

The background is a deep purple with a blue gradient. Overlaid on this are several glowing, neon-like lines in shades of cyan and magenta that form a series of overlapping diamond shapes, creating a dynamic, geometric pattern.

AVEVAWORLD

ACCELERATE INDUSTRIAL INTELLIGENCE

Predictive Maintenance

Ansaldo Energia: Standardizing Asset Intelligence for Predictive Maintenance at Scale

Speakers



NEW UNITS

- Hydrogen-ready, operationally flexible heavy-duty Gas Turbines
- Steam Turbines
- Generators / Synchronous Condensers
- Geothermal equipment
- EPC

SERVICE

- Engineering & Field Service
- Repair
- Long Term Service Agreements
- Upgrades & Mod.
- Hydrogen-ready
- Digital Solutions / RMD

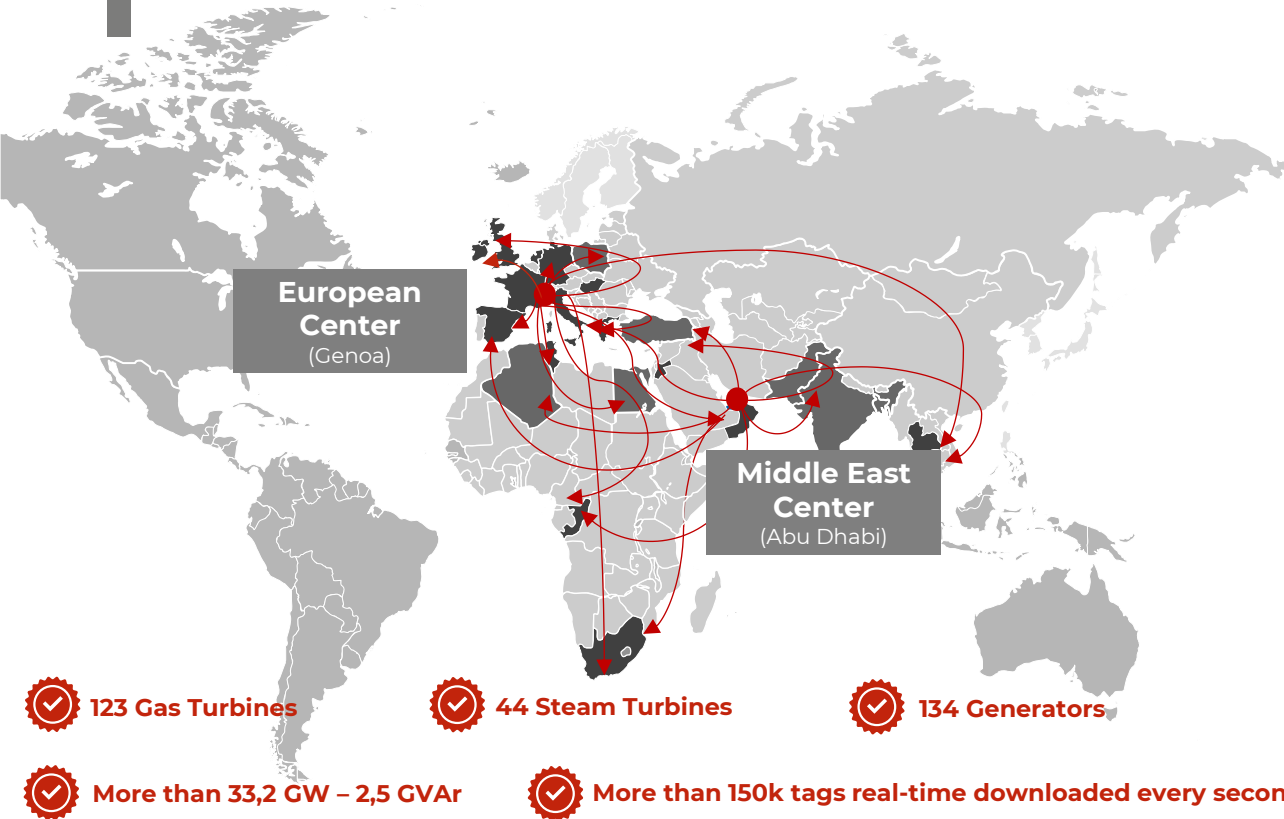
GREEN TECH

- Developing AEM electrolyzers
- Producing microturbines for distributed generation
- Fitting turbines for CO₂ sequestration

