AVEVAWORLD

PARIS



OCTOBER 2024

Supporting Sustainability in Refineries With bp's OPAL Information Platform

Enabling Human Analytics with the AVEVA PI System

Presenters: Frank Czaia & André Schipper

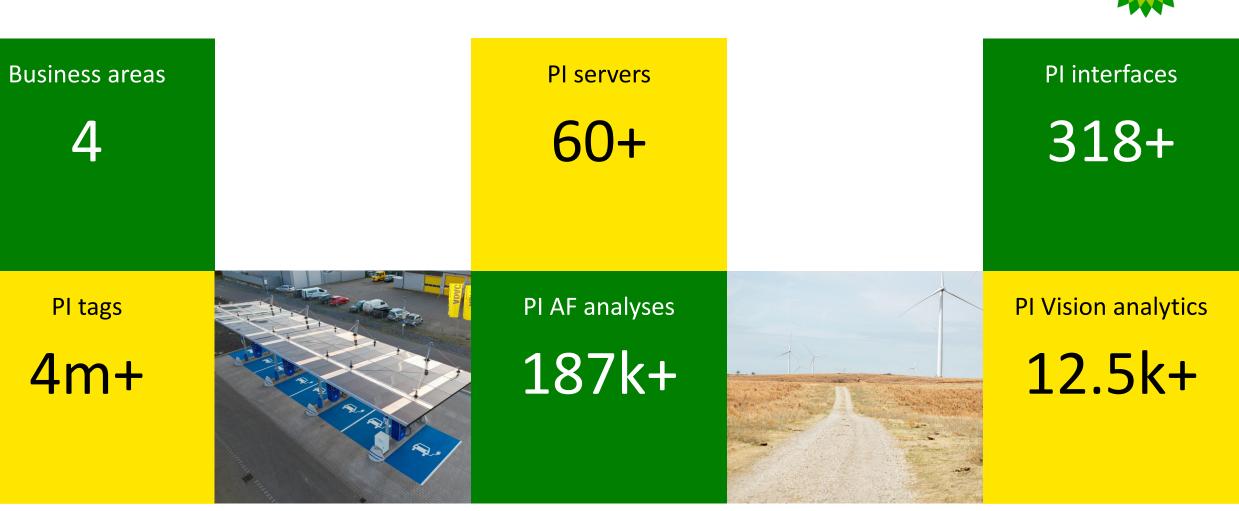


Agenda

bp

- bp Context and General Updates
- bp usage of AVEVA[™] PI System[™] in refineries
 - Optimized Process Analytics Launchpad (OPAL)
 - OPAL idea and overview
 - Capability and Feature Overview
- bp OPAL supporting sustainability in refineries
 - Emission Dashboard for Operations (ERS)
 - Daily Optimization dashboards
 - Pump status and health monitoring
 - Chemical supply for Operations
- Summary

bp context and approximate usage of AVEVA PI System





What is OPAL

Optimized Process Analytics Launchpad

- Vision: "OPAL is recognized as the <u>valuable refining</u> <u>information platform</u> that supports safe day to day operations, **sustainability,** and growth within our manufacturing business based on single-sourced information"
- OPAL will combine existing capabilities and strives to reuse/share systems. New built will happen only where no bp standard exists.
- OPAL uses the PI System ecosystem as the foundation for all Real time data visualization & decision support enhancing usability by Azure functionalities
- OPAL will replace all boTec use cases with a modernized solution except those where bp has an existing strategic solution.





