AVEVAWORLD

ACCELERATE INDUSTRIAL INTELLIGENCE

AVEVA WORLD MILAN, MAY 2026

Power Community Group Panel: Connecting the Lifecycle

Powering the Future: Energy Transition and Grid Modernization in Action

Paola Casabona Oré, ISA Energia Peru

Nicolas Tempestelli, Pampa Energia

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AVEVA

Powering the Future:
Energy Transition and Grid Modernization in Action

Your Panelists

Fiona
Straton

Global Industry Marketing – Critical Infrastructure

AVEVA

With over 20 years of industry experience, Fiona is an advocate for digital transformation and how technology delivers a better, more sustainable quality of life for all.

Paola
Casabona Oré

Operations Technology Analyst

ISA Energía Perú

Paola is focused on monitoring and data-driven initiatives in electric power transmission. She works with AVEVA PI System, SCADA, cloud platforms and analytics tools to improve visibility and decision-making across OT environments.

Nicolas
Tempestelli

IT Solutions Analyst

Pampa Energia

Nicolas is an Automation Engineer with 5+ years of experience in AVEVA PI System across Power Generation, Oil & Gas and Pharma Industries.

Syafiq
Tazuri

SCADA Engineer

Ørsted

Syafiq is delivering control room systems for offshore and onshore wind, specializing in AVEVA System Platform, integration, templates, grid services, turbine control, and alarm management.

ISA Energia Peru

Paola Casabona Oré

POWER & UTILITIES | PERU

SF_6 Gas Leak Monitoring in Electrical Substations

isa ENERGÍA

ISA

3 Business Units

Transmission

Roads

Telecommunications

ISA is part of ecopetrol

Project Team

Ángel Huamán

Evaluation Specialist

Maintenance Department

Jorge Dávila

Substation Maintenance Specialist

Maintenance Department

Andrés Gibu

Data and Analytics Specialist

Business Management Department

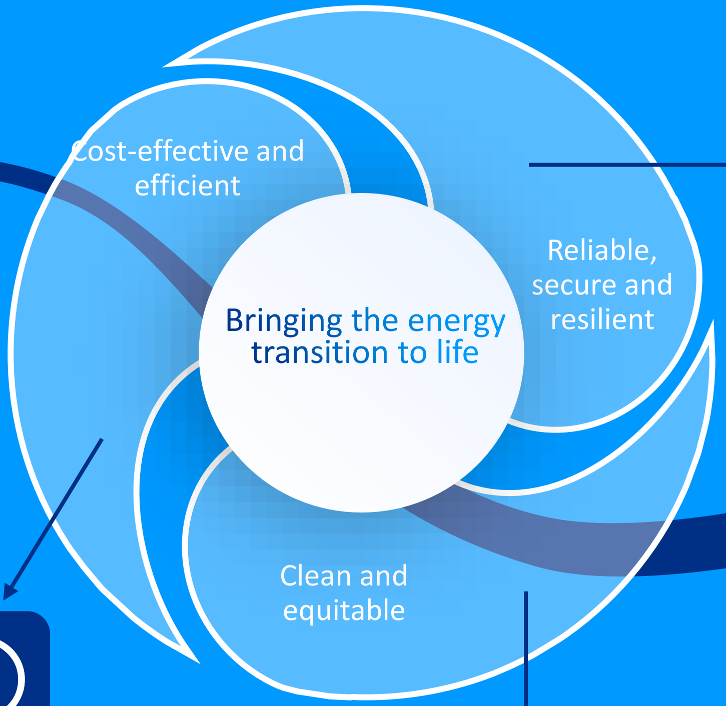
Paola Casabona

Operations Technology Analyst

Operations Department

CHALLENGE

A part of our Corporate strategy, ISA Energia Peru is committed to reducing SF6 emissions across GIS compartments, strengthening operational safety and improving transmission system reliability.



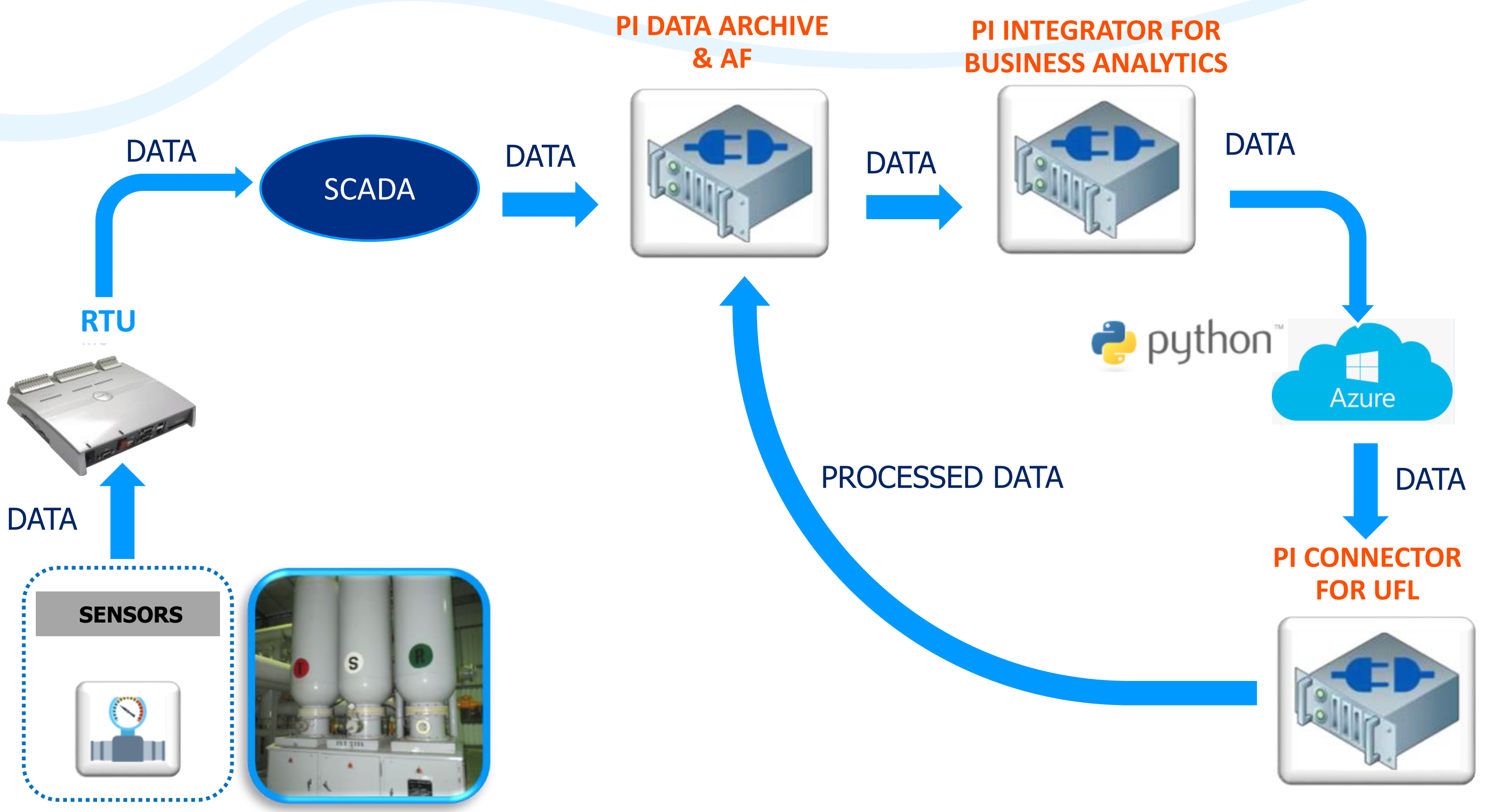
The corporate objective of achieving **NET ZERO** pathway.

Reduce emissions **from approximately ~10 Kg of SF6 per event** before they are detected, increasing the carbon footprint and operational risk on the equipment.

Reduce density readings by maintenance personnel and improve response times in SF6 gas leaks events.

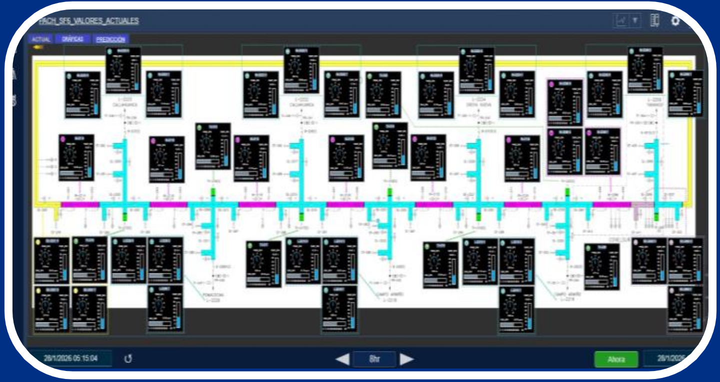
SOLUTION

ISA Energía Perú implemented a continuous monitoring system with sensors measuring pressure, density and temperature across GIS compartments.



- Bidirectional integration with Microsoft Azure via PI Integrator and PI Connector
- Analytical calculations on SF6 gas leak behavior, enabling predictive maintenance on GIS compartments
- Automated alerts to prioritize leak events

RESULTS



- SF6 emissions were reduced by 90% in the selected electrical substations through timely maintenance actions. This represents approximately 74 kg of avoided SF_6, equivalent to 1739 tCO_2 in 2024.
- The amount of SF6 lost per event was reduced from ~10 Kg to ~1Kg. In addition, 8 SF_6 leaks were detected in GIS compartments during 2024.
- Man-hours in density readings were reduced to remote acquisition of variables from the selected electrical substations and the automatic alerts permit prioritize the attention of events.
- SF6 monitoring variables are visualized in PI Vision dashboards.

