
AVEVAWORLD
PARIS

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Supporting Sustainability in Refineries With bp's OPAL Information Platform

Enabling Human Analytics with the AVEVA PI System

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Agenda

- 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

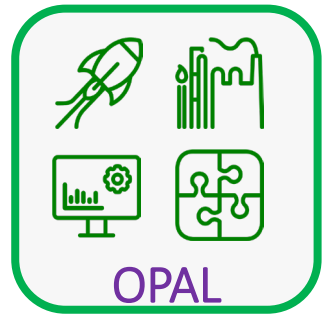
bp context and approximate usage of AVEVA PI System

Business areas 4	PI servers 60+	PI interfaces 318+
PI tags 4m+		PI AF analyses 187k+
		PI Vision analytics 12.5k+

What is OPAL

- **O**ptimized **P**rocess **A**nalytics **L**aunchpad

- **Vision:** *"OPAL is recognized as the valuable refining information platform 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
- Data based decision & "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

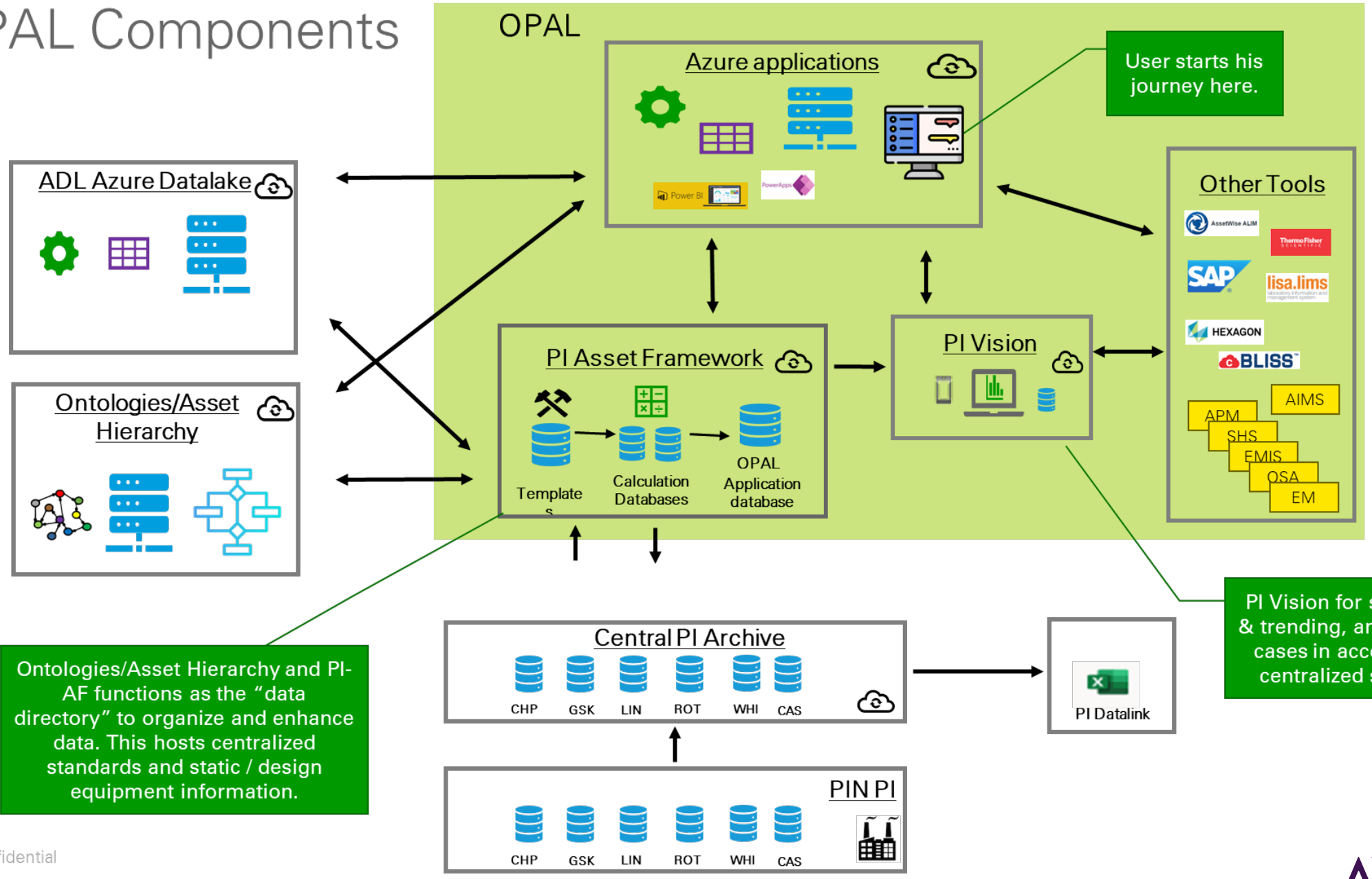
- ***Customer friendly navigation & search***
- Provide search functionality based on a business-driven algorithm
- Minimize customer work on noncore work