OPAL key concepts

- Schematics & Trending
- Refinery Information Twin translating the asset structure into 2D displays designed based on use case
- Drill down & analyze

- Reporting & Exporting
- Display and prepare exportable data sets to support business workflow information needs
- <u>Data based decision &</u> "audit"

- Process driven linking
- Context based information linking underpinning customer workflows
- Day to Day process efficiency

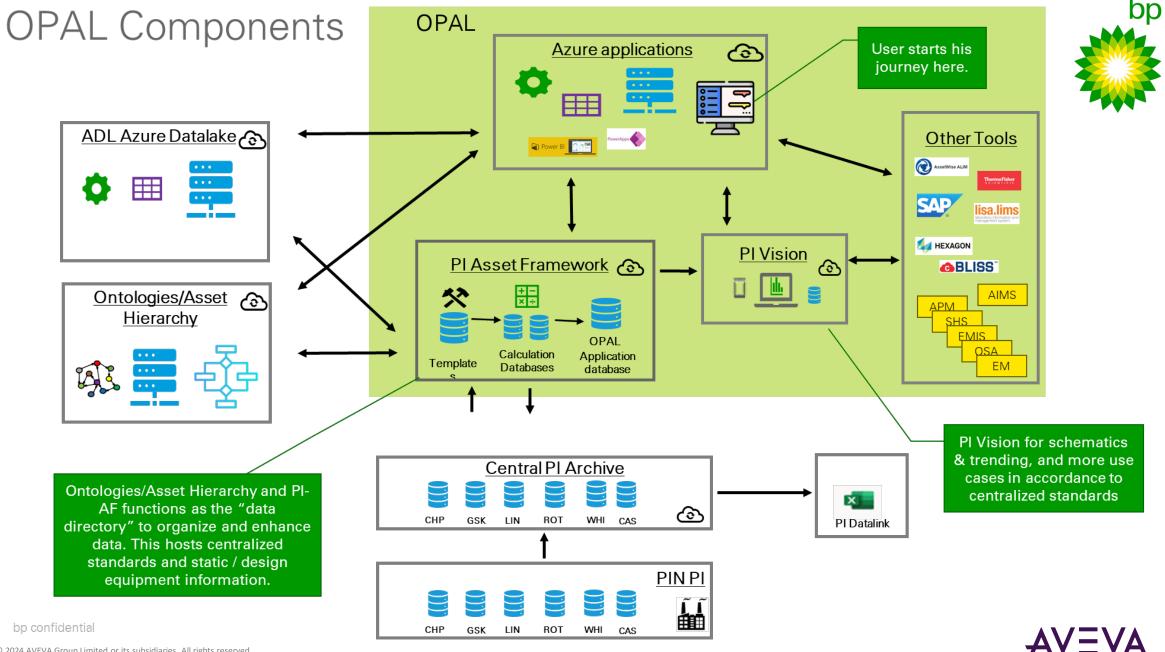
- Business apps
- A variety of data driven apps used in refinery processes: KPI, Leakage audit, Emission monitoring/audit
- Digitize business work

- Customer friendly navigation & search
- Provide search functionality based on a business-driven algorithm
- <u>Minimize customer</u> work on noncore work

Monitoring & alarming system

Proactive data usage to capture excursion, deviation & limit breaches

Reduce "wasted" customer time



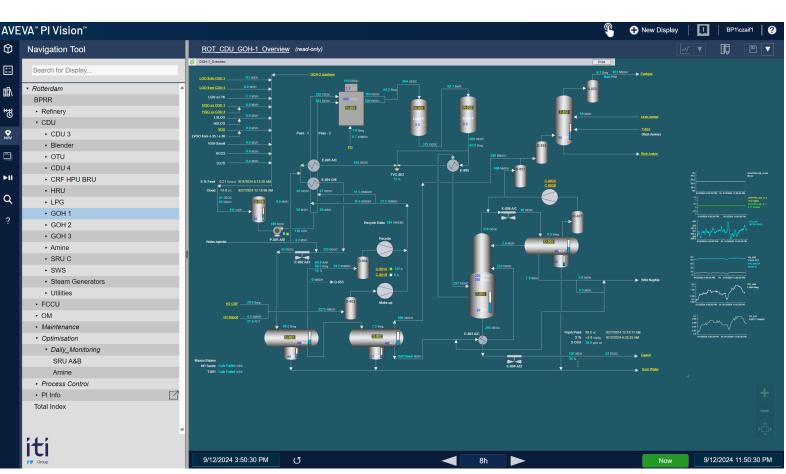
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OPAL – Customer platform to data

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Asset hierarchy driven information presentation

- OPAL delivers a 2D digital Twin and overlays it with data analytics
- Reuse of existing hierarchies
- Extension to optimize user navigation and analytics capabilities
- Combining all refineries in one platform to support global analytics
- Centered around the PI System infrastructure for real time/historic data
- User context driven extension for more data sources (ERP/CAD/LIMS...)







