OSIsoft for Oil & Gas Midstream

Kelly Strader, Enterprise Program Manager

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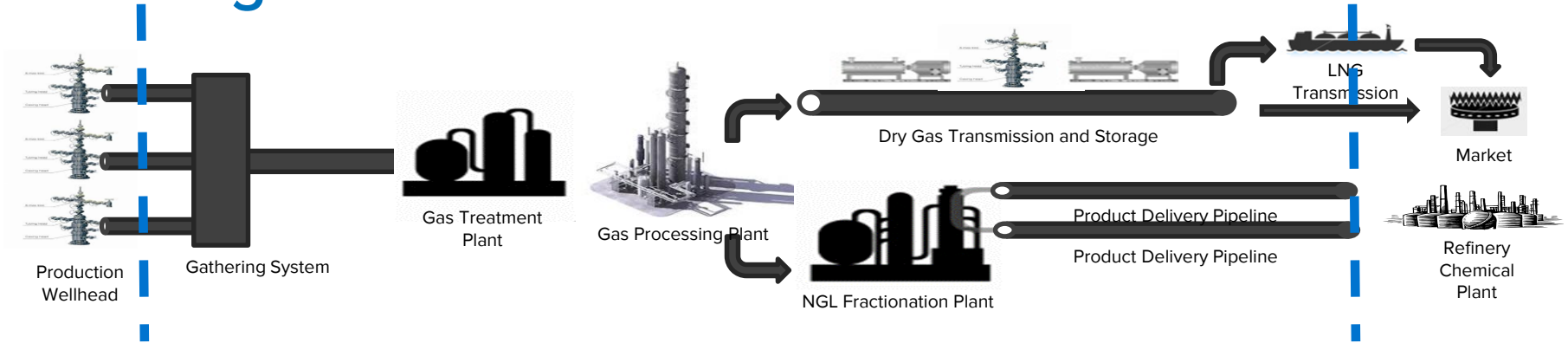
Challenges for O&G Midstream



Gathering & Processing

Leak Detection

Meter management/accuracy

Remote assets, telemetry issues

NGL Fractionation

Contamination extraction and disposal

Plant balance

Maintenance [2]

Transmission & Storage

Rotating equipment reliability [3]

Pipeline Integrity

Asset Performance [1]

Leak Detection

System Awareness [4]

LNG

Safety: High operating pressures, extreme temperatures

Managing LNG Transfer: trucks, vessels

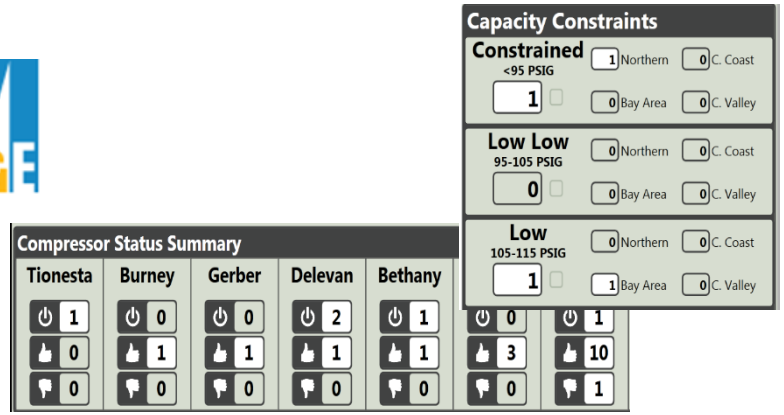
Traditional Use Cases

Predictive and Proactive

PG&E

Implementation of the PI System has enabled the transformation of PG&E's ability to provide safe and reliable gas T&D to our customers. We now have proactive alarm management and enhanced visualization, collaboration, and an crisis management capability. The PI System has provided significant benefits and value.