RED DE ENERGÍA DEL PERÚ S.A.

isa ENERGÍA

ENERGÍA

ISA Energía Perú accelerates its NET ZERO pathway with real-time SF_6 monitoring

Challenge

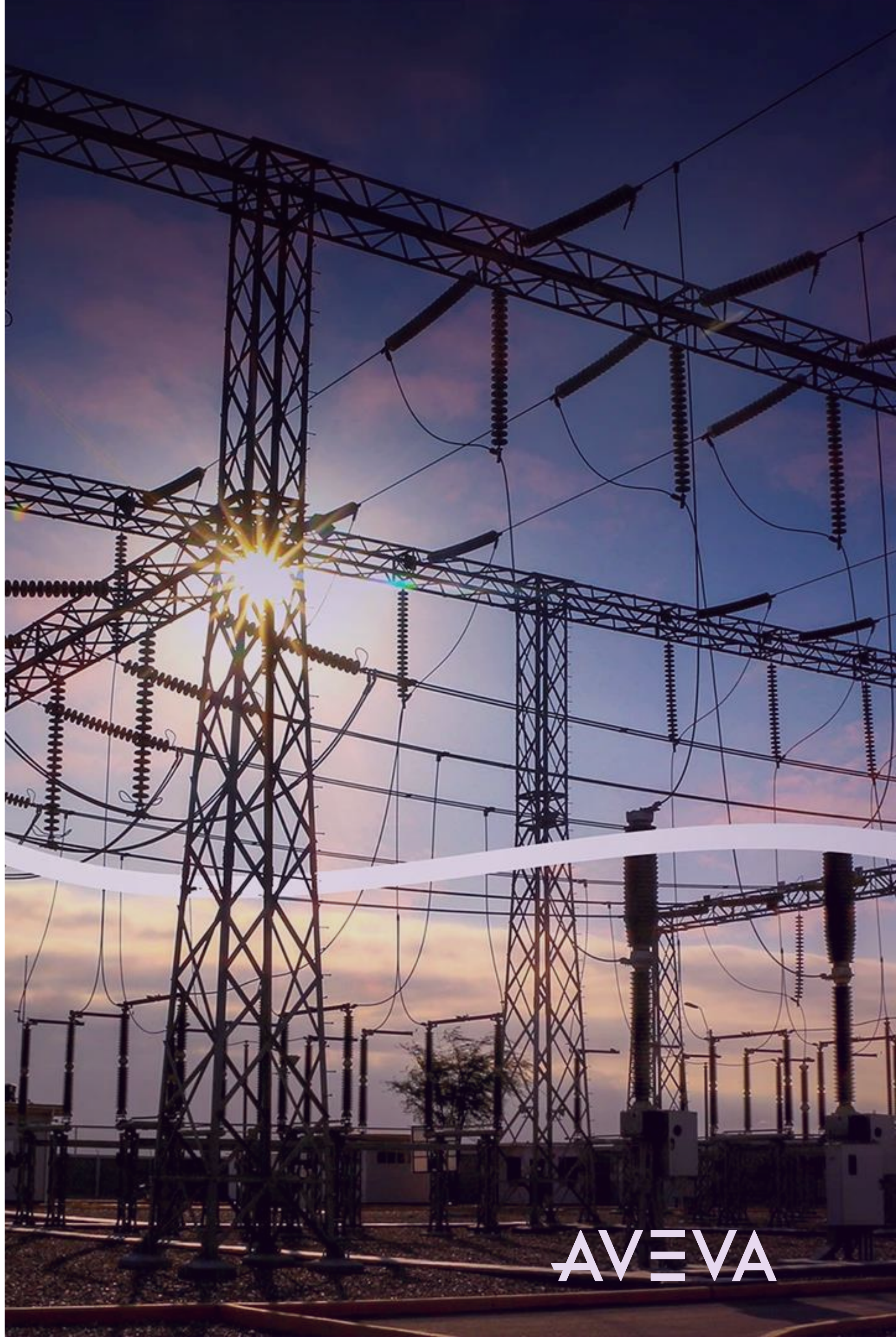
- Manual density readings in GIS compartments delayed leak detection
- SF_6 leaks of ~10 kg per event increased emissions, operational risk, and maintenance burden
- Needed to reduce environmental impact and improve response times to meet corporate net zero goals

Solution

- Deployed continuous SF_6 monitoring with integrated sensors, automated alerts, and AVEVA™ PI System™ analytics to enable faster detection, predictive maintenance, and improved operational reliability.

Results

- **Reduced SF_6 emissions by 90% in monitored substations**
- **Avoided 74 kg of SF_6, equivalent to 1,739 tCO_2 in 2024**
- **Cut loss per event from ~10 kg to ~1 kg**
- **Detected 8 leaks early, enabling timely maintenance actions**
- **Eliminated manual density checks, cutting man hours and improving safety**
- **Improved visibility and prioritization of events using AVEVA™ PI Vision™ dashboards**



Thank you!

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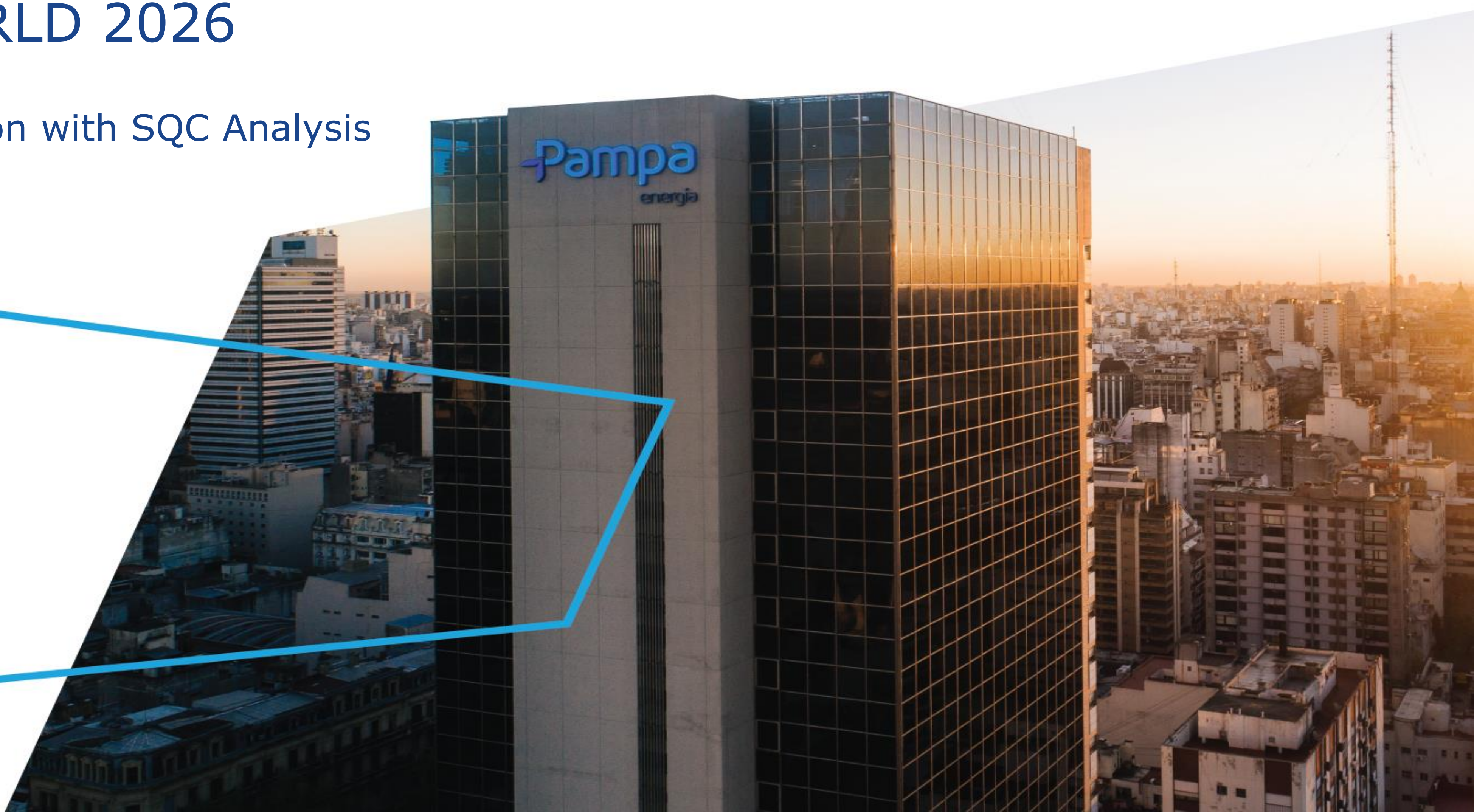
CONEXIONES QUE INSPIRAN

Pampa Energia

Nicolas Tempestelli

AVEVA WORLD 2026

Anomaly detection with SQC Analysis



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OUR BUSINESSES
What we do and where we are

MARKET SHARE

Electricity

Power generation

15%

Transmission

86%

Gas and Oil

E&P

9%

Midstream

60%

Petrochemicals

100%

THERMAL

HYDRO POWER

WIND POWER

CO-CONTROL OF Transener

Production of
78.2k boe/d
Gas: 94%
Oil: 6%

CO-CONTROL OF tgs

PETROCHEMICAL PLANTS

Operational challenges at Pampa Energía

Pampa has a diverse fleet of machines and technologies across its different power plants and generation sites.