OPAL – Emission Dashboard for Operations (ERS)

"What gets measured gets managed" – emissions KPIs, baselines, and Intelligence

REFINERY EMISSION OVERVIEW FOR PRODUCTION AND MANAGEMENT

SO2 / NOX REFINERY BUBBLE STATUS (YEAR/MONTH/DAY TRENDS)

PROVIDES EMISSIONS INTELLIGENCE AND DECISION SUPPORT



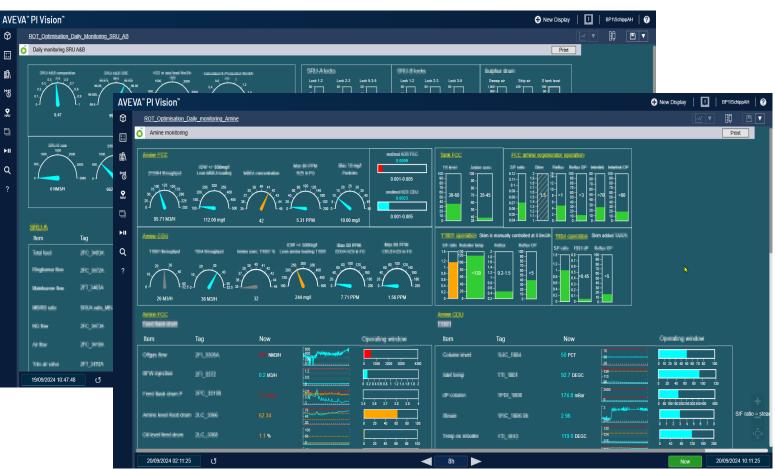


OPAL – Daily Optimization dashboards

Leveraging the AVEVA PI System to Operationalize Production Information

KPI DASHBOARDS FOR OPTIMIZATION ENGINEERS

ONE PAGER OVERVIEWS OF KEY ELEMENTS TO CAPTURE EXCURSION, DEVIATION & LIMIT BREACHES







OPAL – Pump status and health monitoring



ASSET PUMP DASHBOARDS, LATEST **RUN/STOP TIMES SINCE PUMP HAS** STARTED OR STOPPED

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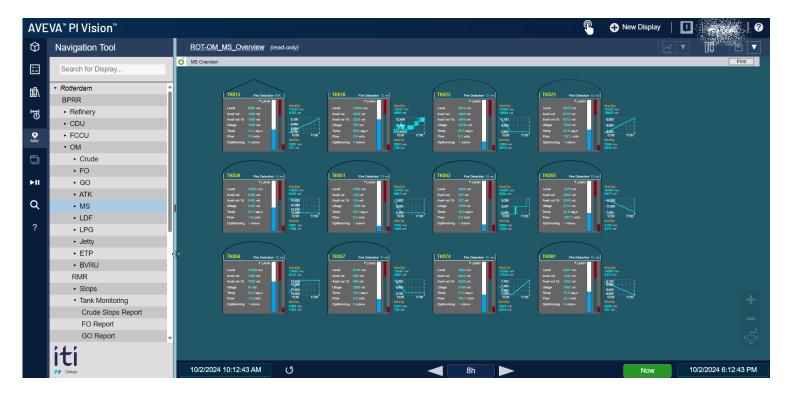
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OPAL – Tank Monitoring Overview