Monitoring & alarming system

Proactive data usage to capture excursion, deviation & limit breaches

Reduce "wasted" customer time

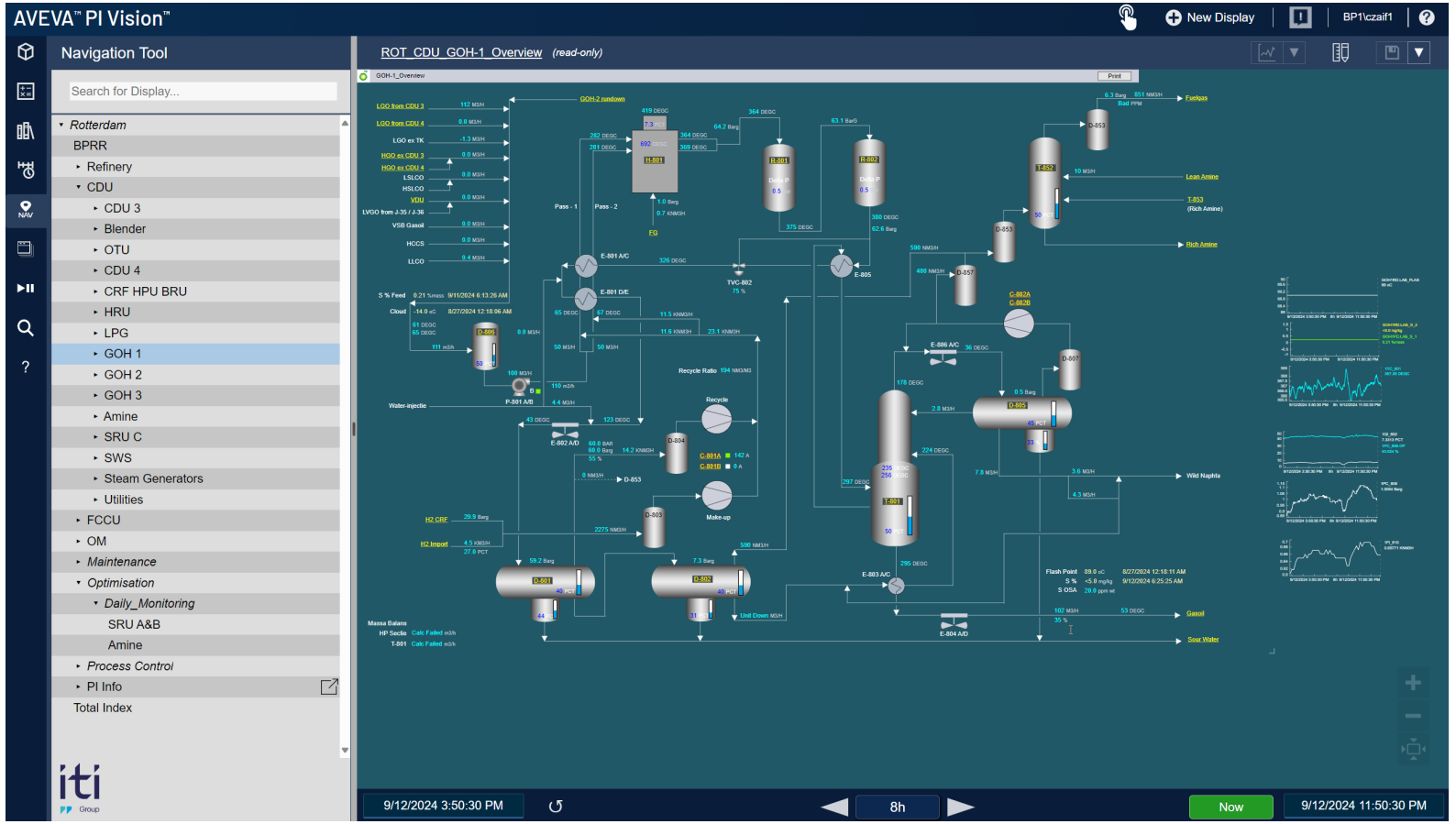
OPAL Components