One of the business goals has been how the operational data can be leveraged to detect anomalies in critical process values.

The objective is to minimize downtime and revenue lost due to unexpected failures.

One of the solutions that has been developed across all sites is the deployment of SQC Analysis dedicated to monitor critical signals across all operational machines.

17 OPERATED PLANTS **5,472 MW** TOTAL CAPACITY

3 HYDRO POWER PLANTS
938 MW

5 WIND FARMS
427 MW

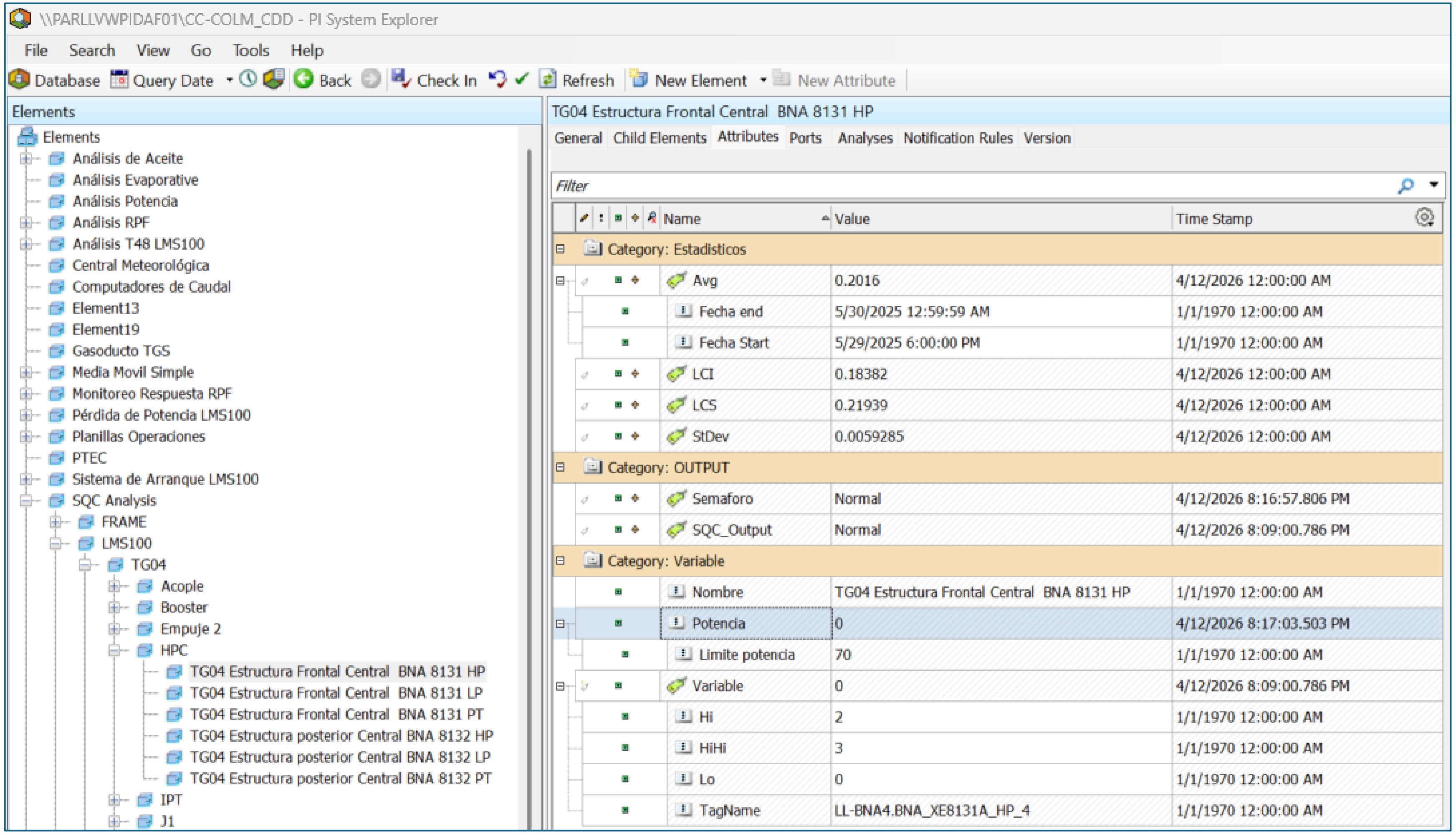
9 THERMAL POWER PLANTS
4,107 MW

Geographic distribution and capacity of Pampa Energia Power Generation assets

Solution - SQC Strategy

Statistical Quality Control analysis – *or SQC* - are used to apply standard statistical tests to process signals in order to detect abnormal behavior by checking whether process values remain within defined control limits.

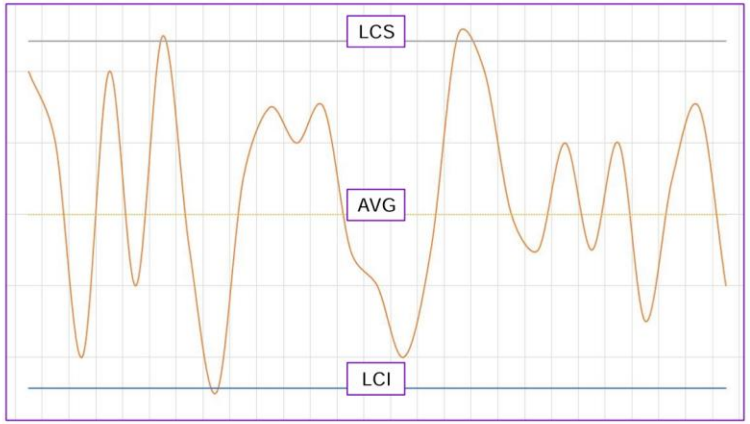
- ✓ Created for critical process values
- ✓ Unique template
- ✓ Models organized by plant, machine and component

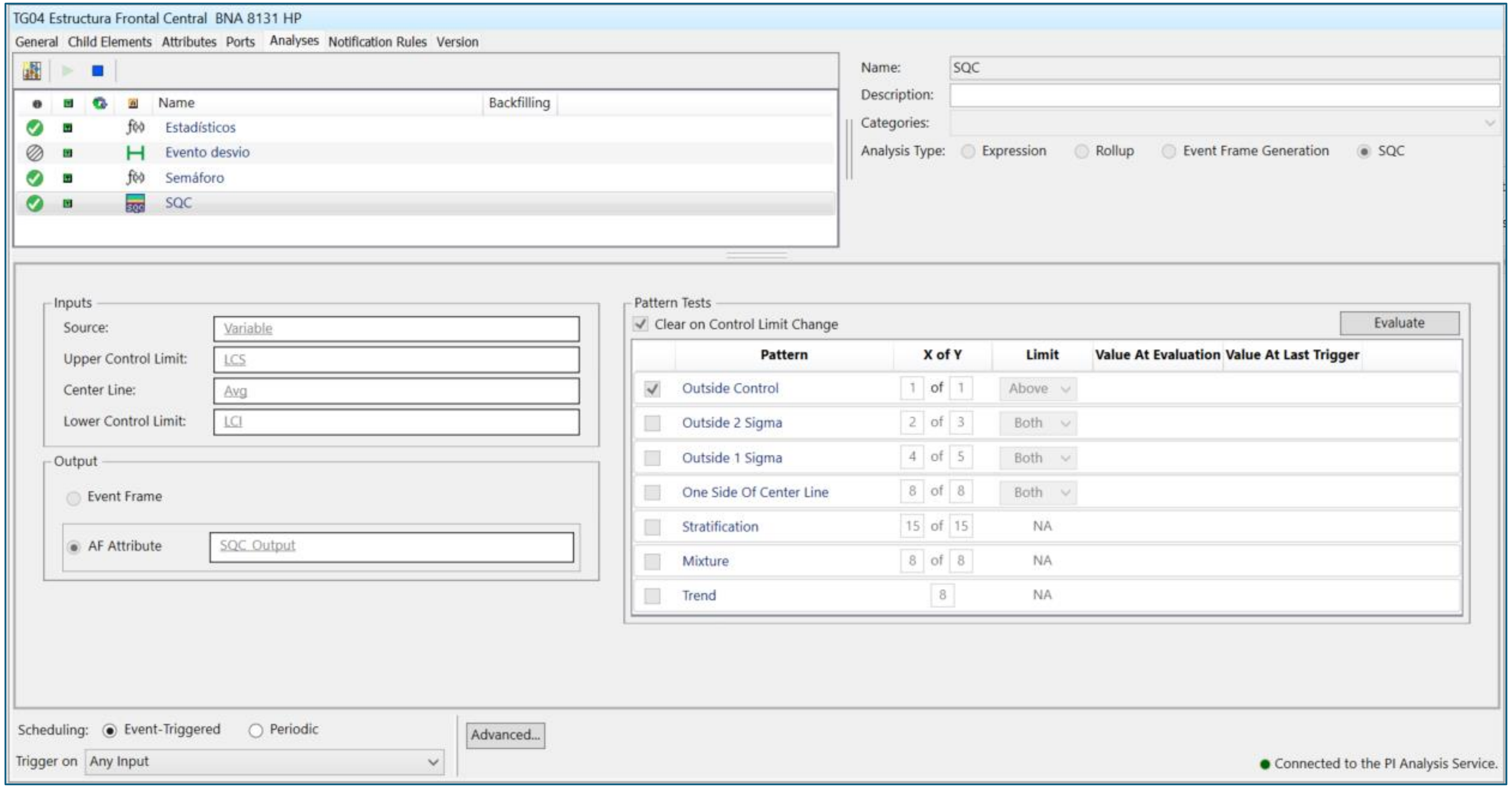


SQC Strategy – Definition of Signal Limits

The Control Limit Parameters

They give the reference if a process value is outside of what is considered "normal range of operation"