Sr. Consulting Engineer, PG&E



CHALLENGES

Mandated Implementation of NTSB and PHMSA 49 CFR 192 to address findings of gas explosion 9/9/2010

Large gas T&D network:
- 4.2 million customers
- 6,500 miles transmission
- 43,000 miles distribution
- 4500 RTUs

Diversity of systems, no integration

No collaboration or proactive CBM alarm management

SOLUTION

Used the PI System as a real-time data integration for Situational Awareness

Used PI AF for:
- Advanced alarm management and notification
- Critical asset CBM
- Collaboration, visualization, & mobility foundation

Video Wall to provide system-wide status in Gas Distribution Control Center

RESULTS

Improved alarm management, response, and crisis management capability

Significantly improved real-time situational awareness, visualization, and collaboration

Increased visibility into Gas Operations

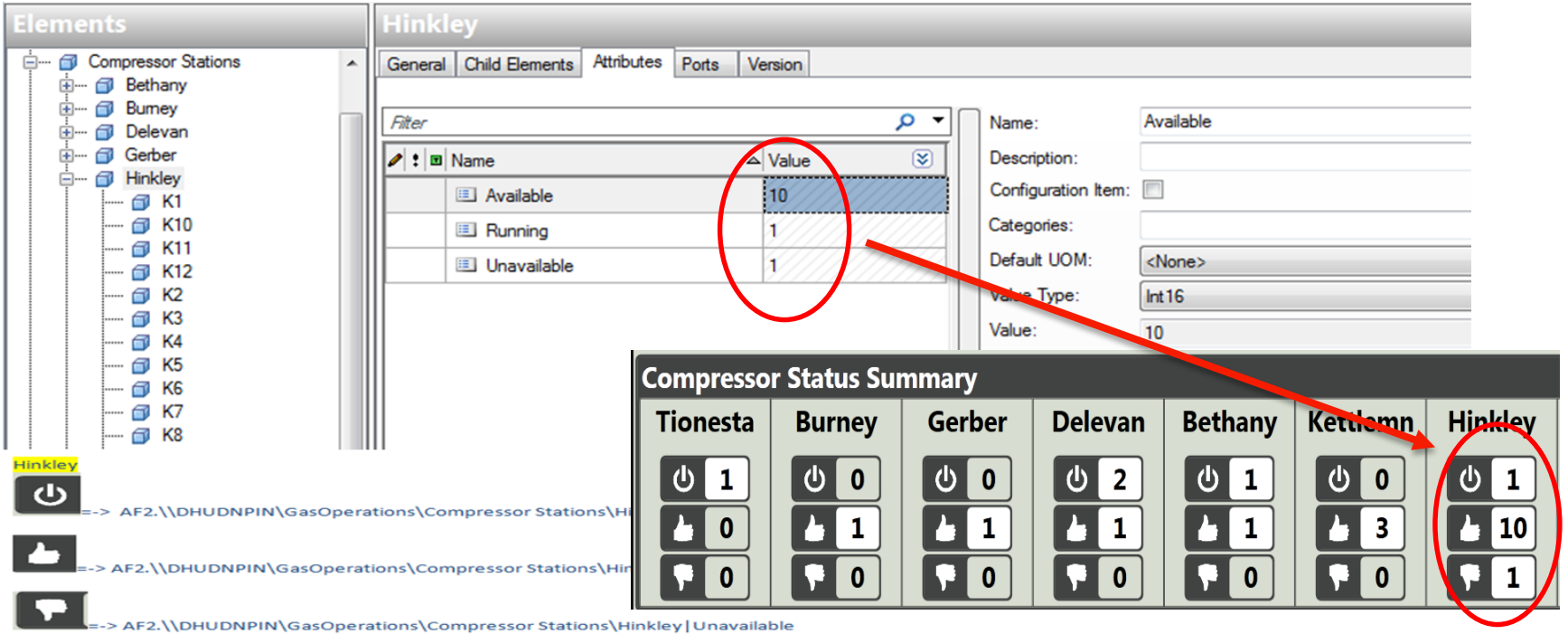
Safer, more reliable gas T&D operations

PG&E – Situational Awareness

Video placeholder.