NUCLEAR

- Service for nuclear power plants
- Nuclear new builds
- Decommissioning & waste management
- SMR & LFR development
- Fusion

Integrated Plant Support



Remote Monitoring & Diagnostic

- Remote connection and data flow ◀
- Ticketing ◀
- Technical Analyses ◀
- Recommendations ◀
- EWs based on Smart Limits ◀
- Periodical Reports ◀
- Web portal ◀

Predictive

- APEX™ ◀
- GT TwinCore™ ◀

Remote operations

- Controls and operations adjustments ◀
- Balancing of the shaft line ◀
- GT Combustion tuning ◀

System and data architecture

From sensors to on-site data acquisition for a secure flow of data. Structured infrastructure and different tools to achieve results.

Customer 1



DCS



TSI

AEN on site 1



Fast recorders
High frequency
up to 200Hz (5ms)



Site database
Medium frequency
up to 4Hz (256ms)

GT TwinCore™

Performance tool

- Components maps
- Components KPIs
- Deviations identification



PI database - HQ

- Data concentrator
- Live data
- Buffer



Asset Framework

- Structured
- Templates & assets
- Analyses on live data
- Events frame

APEXm&d™

Machine learning tool

- Data-driven
- Predictive maintenance
- Deviations identification

AEN HQ



PIVision



Visualization

Seeq



In-depth analyses



Analytics & rules



Reporting



Notifications

Customer n



DCS



TSI

AEN on site n



Fast recorders
High frequency
up to 200Hz (5ms)

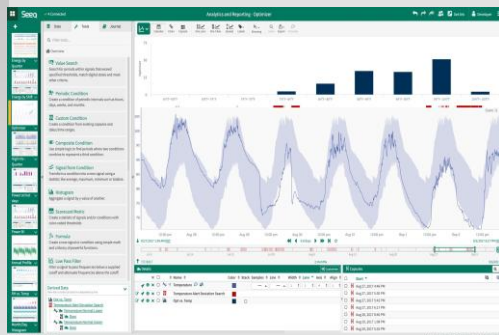


Site database
Medium frequency
up to 4Hz (256ms)

Company Data Analytics platform

From structured data to self-service in-depth analyses, internal & external reports and custom applications.

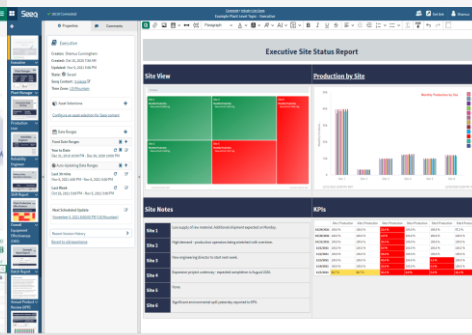
Seeq® WORKBENCH



Self-service analytics

- Integration with PI system
- Ready-made workflows
 - Intuitive formulas
- Find recurring patterns
- Real time collaboration
 - Analyses sharing
 - Corporate usage

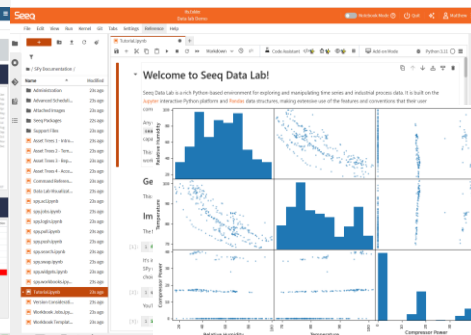
Seeq® ORGANIZER



Reports

- Template workflow
- Dynamic dashboards
- Auto-update function
- Auto-send function
 - PDF format

Seeq® DATALAB



Python environment

- Access to Python libraries
 - Advanced users
- Custom applications
 - Non-native plots
- Data to Workbench
- Plot to Organizer