OPAL – Customer platform to data

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…)



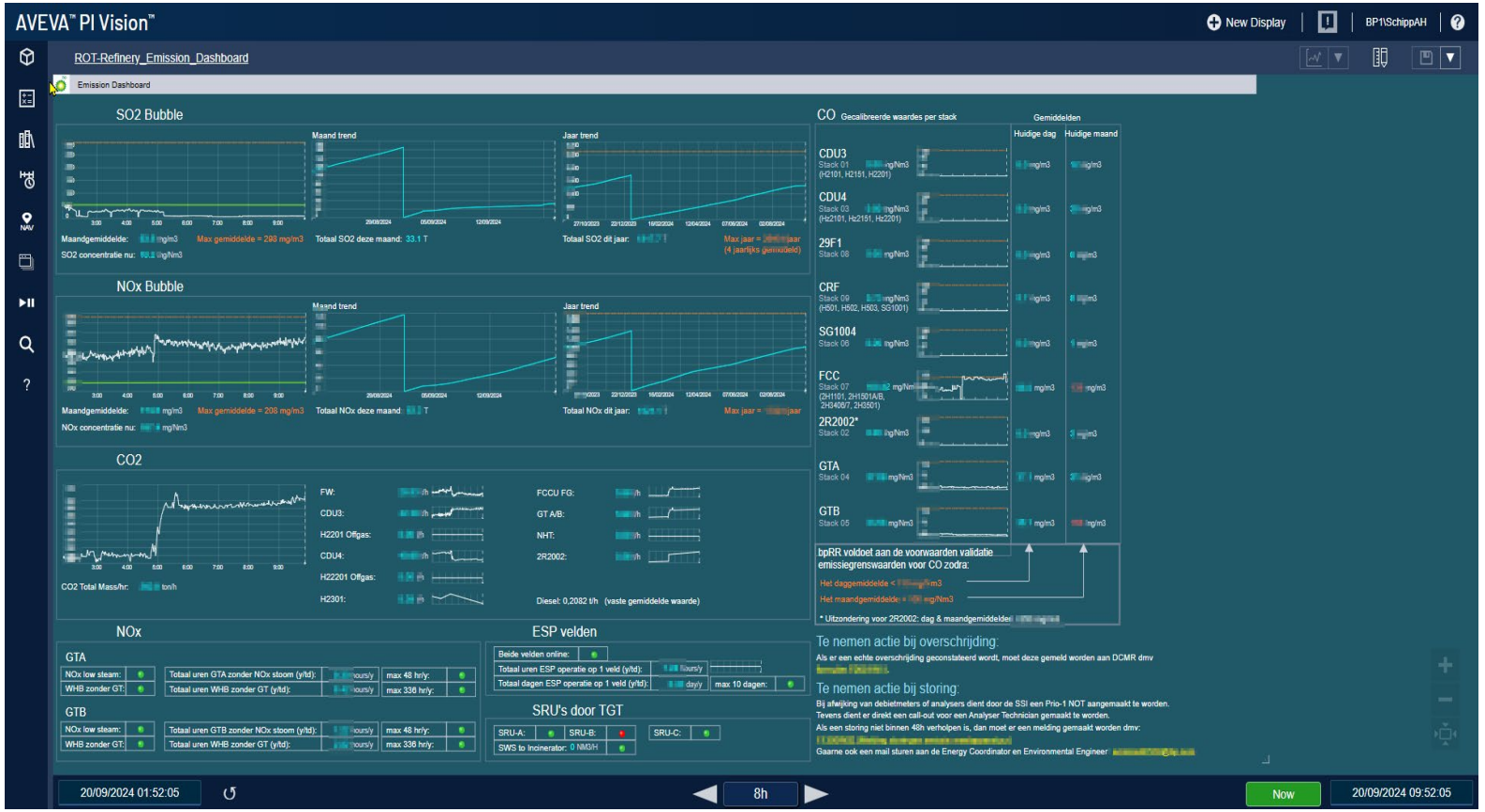
OPAL – Emission Dashboard for Operations (ERS)