Situational Awareness

Convert data into Information

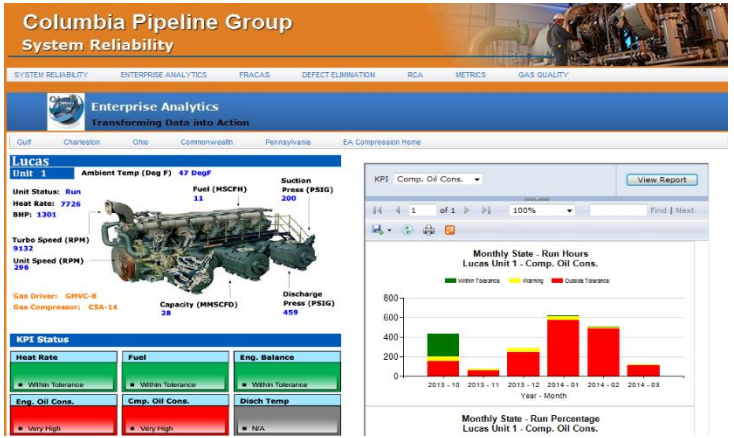


Actionable Knowledge

NiSource Gas Transmission and Storage

“To meet the needs of the customers and maintain total system awareness of the entire transmission and storage process, NGT&S is changing the way we think about data; data becoming information; and information becoming actionable knowledge.”

John Cox,
Reliability Engineer, NiSource



CHALLENGES

Meeting customer delivery obligations with an aging automation system.

Meeting the requirements of an expanding natural gas market spurred by increased production in the Marcellus Shale formation

SOLUTION

Role Based Dashboards using PI Web Parts and DataLink for Excel Services.

Core to NiSource's “Enterprise Analytics” reliability improvement program

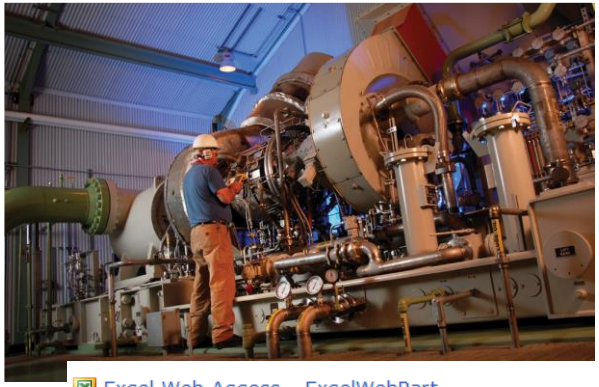
RESULTS

Providing knowledge empowers stakeholder employees to autonomously monitor and maintain assets for which they are responsible.