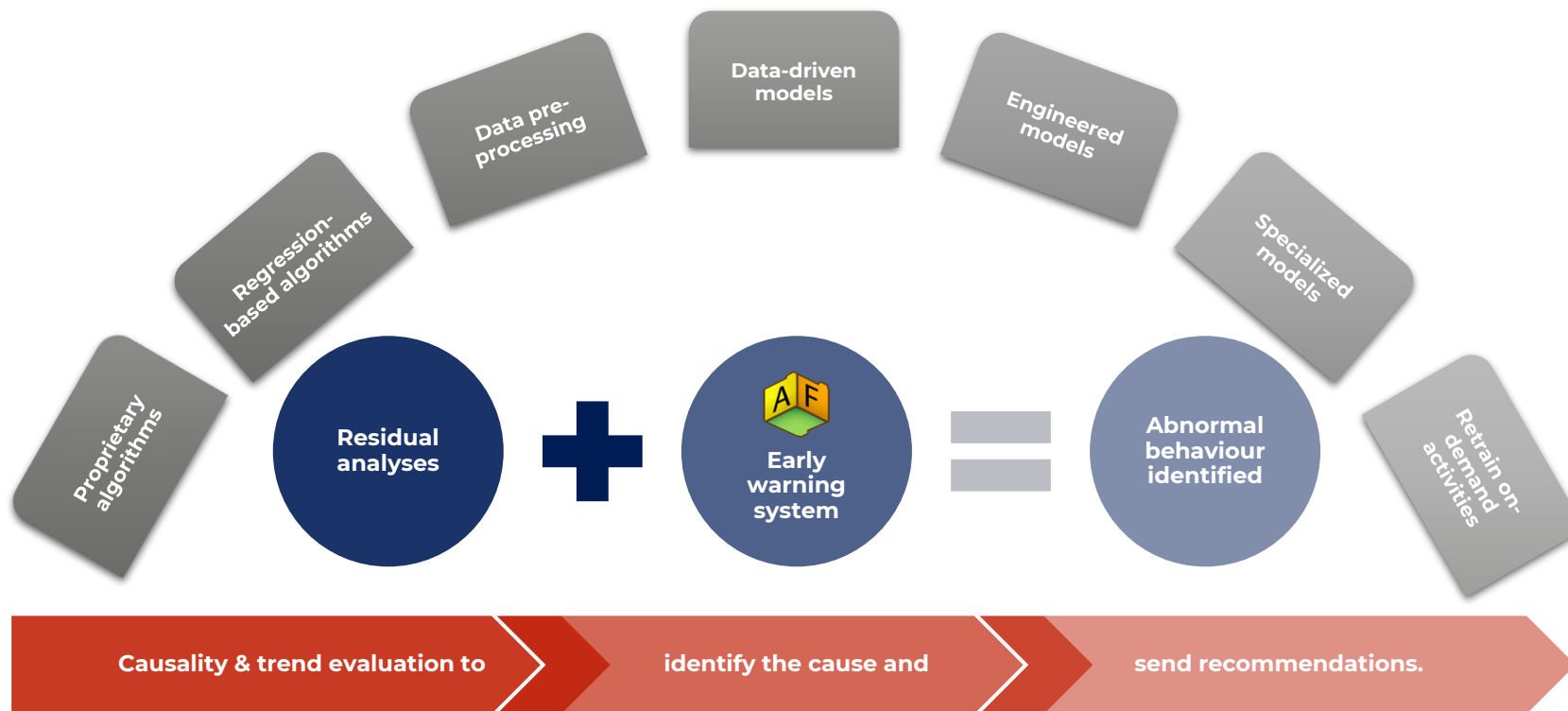
Asset Framework

- Structured
- Templates & assets
- Analyses on live data
 - Events frame

Machine Learning platform

ansaldo | energia Fit for transition

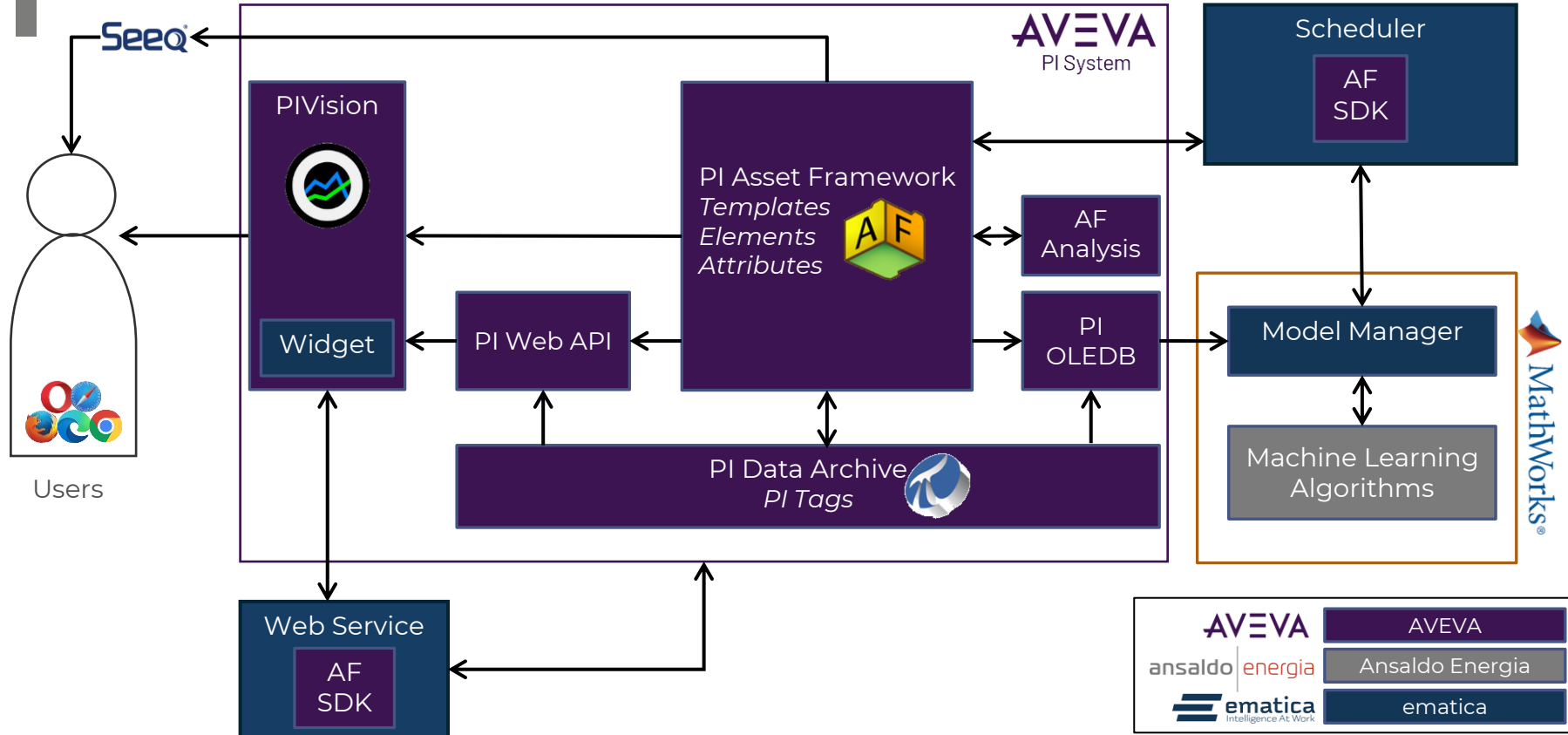
AVEVA ematica Intelligence At Work Seeq



Technical platform solution

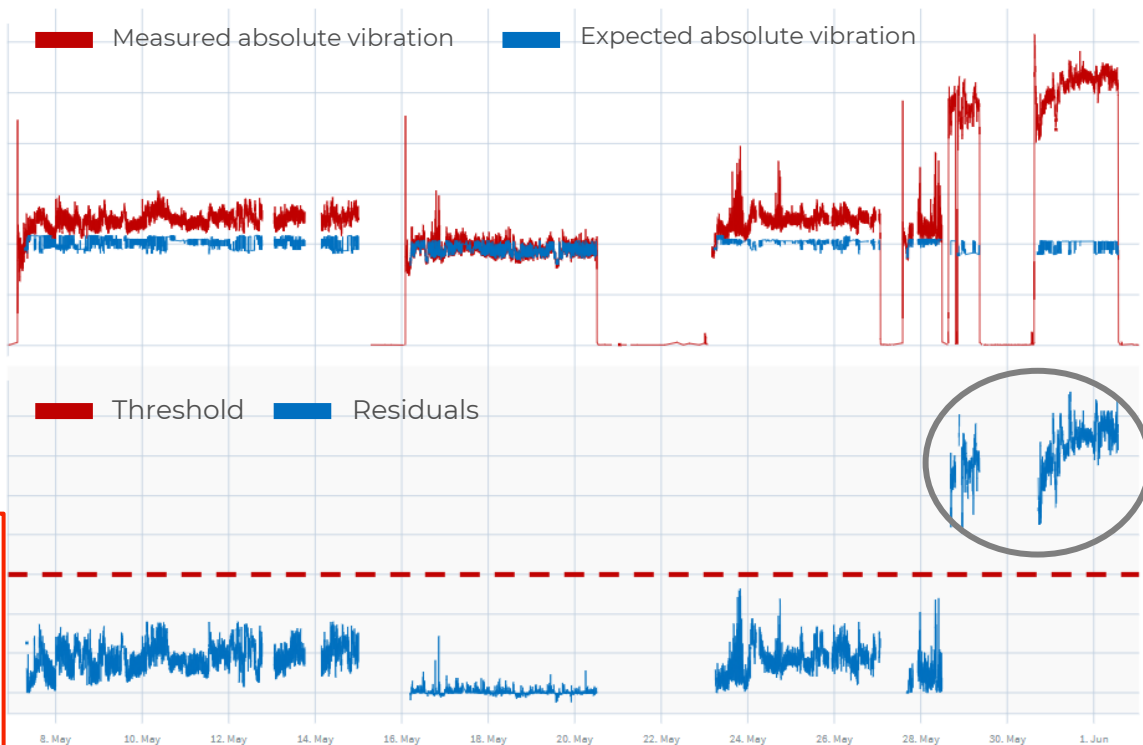
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AVEVA ematica Intelligence AT Work Seeq



Case study - rotordynamics

- EW deviation on Turbine Bearing Vibration
- Vibration experts analysis started with low values of vibration (far under alarm and TRIP limits)
- Suggestion to stop and inspect the machine
- Inspection planned and performed
- Unit operation released for a limited amount of hours
- M.O. planned in 2023 rescheduled in summer 2022 according to customer needs