“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

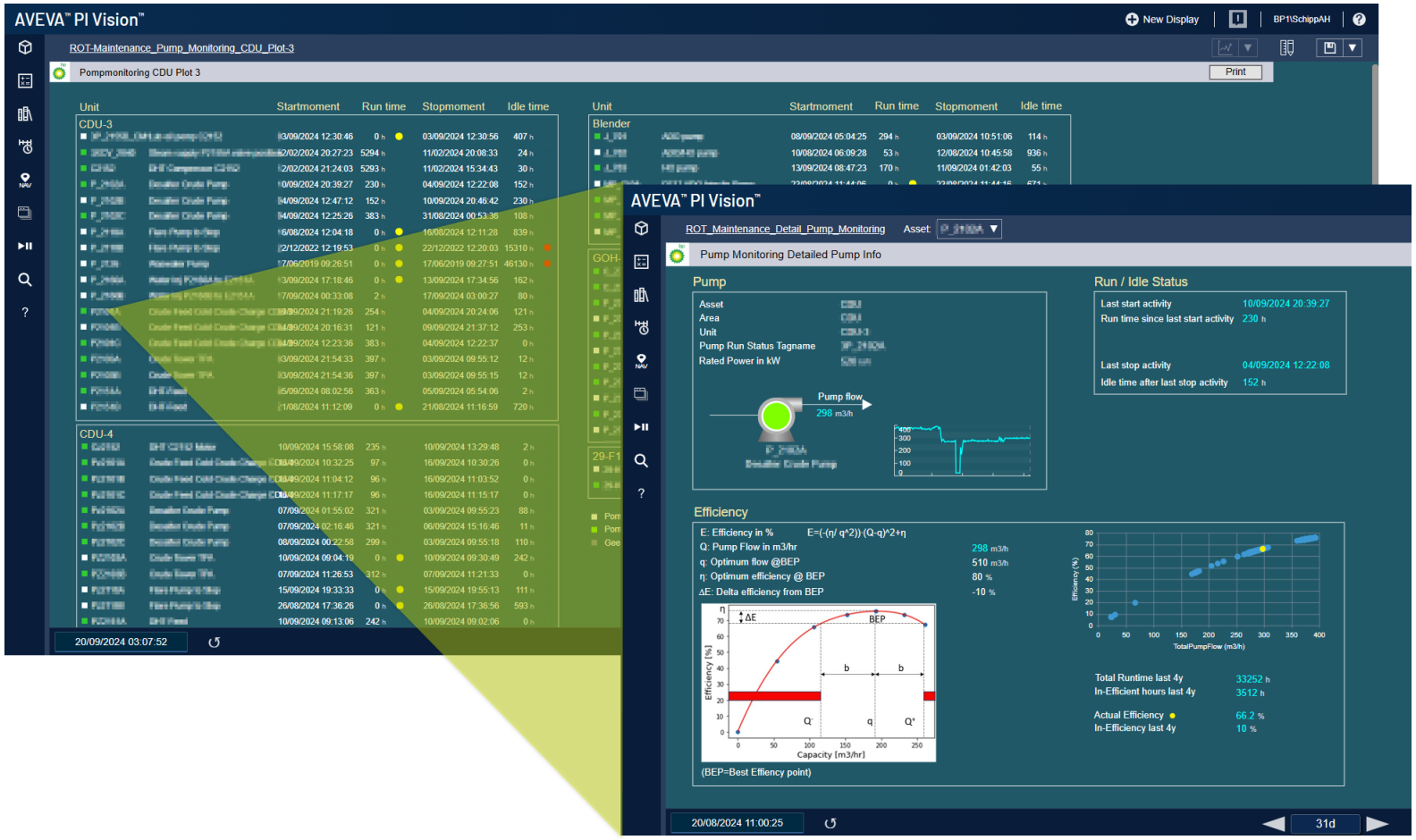
KPI DASHBOARDS FOR OPTIMIZATION ENGINEERS