Asset Performance Monitoring

NiSource Gas Transmission & Storage

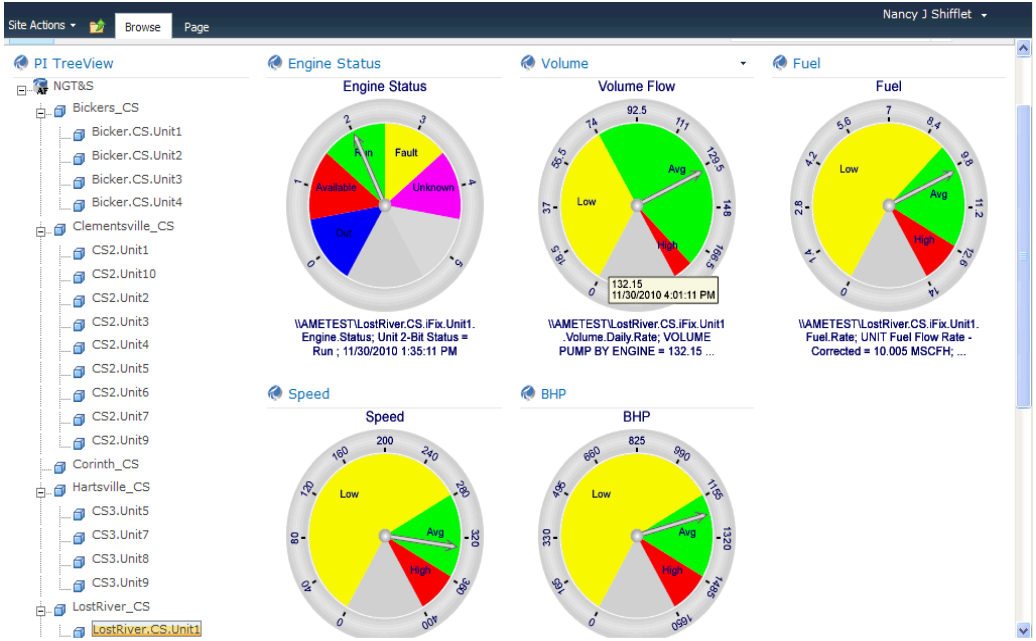
Real-time and Historical perspectives



Excel Web Access - ExcelWebPart

	A	B	C	D	E
1	Data Availability	Previous Day	Previous Week	Year to Date	YTD Unavailable Hours
2	Unit 5	100.0%	94.0%	64.9%	607.2
3	Unit 7	100.0%	94.0%	65.7%	592.9
4	Unit 8	100.0%	94.0%	66.2%	584.0
5	Unit 9	100.0%	94.0%	65.0%	604.1
6					

DataAvailability | OverView



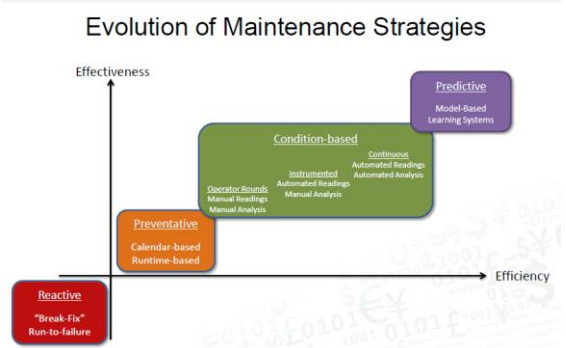
Reliability Focused Maintenance

Alyeska Pipeline

“Implementation of the PI System has enabled the transformation of Alyeska’s ability to provide safe and reliable gas T&D to our customers. We now have proactive alarm management and enhanced visualization, collaboration, and an crisis management capability. The PI System has provided significant benefits and value.

Maintenance Strategies Program Lead

Alyeska Pipeline Service Company



CHALLENGES

Need to improve pipeline integrity and reliability – regulation & scrutiny

Difficult operating environment

Attrition of SMEs

SCADA based system closed, difficult to work with, poor integration

SCADA data to the enterprise & cyber security

SOLUTION

Developed Reliability Centered Maintenance and Diagnostics (RCM)

integrated with the Maintenance system including master data management (MDM) synchronization