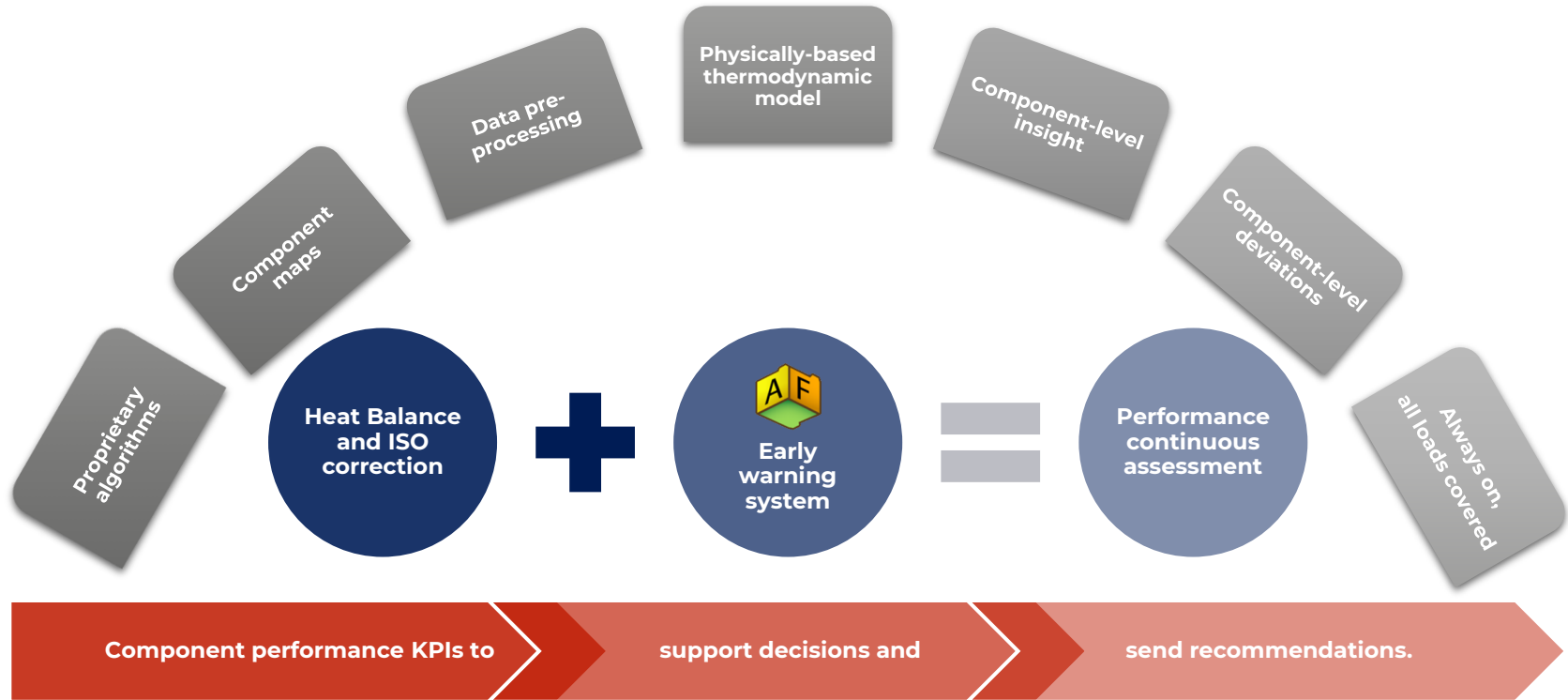


Predictive value

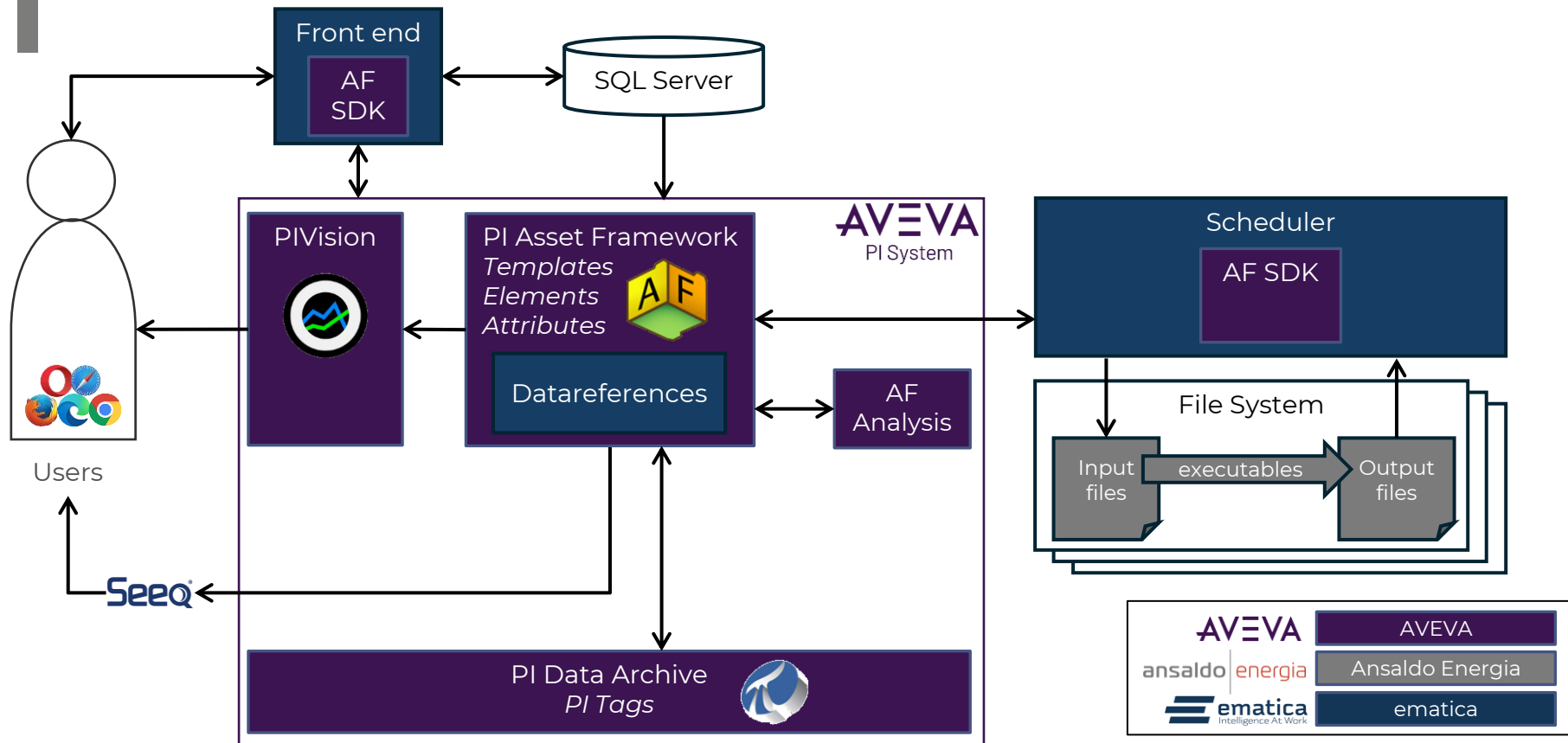
EW allows to analyse the behaviour, plan the inspection and evaluate corrective action in advance avoiding unplanned stops of the GT