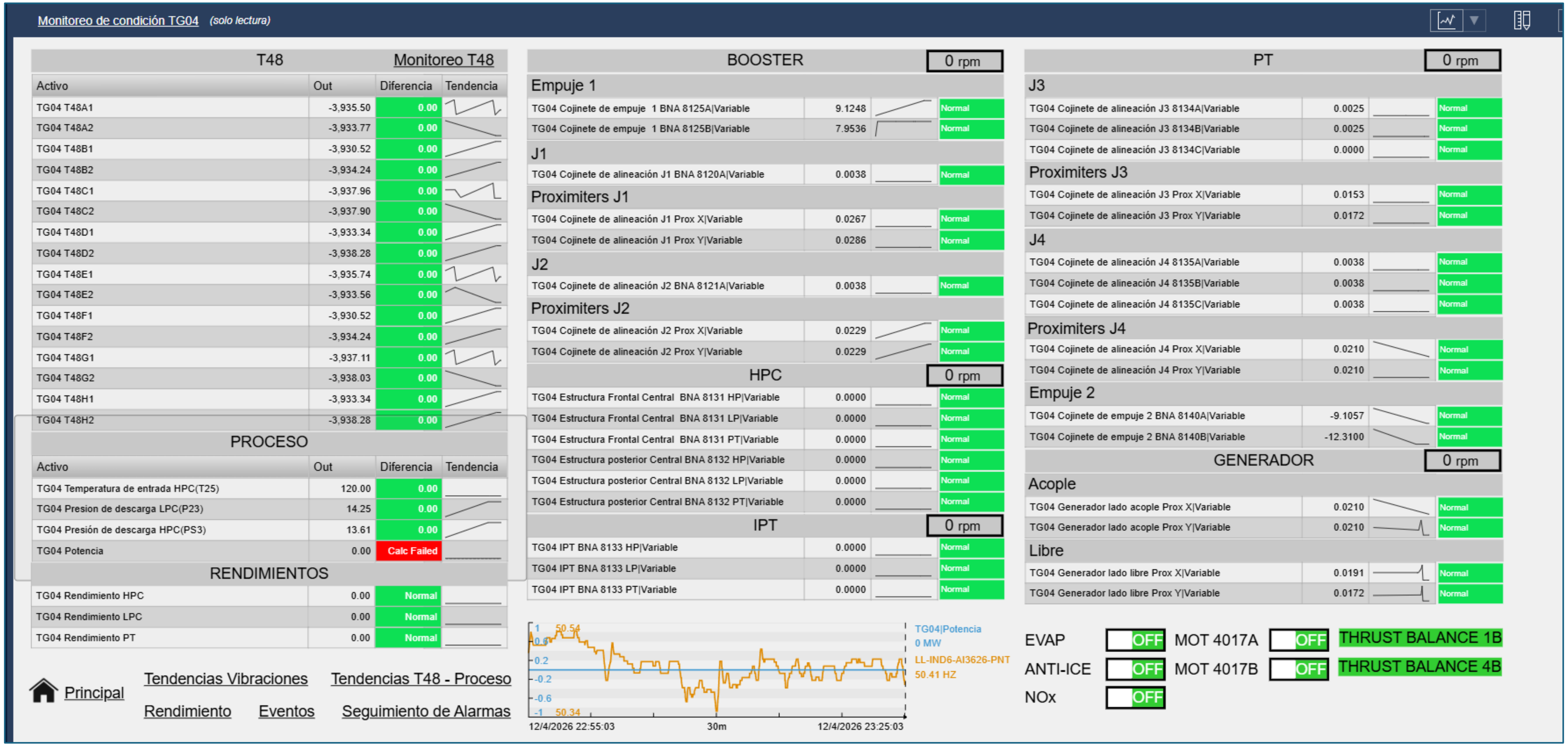




SQC configuration in AF

Monitoring SQC with AVEVA PI Vision Dashboards

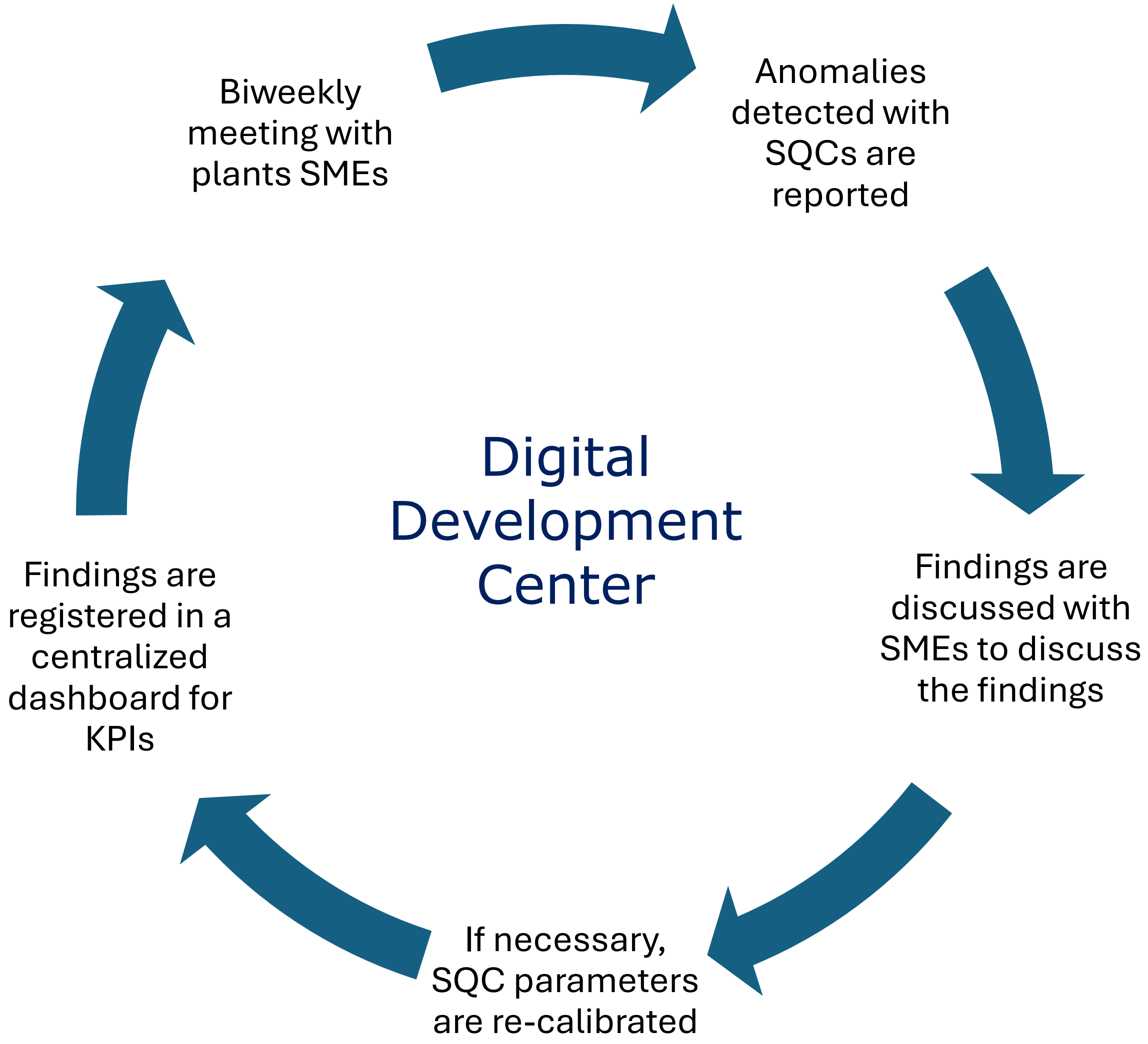
Displays centralizing the most important SQC Analysis were built to support operators work in detecting anomalies.