TANK OVERVIEW DISPLAYS PER PRODUCT, DRIVEN BY PI-AF



OPAL – Tank Monitoring Detail



DETAILED TANK INFORMATION AVAILABLE WHICH VISUALIZE ALL RELATED INFORMATION IN ONE DASHBOARD



OPAL – Tank Valve Monitoring



FILTERED OVERVIEW OF TANK VALVES WHICH HAVE NOT FULLY OPENED IN LAST 12 MONTH

AUTOMATE A PREVIOUSLY MANUAL PROCESS SAVE MAINTENANCE ENGINEER'S TIME

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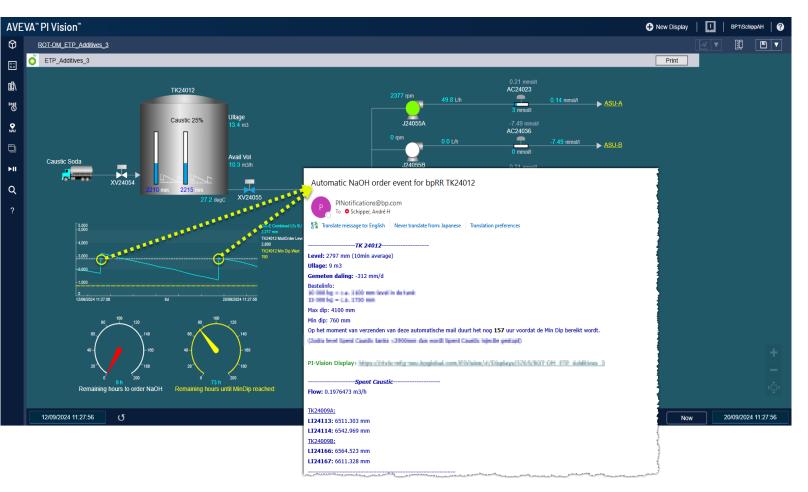
OPAL – Chemical supply for Operations



AUTOMATIC NOTIFICATION AT PREDEFINED TANK LEVEL

SINCE GO-LIVE:

- NO WASTE OF CHEMICALS (SUSTAINABILITY)
- NO EMERGENCY ORDERS (COST SAVING)
- PREVENTING PRODUCTION
 IMPACT



OPAL – Optimized Process Analytics Launchpad in support of sustainability at bp

Challenge

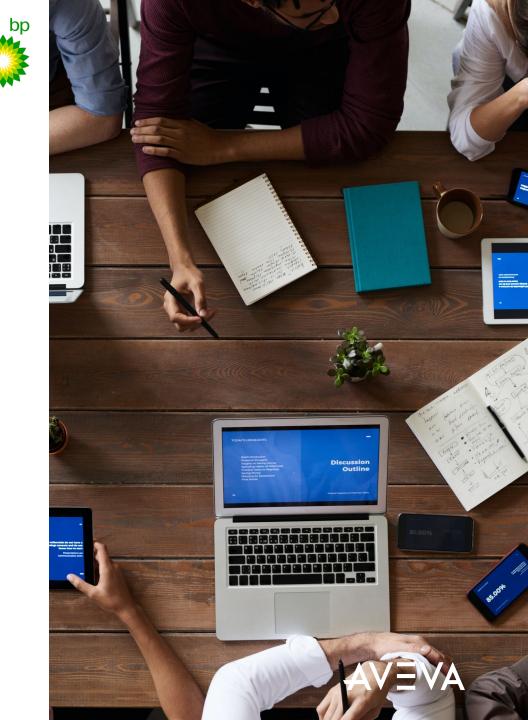
- Create a standardized approach on providing process information and analytics for bp's refineries and reduce application landscape
- Standardization across refineries demands acceptance of change

Solution

- OPAL massively extends the use of the AVEVA PI System from a "data historian" to an information platform with deep PI System asset framework usage
- Extend the existing PI Vision user frontend with ITI's VisionEX to improve the user efficiency navigating hundreds of information screens

Results

- OPAL drastically reduces users time to access information
- One version of trusted information, automatically provided
- Optimized analytics and reporting for processes reduces risk of misunderstandings
- Drive sustainability goals by optimizes data presentation to prepare the right user decisions





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Questions?

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