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

OPAL – Pump status and health monitoring

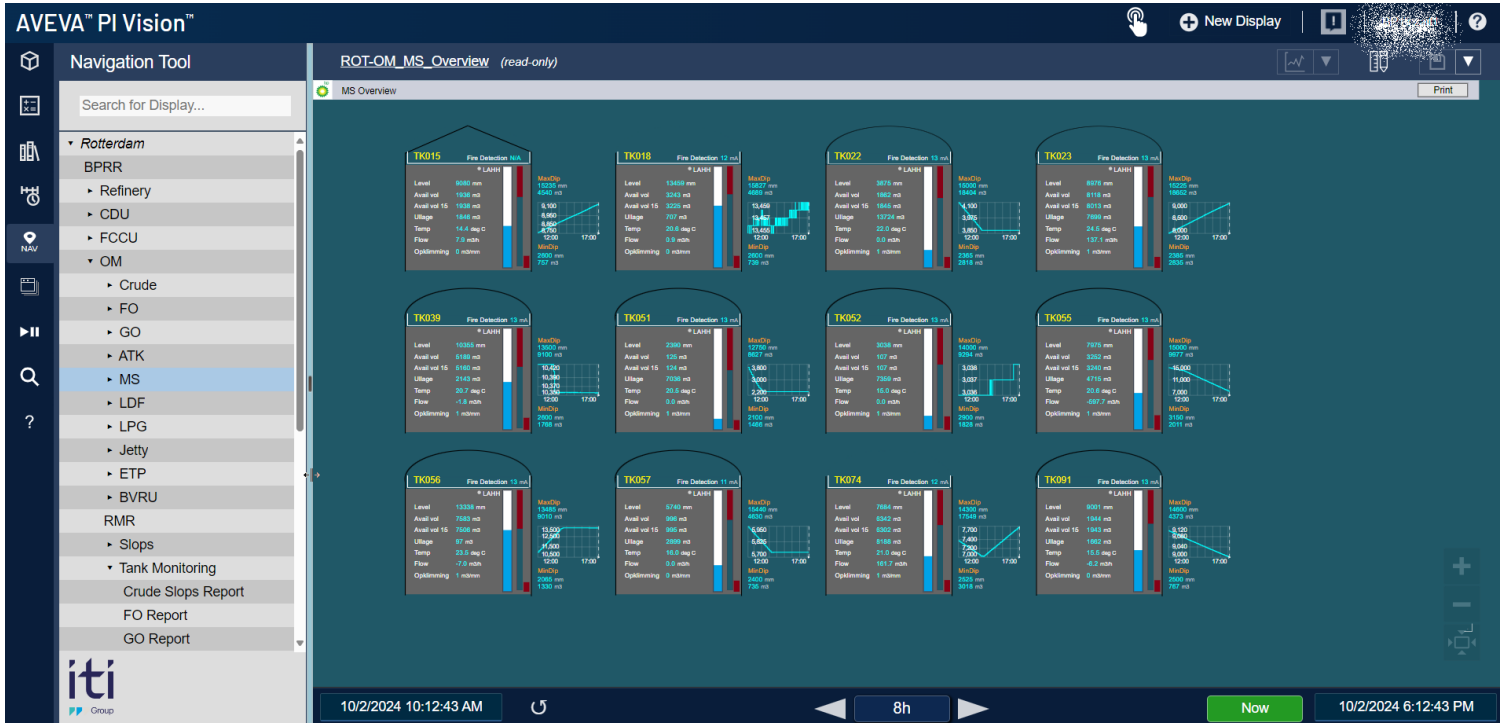
ASSET PUMP DASHBOARDS, LATEST RUN/STOP TIMES SINCE PUMP HAS STARTED OR STOPPED

PUMP EFFICIENCY ANALYSIS INFO MAINLY USED BY MAINTENANCE AND OPTIMIZATION