SQC Strategy – How findings are reviewed

Meetings with SMEs and engineers

- ✓ Discussion about anomalies detected
- ✓ Previous experiences shared
- ✓ False positives discussed and calibrated



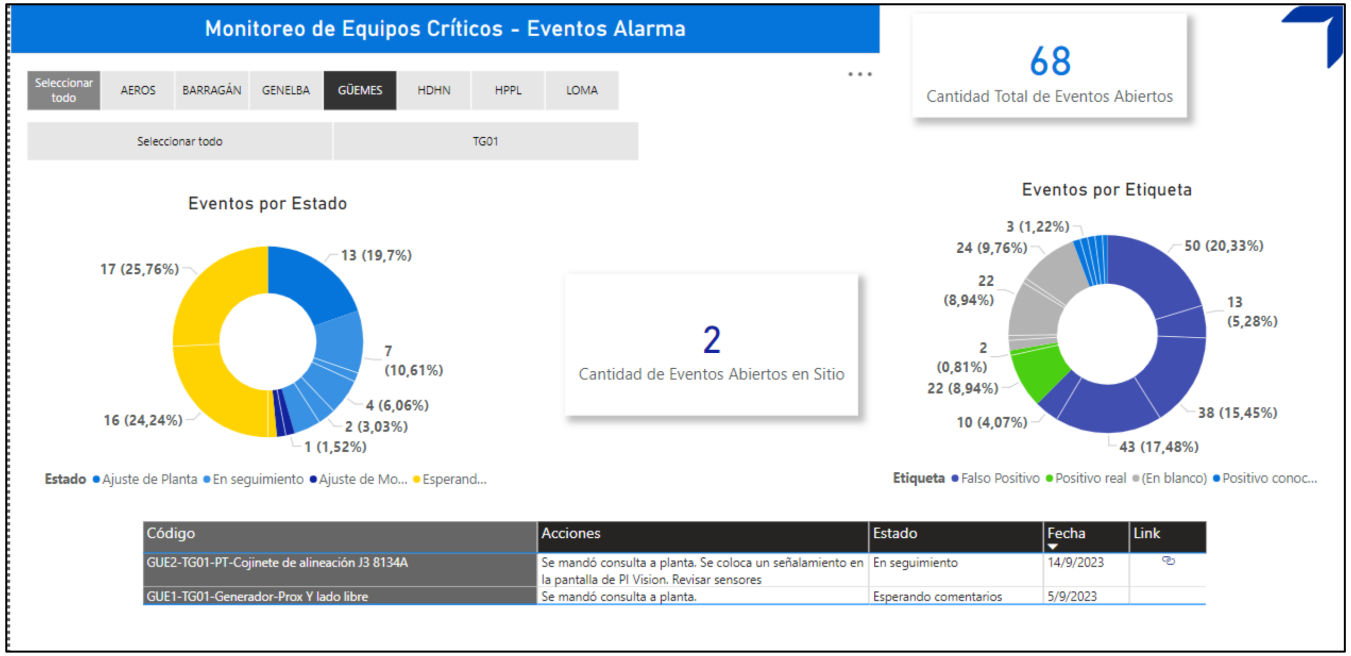
Anomaly detection workflow

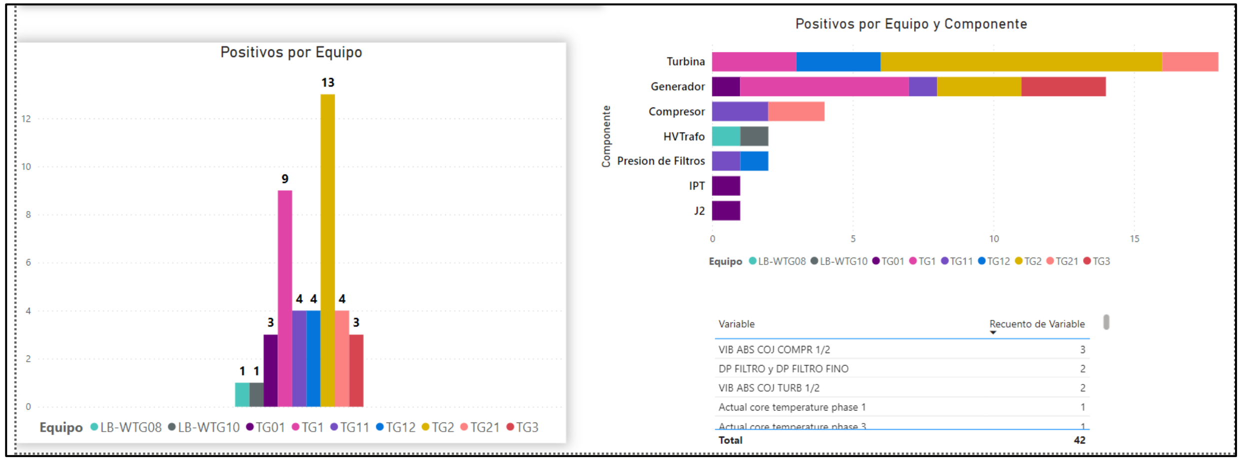
SQC Strategy – Centralized reporting

The anomalies detected across all sites are centralized in a KPI dashboard for further analysis.

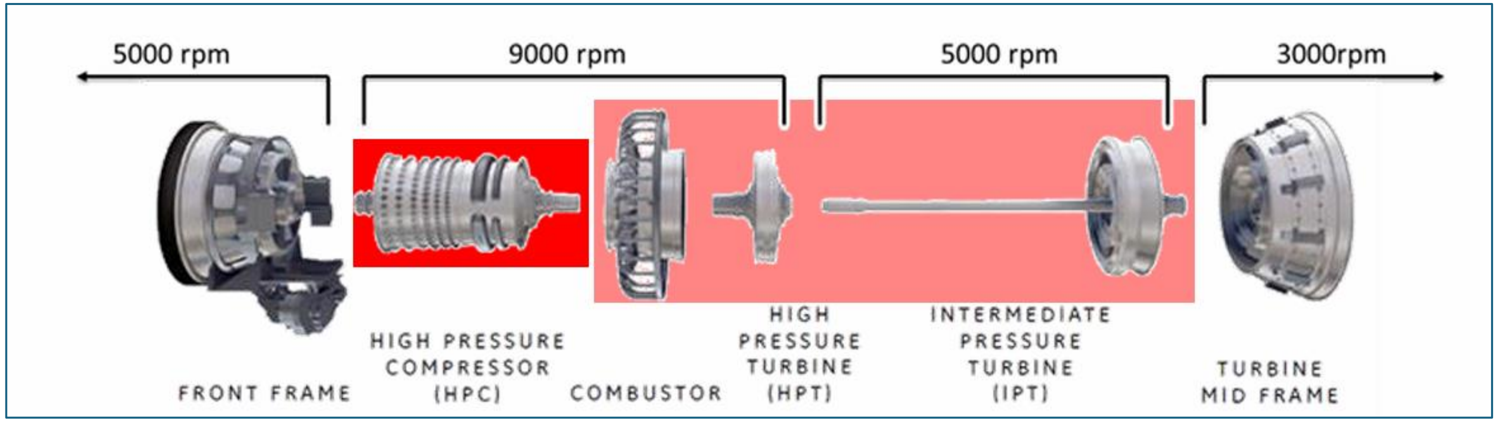
Key indicators tracked:

- Asset
- Asset component
- Root cause
- Solution
- Cost avoided from early detection





Applied case use – LMS100 gas turbine
LMS100 HISTORICAL CONTEXT



LMS100 Gas Turbine

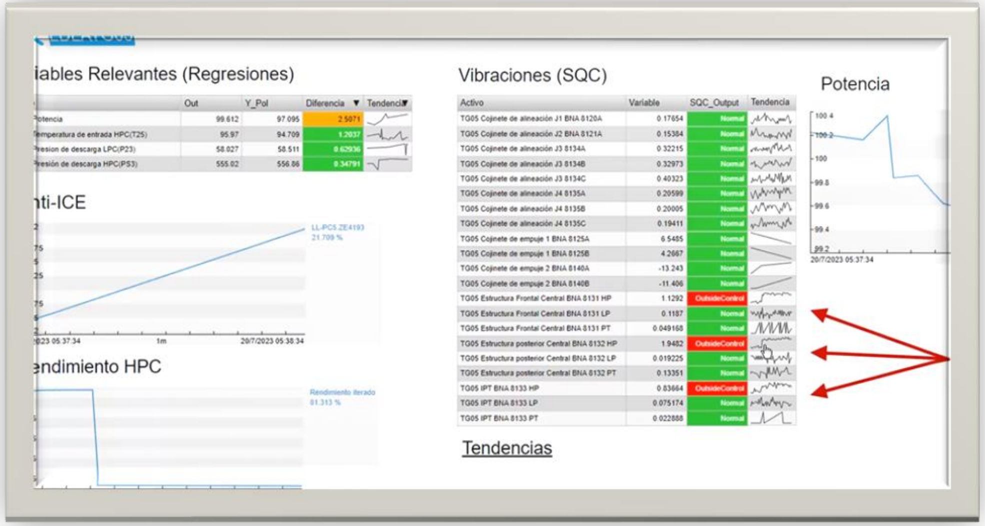
Gas Turbine

Intermediate pressure turbine (IPT)

Blade debris

Applied case use – LMS100 gas turbine
SQC DETECTION AND NEXT STEP: AUTOMATIC TRIP

