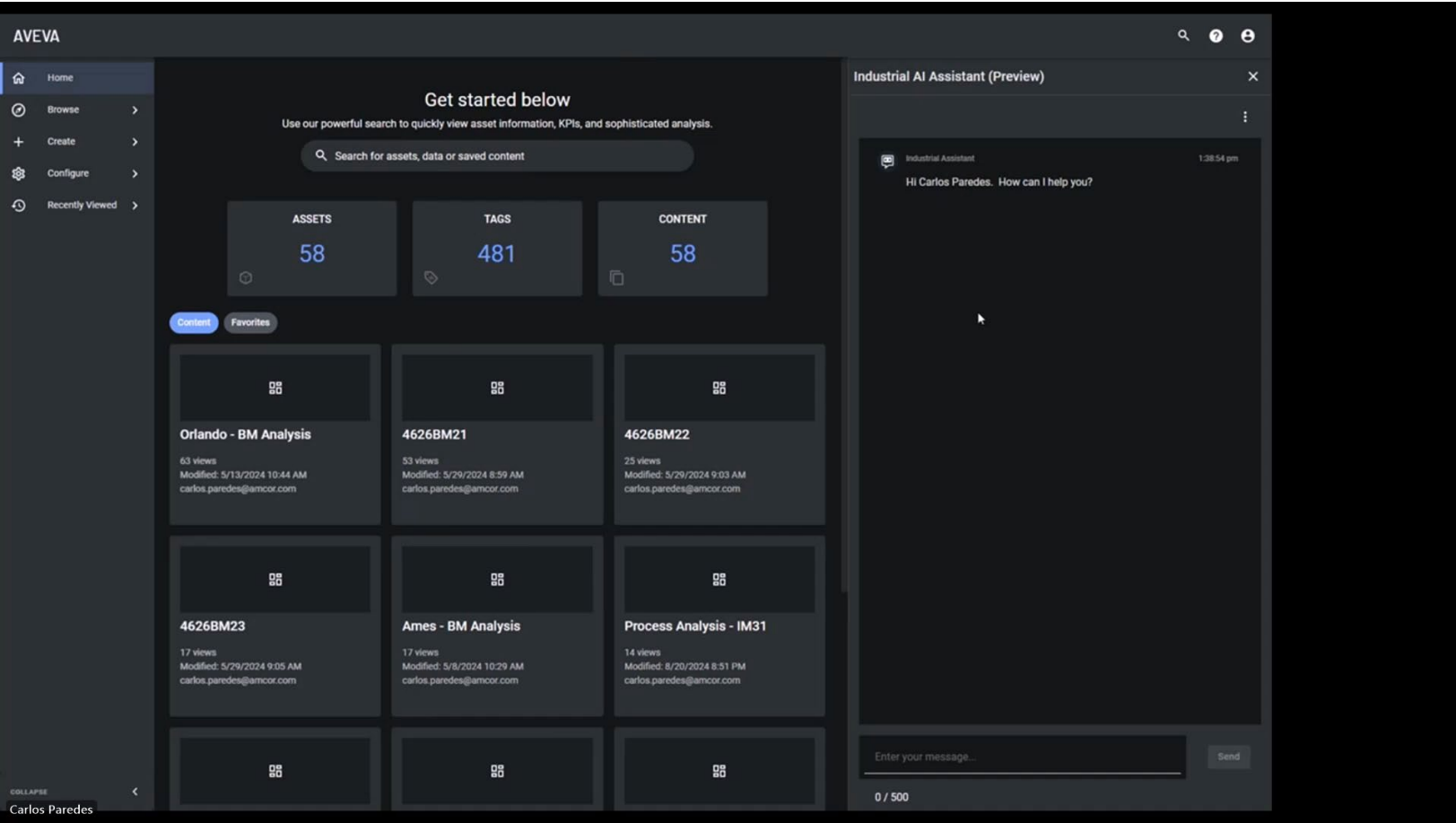
Advanced Analytics Use-Cases Enabled by CONNECT



- A process anomaly alert occurred at Injection molder 12 in the Ames plant
- Research showed that dryer process temperature was repeatedly dipping to 258 F. This influenced the viscosity
- The plant was unaware of the behavior until the alert was issued
- A maintenance work order was put in place to rectify the situation

Avoided machine failure. Would have required troubleshooting and maintenance (1 day+, six figures \$).

Demo of the Industrial AI Assistant by Carlos Paredes, Amcor



This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.

 [linkedin.com/company/aveva](https://www.linkedin.com/company/aveva)

 [@avevagroup](https://twitter.com/avevagroup)

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.

Learn more at www.aveva.com