OPAL – Tank Monitoring Overview

TANK OVERVIEW DISPLAYS PER PRODUCT, DRIVEN BY PI-AF



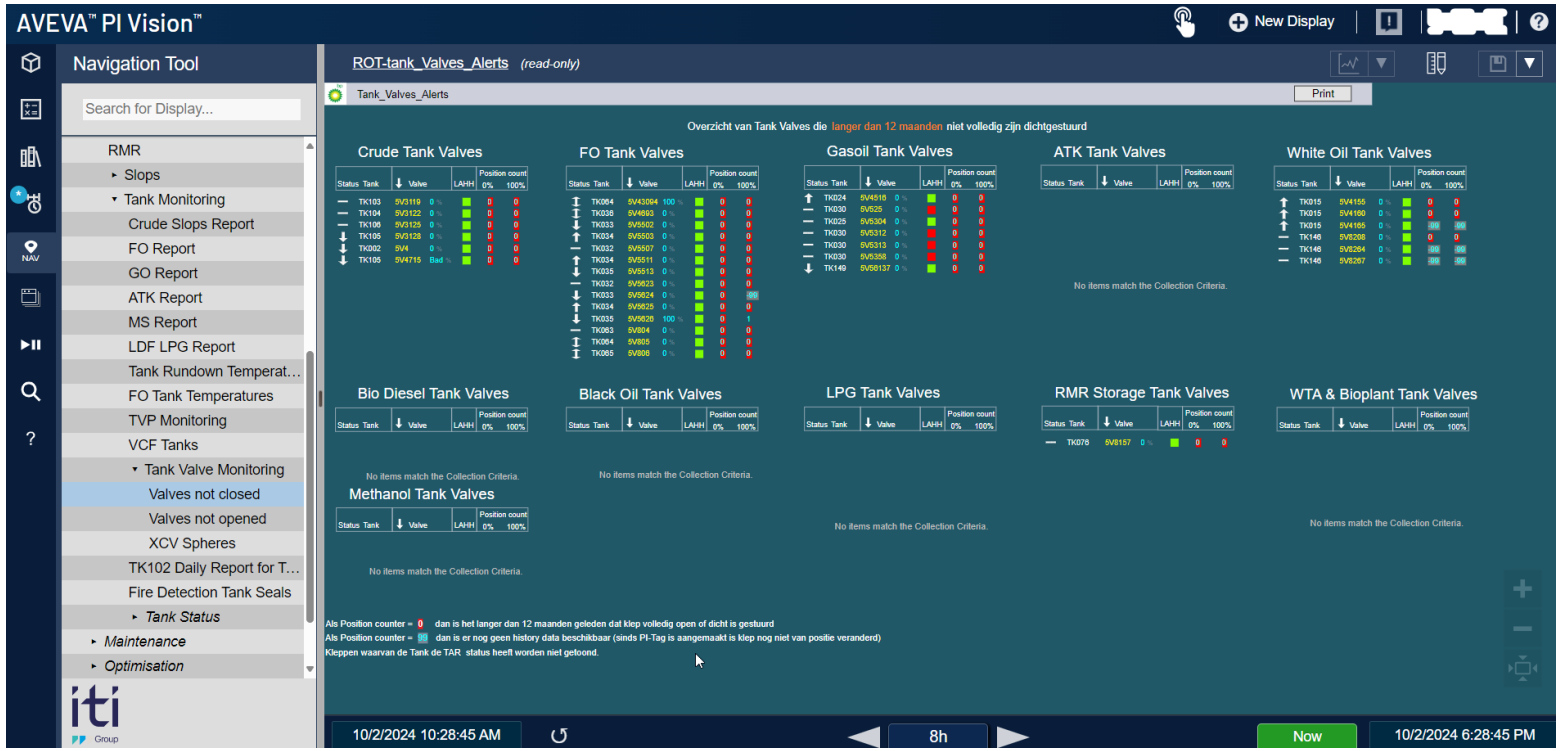
OPAL – Tank Monitoring Detail

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

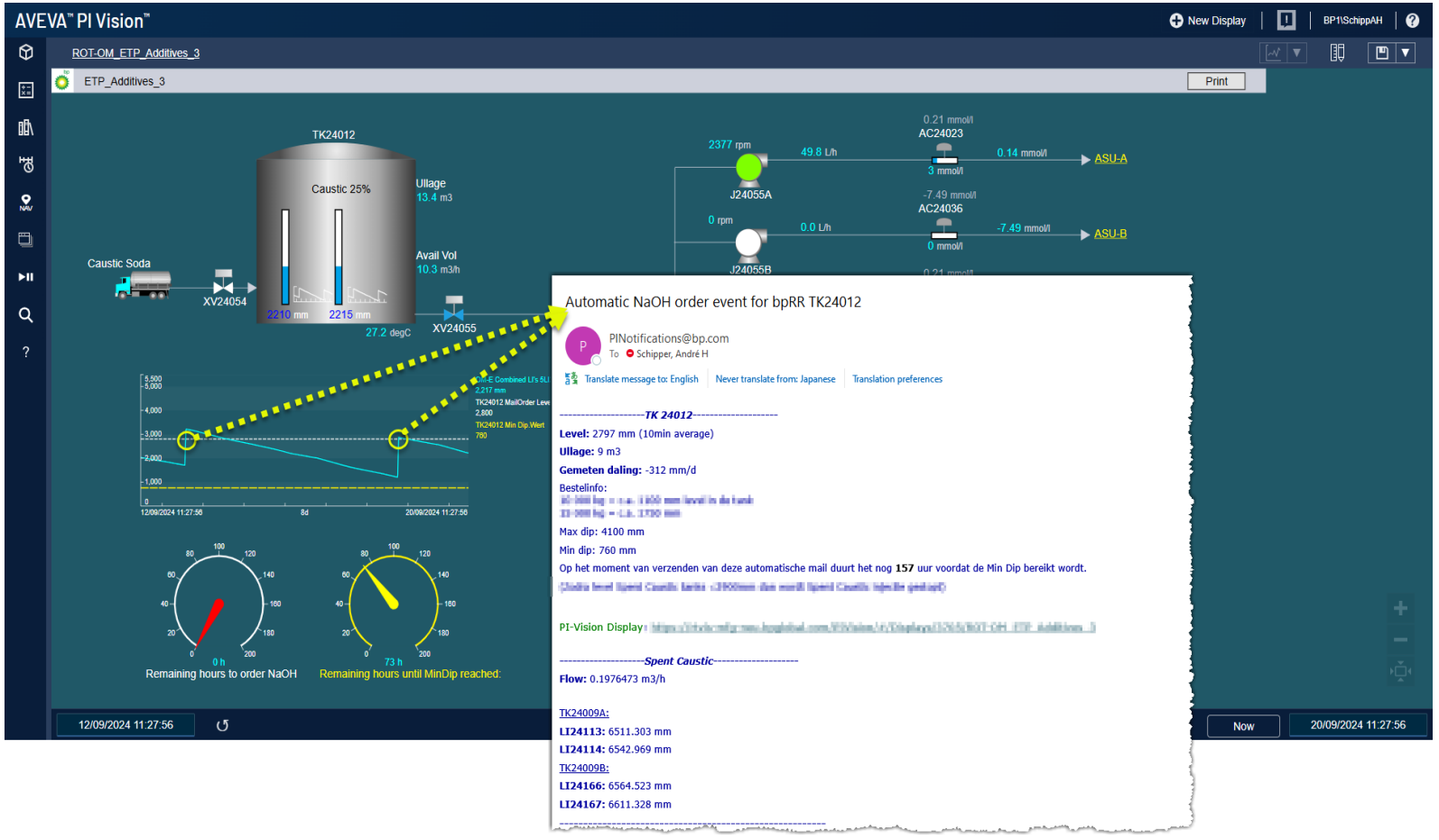


OPAL – Chemical supply for Operations

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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State your name and company.

Please remember to…

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