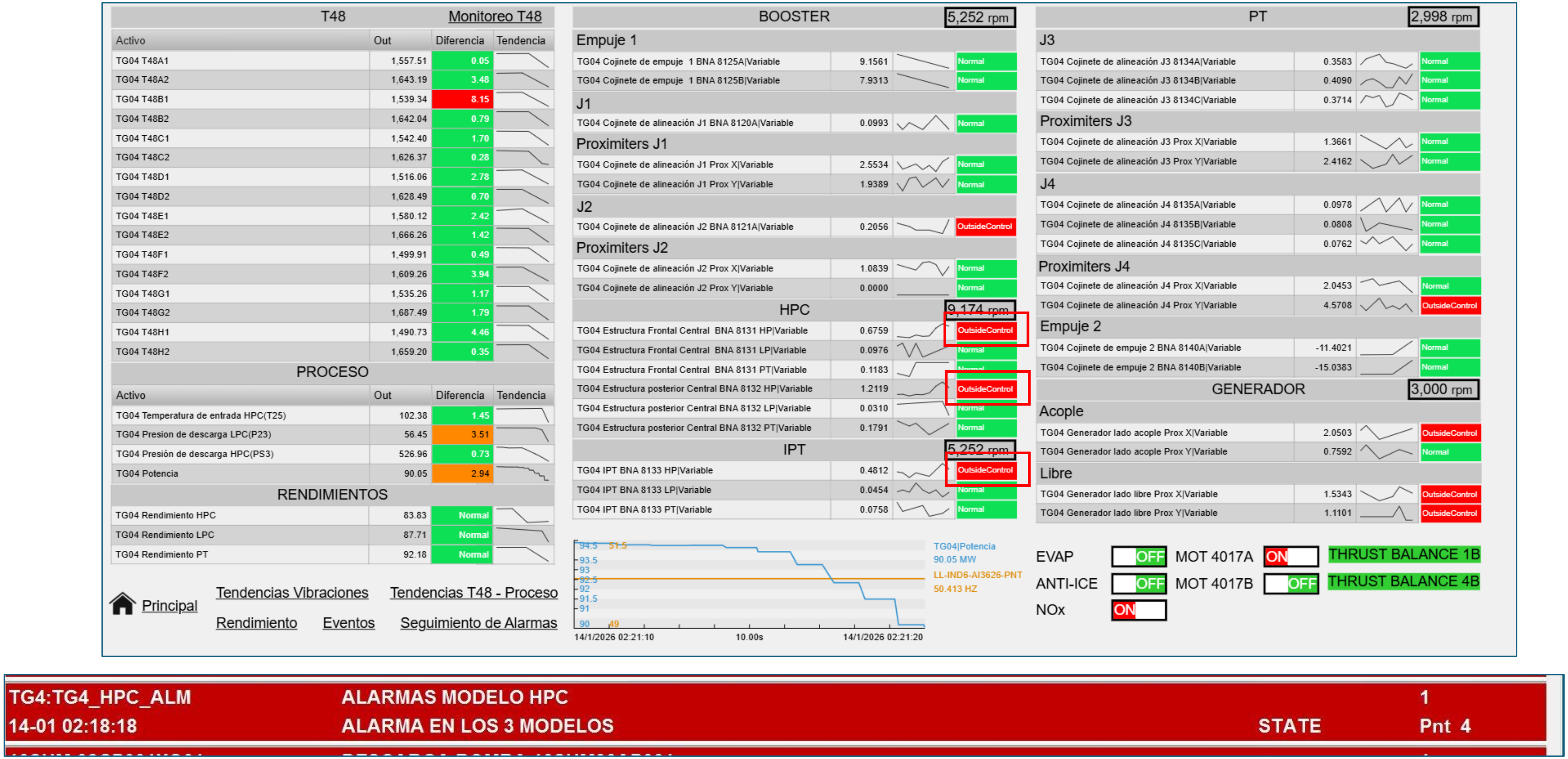
- A model based in the simultaneous activation of 3 SQC for critical process values was replicated in the control systems.
- If the trigger conditions are met for three minutes for all process values, an alarm in the DCS is activated for the operators to investigate and shutdown the machines if an actual risk is found.



Analysis of the July 2023 LMS100 incident.

Now

Applied case use – 2026 LMS100 gas turbine incident



Alarm generated in the Control System

Conclusions and next steps

- It is possible to create all kinds of models and analytics in PI System to support your business.
- Sometimes it is not necessary to develop sophisticated or complex models to generate value.
- You can use PI System as your sandbox to create and test models, even before making any changes in your control systems.
- This strategy could also be helpful in developing predictive maintenance algorithms by detecting early degradation in critical components.
- The study of the SQC analytics allowed to develop another model, which can ultimately lead to automatic trip of turbines. This may reduce the cost and repair time of a critical failure.

Pampa Energía reduces turbine damage through earlier anomaly detection

Challenge

- Needed anomaly detection across multiple plants, machine types, and sites
- Sought to minimize unplanned downtime and revenue lost due to unexpected failures
- Limited early warning when critical process values moved outside normal operating ranges
- Required a scalable approach that reduced effort to deploy and maintain analytics across sites

Solution

- Using AVEVA PI System, PI Asset Framework, and AVEVA™ PI Vision™, Pampa Energía deployed standardized statistical quality control (SQC) analytics and operator dashboards across sites.

Results

- **Reduced asset damage by detecting a repeat LMS100 turbine failure and enabling an earlier operator shutdown before catastrophic escalation**
- **Lowered operational risk by standardizing anomaly detection across sites, improving confidence in identifying abnormal conditions before failures occurred**
- **Improved maintenance decision-making by centralizing anomaly reviews, root-cause discussions, and KPIs, including tracking of avoided costs from early detection**
- **Increased operator trust and responsiveness through clear, visual alerts that translated analytics into timely, actionable decisions**

Thank you

Questions & discussion

Pampa

20 años

pampa.com

Ørsted

Syafiq Tazuri

From Control Room To Grid

Unified Renewable Operations in Practice

- By Syafiq Tazuri - Orsted

Ørsted: Renewable Operations at Scale

Who we are

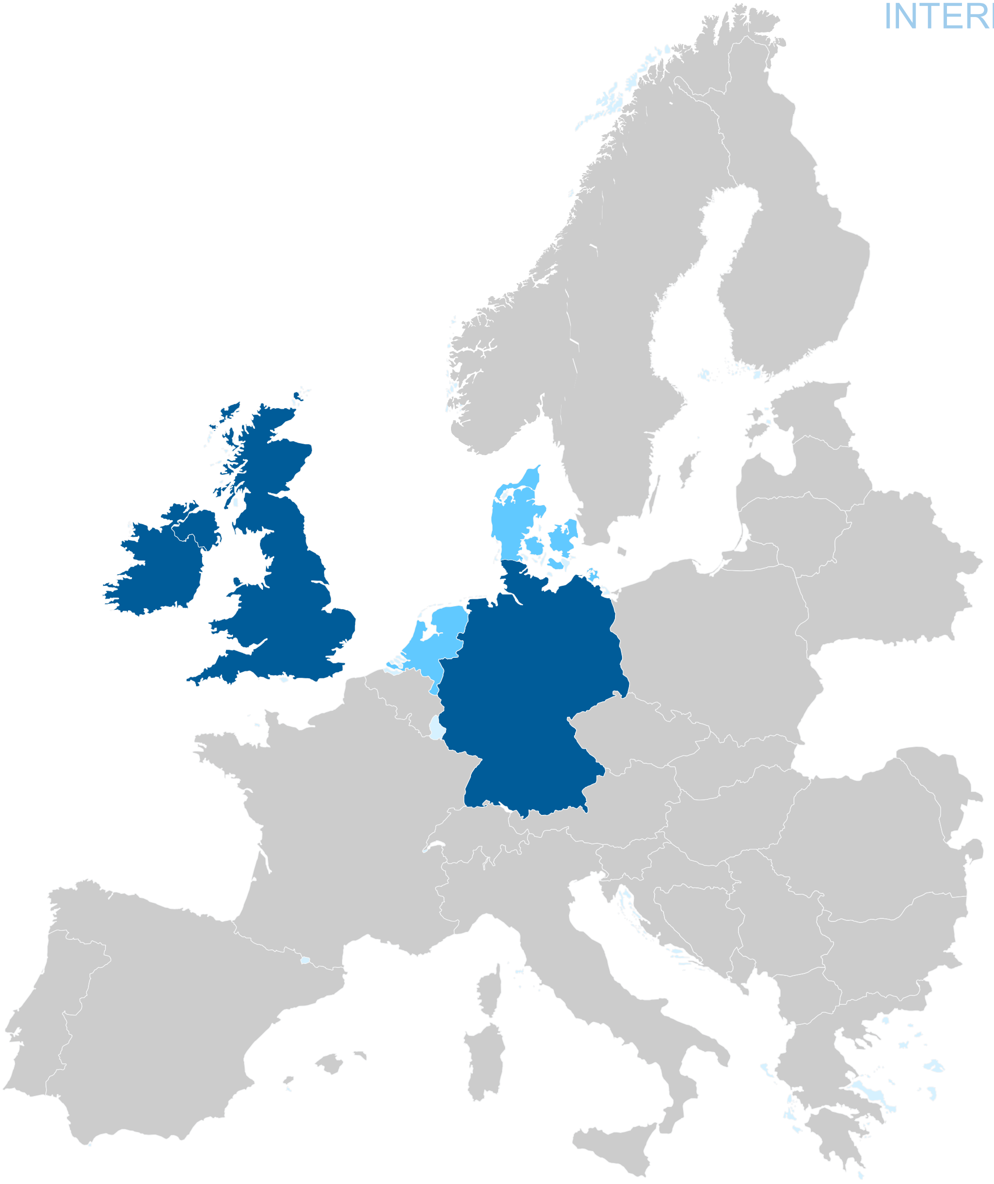
- Renewable energy company focused on offshore & onshore wind
- Multi-country operations (UK, DE, NL)
- Centralized Control Room

What we operate

- 16 wind parks in UK
- 4 wind parks in Germany
- 1 wind parks in Netherlands

From a control room perspective

- Centralized operations across multiple regions
- Continuous interaction with grid and market systems