Rescheduling MO allows to minimize economic losses due to unplanned maintenance

Performance & GT health platform



Technical platform solution

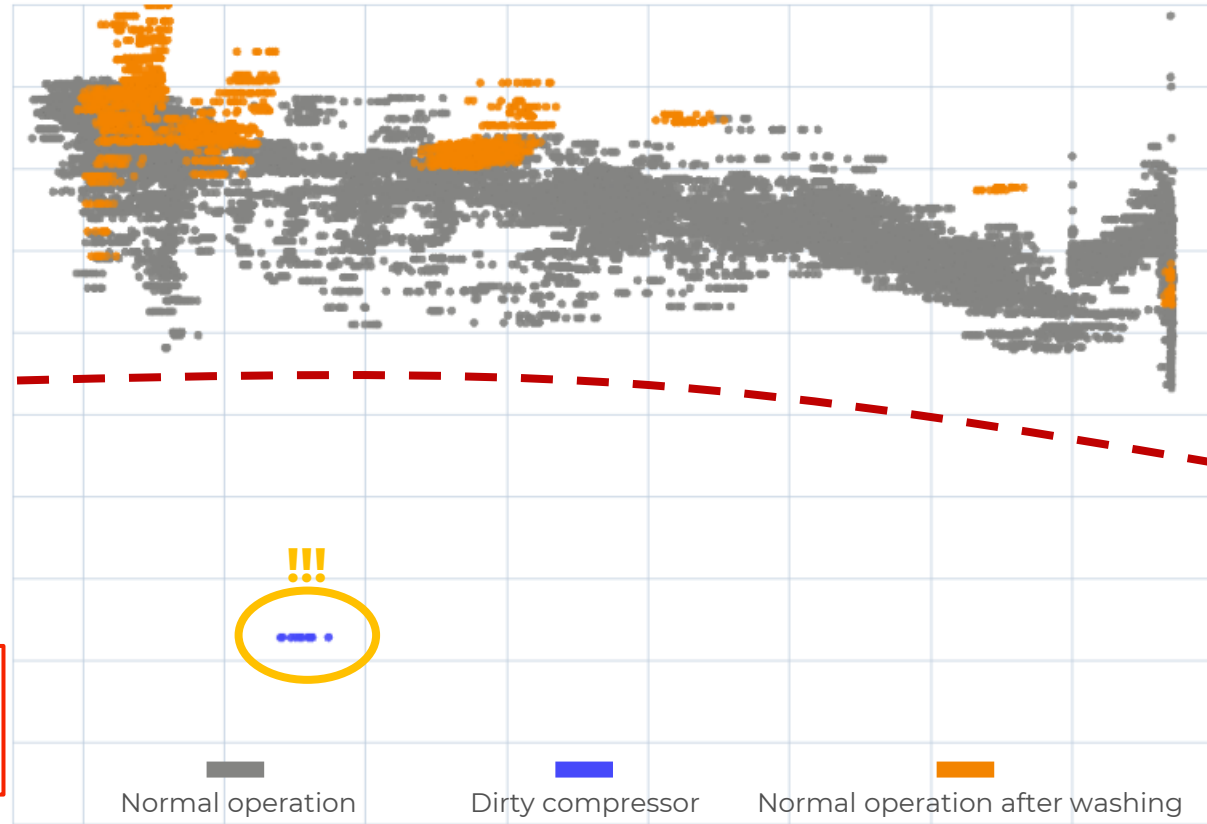


Case study – Compressor health

- EW deviation on Compressor efficiency
- High priority performance experts analysis started
- Hp.: too dirty compressor
- Suggestion to stop the machine due to risk of Surge
- Suggestion to run a compressor washing
- Close monitoring during the next run
- Compressor came back in normal operation