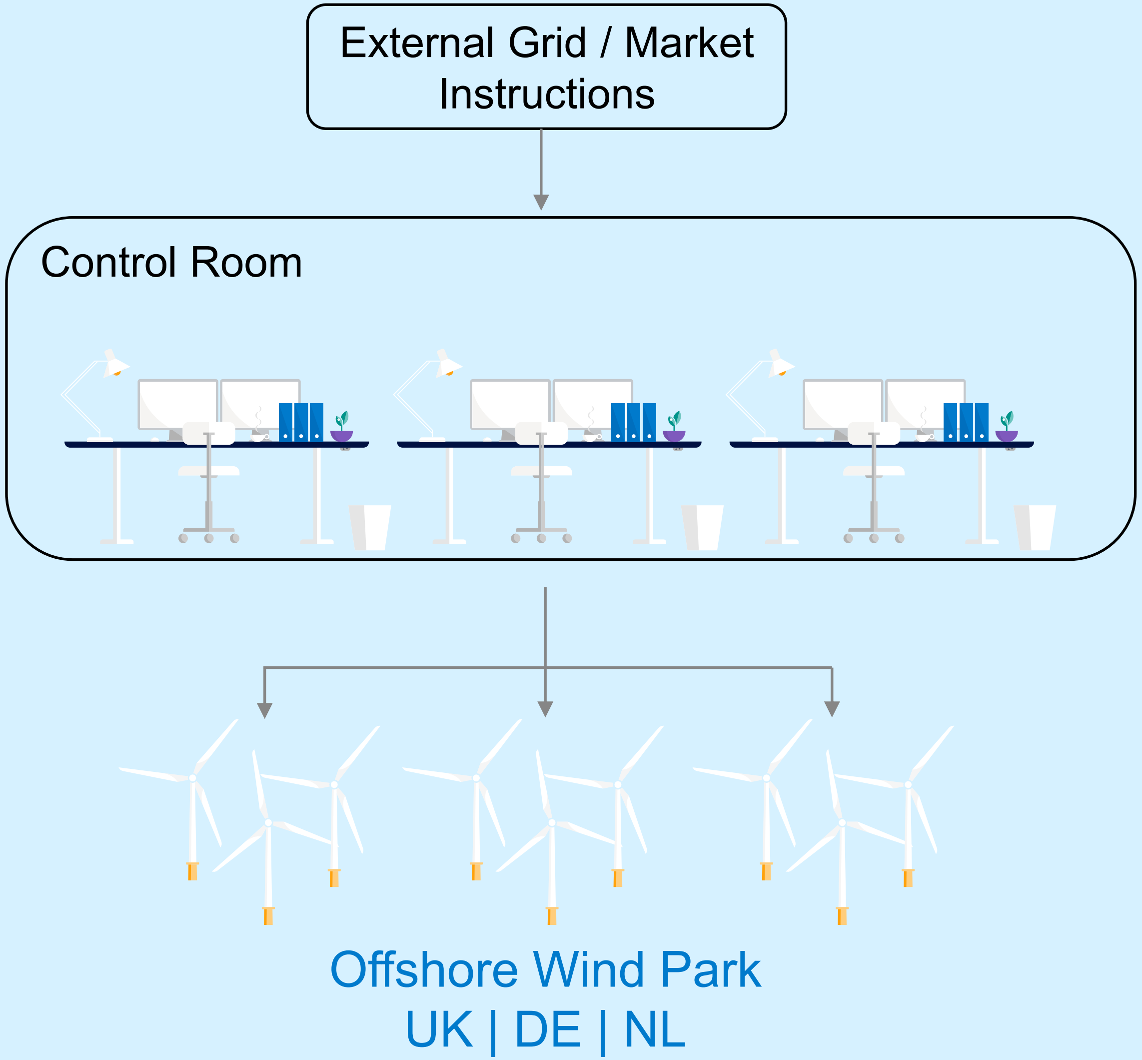
Control Room Operations at Scale

What Control Room manage

- Grid / market instructions
- Wind turbine control across multiple parks
- Alarm monitoring and system status

Operational reality

- Multiple wind parks
- Continuous incoming instructions
- Need for fast, consistent response



Ørsted

Fragmented Systems in Daily Operations (Before Unification)

Fragmentation in systems:

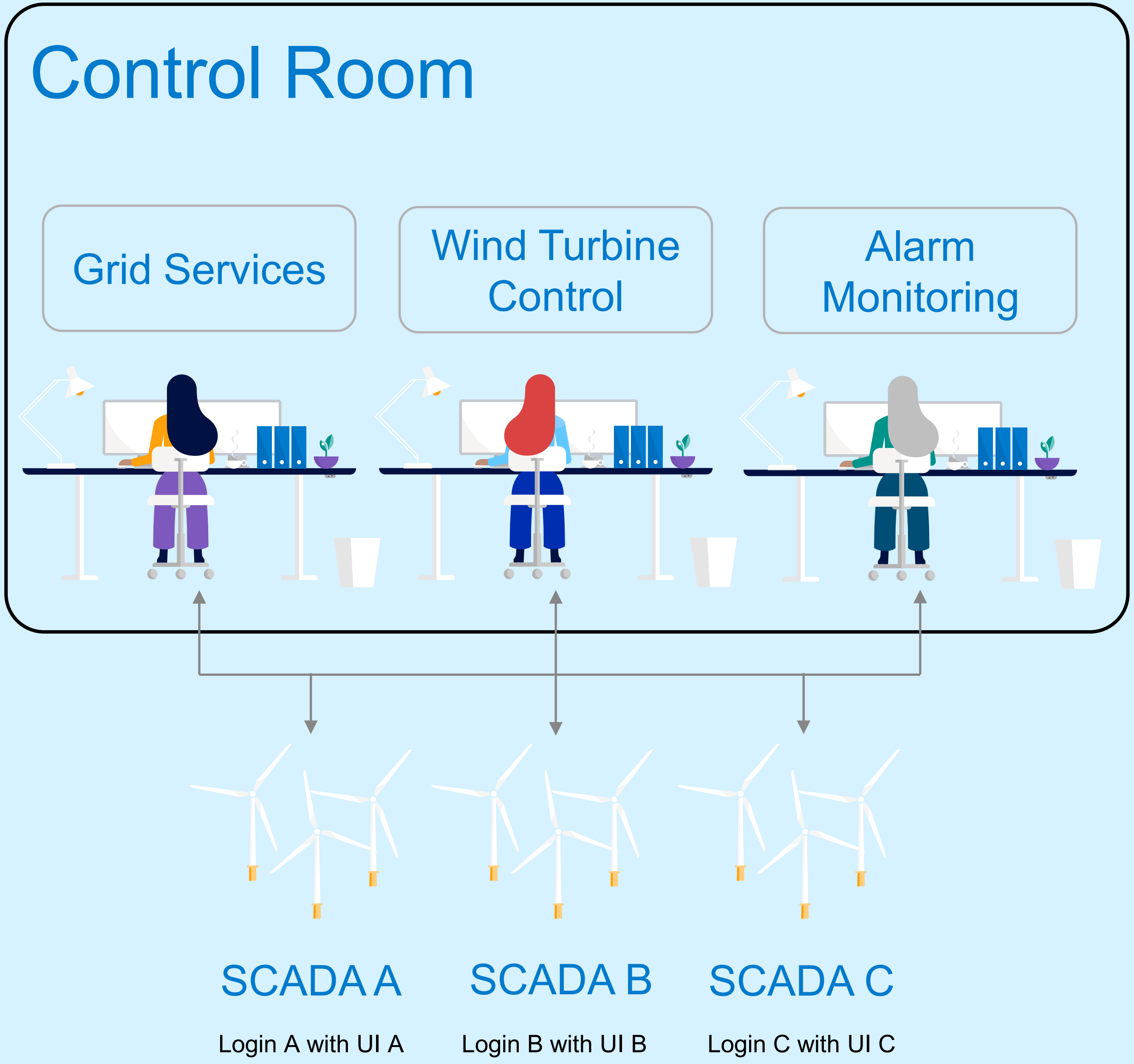
- Grid services handled in separate tools
- Turbine control in vendor-specific systems
- Alarm monitoring in another interface

Operator experience:

- Different interfaces and navigation
- Multiple logins required
- Manual switching between systems

Operational impact:

- Slower response time
- Higher operator workload
- Increased risk during grid events



Manual Workload at Scale

Instruction volume

- 2024: ~3000 Curtailment instructions
- 2025: ~4800 Curtailment instructions

Manual effort

- ~4 minutes per instruction
- 2024 ≈ 200+ hours/year
  ≈ 25 working days
- 2025 ≈ 320 hours/year
  ≈ 40 working days

Operational impact

- Repetitive manual actions
- High workload during peak events
- Slower response under pressure
- Increased risk of inconsistency

Received Instruction
Received Instruction
Received Instruction
Received Instruction

Review & Accept
Review & Accept
Review & Accept
Review & Accept

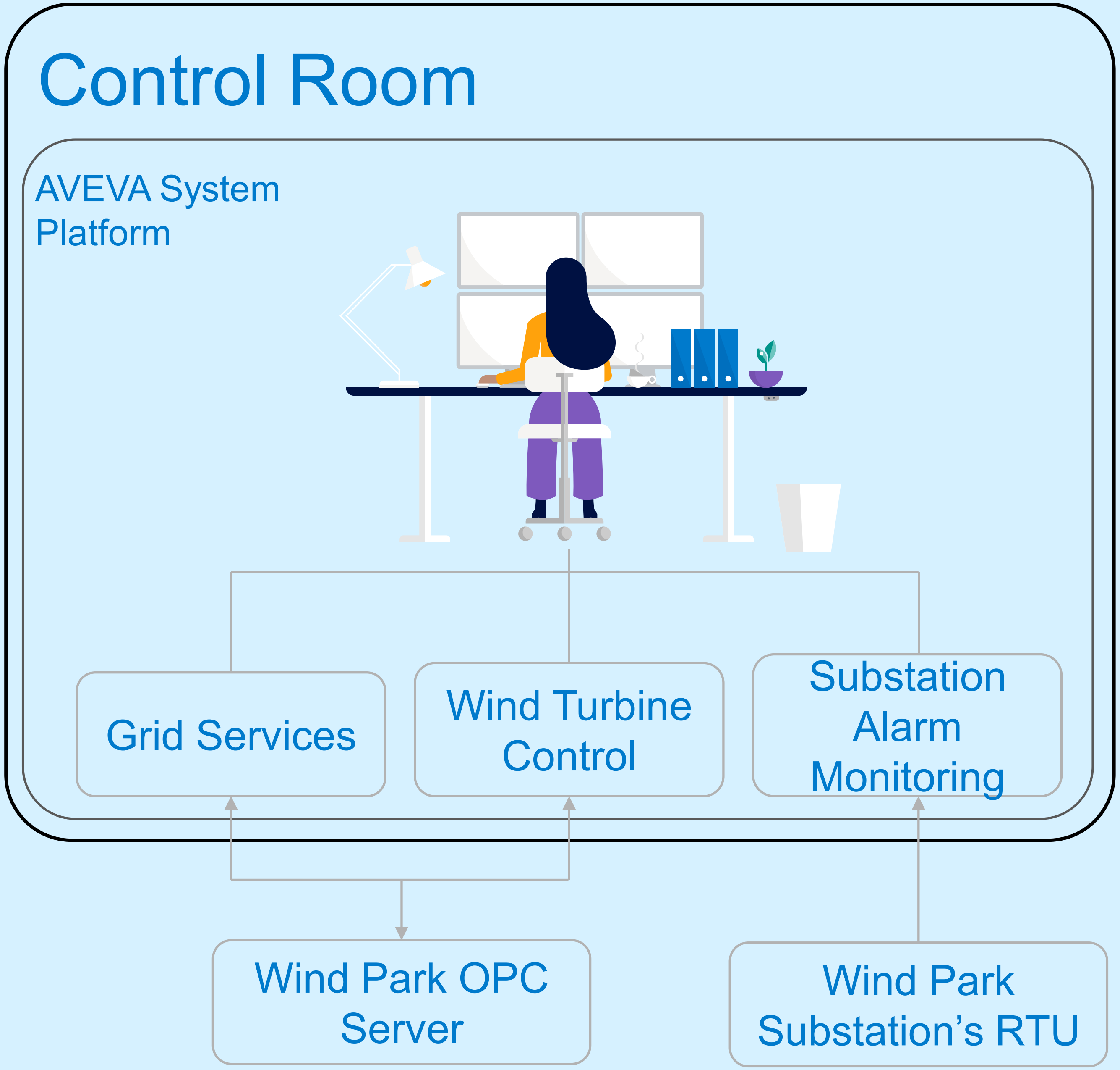
Execute in SCADA
Execute in SCADA
Execute in SCADA
Execute in SCADA

Verify Response
Verify Response
Verify Response
Verify Response

Unifying Operations with AVEVA System Platform

A single operational layer integrates:

- Grid services and power control
- Centralized alarm aggregation
- Wind turbine operational control
- One Interface for Operators



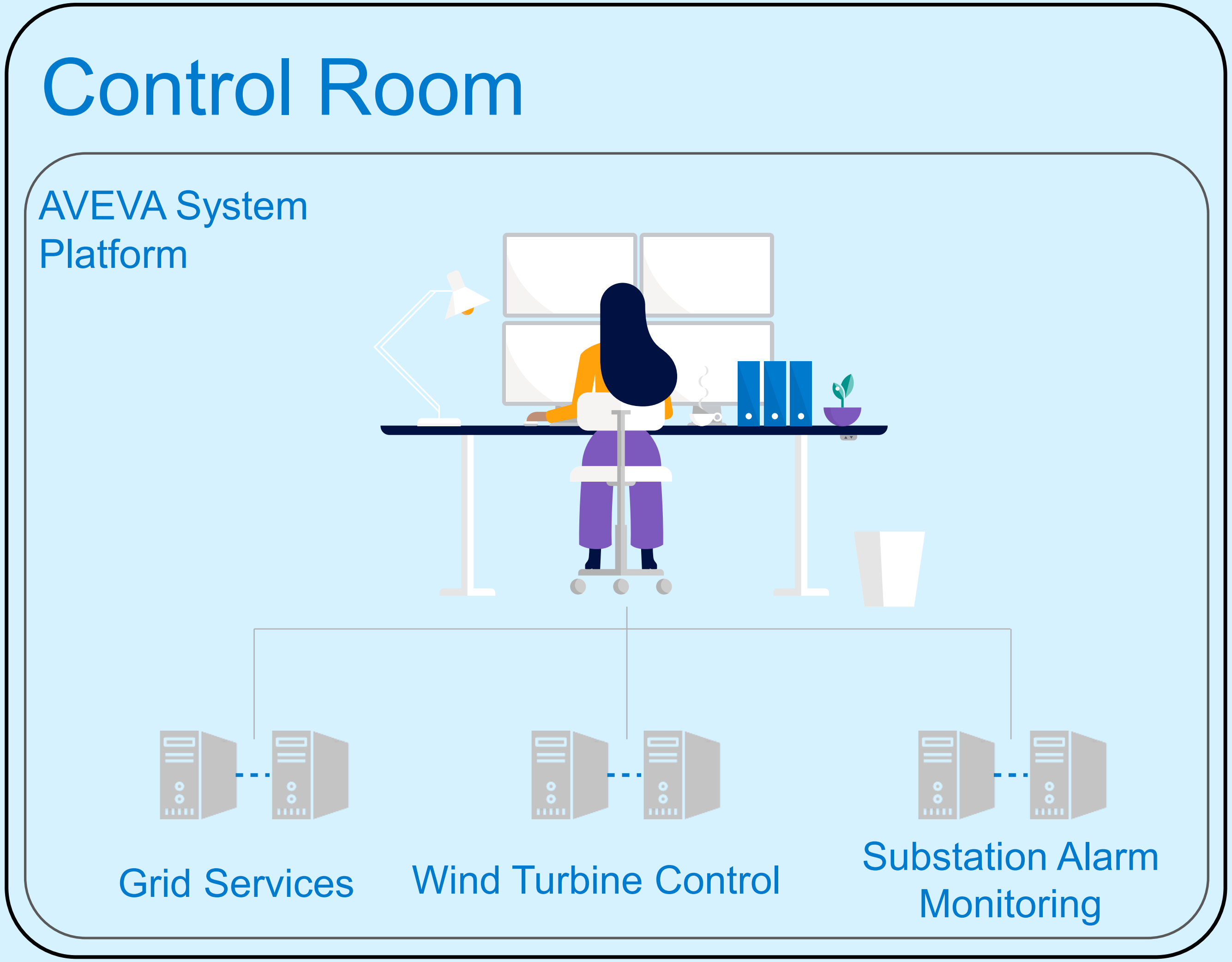
Designed for Continuous Operations

Control room reliability is supported by:

- Redundant application servers
- Separation of operational domains
- Automatic failover during disruptions

Operational domains include:

- Grid Service
- Wind turbine control systems
- Balance of Plant alarms



Accelerating Wind Park Integration

Initial integration:

- Engineering and control logic design
- Alarm structure configuration
- Turbine interface setup

~3 months

After standardized templates:

- Reusable control objects
- Consistent alarm structure
- Faster deployment

~1 Month per Wind Park

Operational Impact

Unified operations enabled:

- Faster response to grid service requests
- Improved alarm visibility for operators
- Simplified turbine control across parks
- Consistent operations across the fleet

Result:

- Improved reliability
- Safer grid response
- More predictable operations

Before	After
Multiple System	Unified Platform
Manual Coordination	Single Interface
Slow Response	Faster Execution
Higher Cognitive Load	Simplified Workflow

Control Room Perspective

"AVEVA-based SCADA solution has removed a lot of manual, time-consuming tasks and gives operators a clear overview of assets."

-Ørsted GSCC Operator

Operator Insight

✓ Faster curtailment handling	✓ Reduced SCADA switching
✓ Centralized turbine control	✓ Improved alarm visibility
✓ Better operational overview	✓ Increased operational automation
✓ Simpler daily workflows	✓ Faster response during grid even

Preparing for the Future Grid

As renewable penetration increases, operations must support:

- Larger renewable fleets
- Faster grid response requirements
- Scalable and resilient infrastructure

Unified operational platforms provide the foundation.

Conclusion

Key takeaways:

- Unified platform simplifies control room operations
- Redundant architecture ensures continuous control
- Template-based design accelerates integration
- Standardized workflows improve grid response
- Scalable foundation for future renewables

POWER AND UTILITIES | GERMANY, UNITED KINGDOM, NETHERLANDS

Ørsted simplifies control room operations through unified grid and wind park management

Challenge

- Operators relied on separate systems for grid services, turbine control, and alarm monitoring
- Manual workflows increased workload during curtailment and dispatch events
- Different SCADA interfaces slowed response and increased operational complexity
- Scaling renewable operations across multiple wind parks risked increasing operator burden

Solution

Ørsted implemented AVEVA™ System Platform to unify grid services, turbine control, and alarm monitoring within a centralized control room environment. The solution standardized workflows using reusable templates and redundant application server architecture.

Results

- **Reduced wind park integration time from ~3 months to ~1 month per park**
- **Improved response to grid and market requests through centralized operations**
- **Reduced repetitive manual operational effort by more than 330 hours annually through automation**
- **Simplified operator workflows by reducing switching between Level 1 SCADA systems**
- **Improved operational visibility across multiple wind parks through a unified interface**
- **Increased consistency across renewable operations using standardized templates and controls**

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AVEVA

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ABOUT AVEVA

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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

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