Predictive value

EW allows to analyse the behaviour and evaluate corrective action in advance avoiding unplanned stops of the GT



Ansaldo Energia unlocks predictive asset intelligence at scale

Challenge

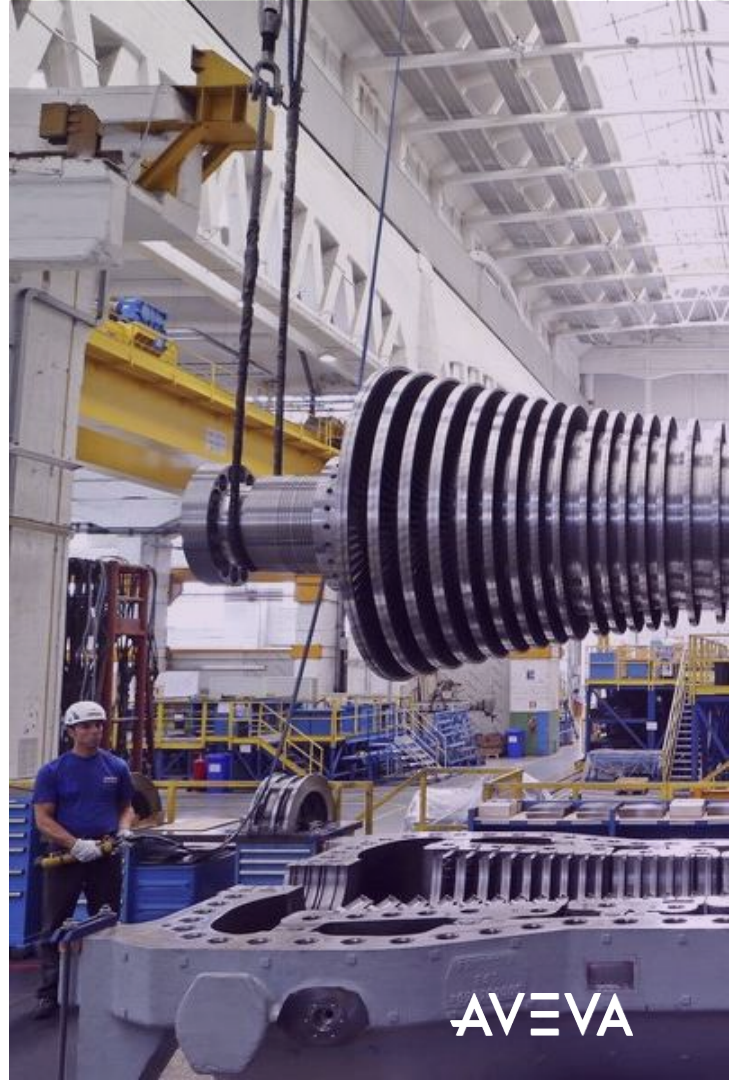
- Fragmented asset data structures limited consistent analysis
- Scaling analytics across fleets required standardization
- AVEVA PI System was used by only a few experts, limiting company-wide data analysis
- Customer expectations increased for reliability and sustainability impact

Solution

- Ansaldo Energia adopted AVEVA™ PI System™ and PI Asset Framework as its global operational data backbone for integrated machine learning analytics, physically-based calculations, and in-depth analysis using Seeq.

Results

- **Standardized asset intelligence globally**
- **Improved consistency of asset monitoring across diverse operating environments**
- **Enabled earlier detection of asset issues**
- **Increased confidence in predictive maintenance insights**
- **Improved decision speed for monitoring and diagnostics**
- **Supported customer operational and sustainability objectives**
- **Helped customers reduce avoidable emissions through earlier intervention**



THANK YOU
FOR YOUR
ATTENTION



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