Web-Based equipment, alarm, and event visualization & collaboration

Automated 200+ Calendar/Runtime-based PMs, root cause analysis

RESULTS

Significant improvement in asset integrity and reliability

Captured knowledge from SMEs by developing (CBM) algorithms

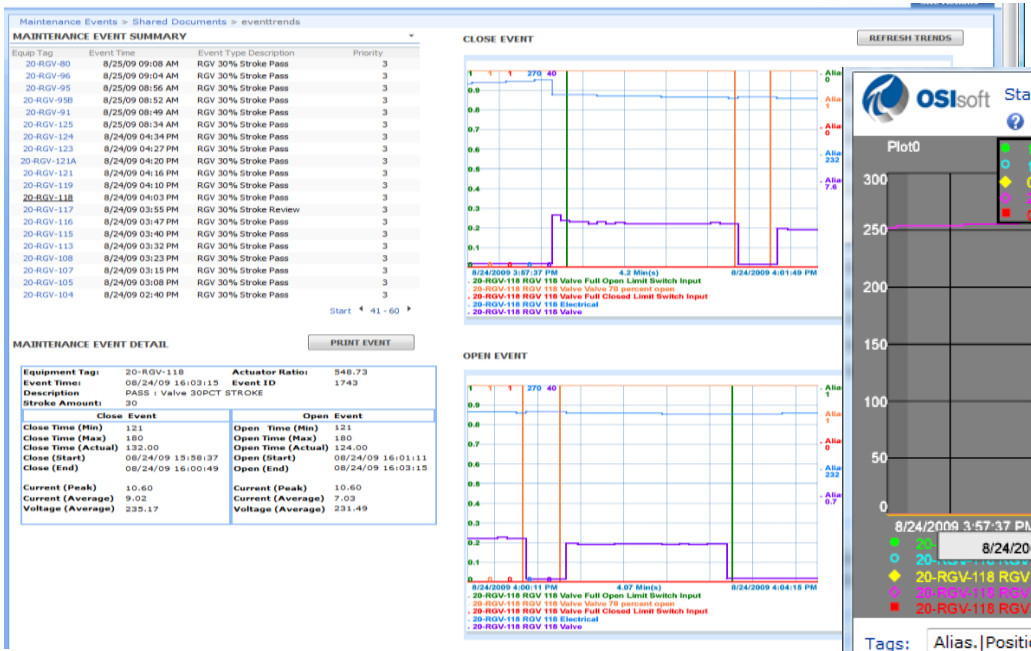
Addressed cyber security and SCADA data to the enterprise

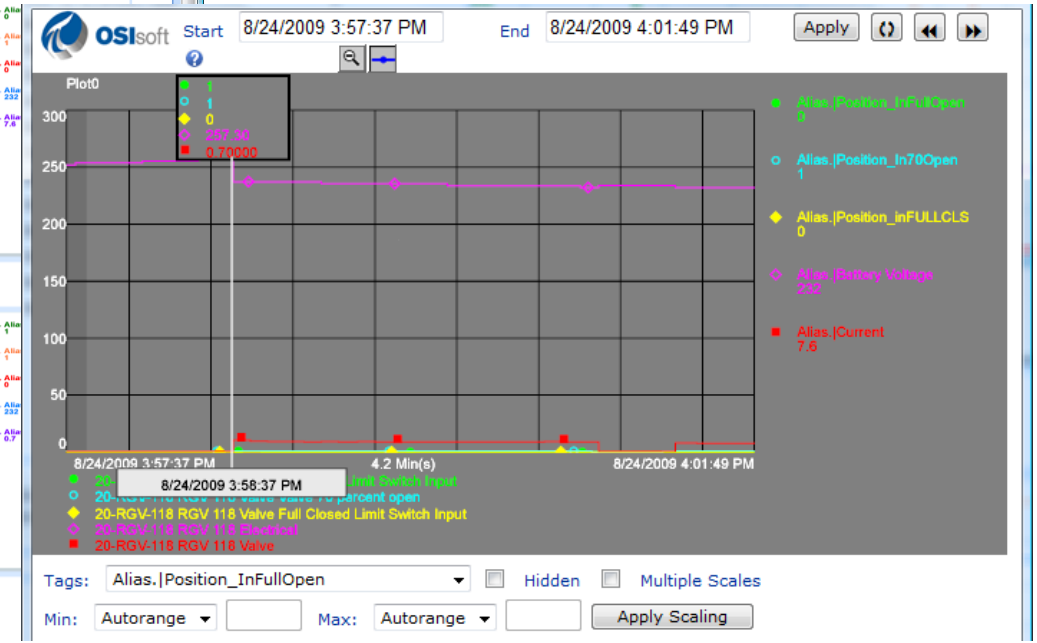
Reduced maintenance and IT costs

Reliability-Centered Maintenance and Diagnostic

Alyeska pipeline SERVICE COMPANY

Asset-based analytics





Innovative Use Cases

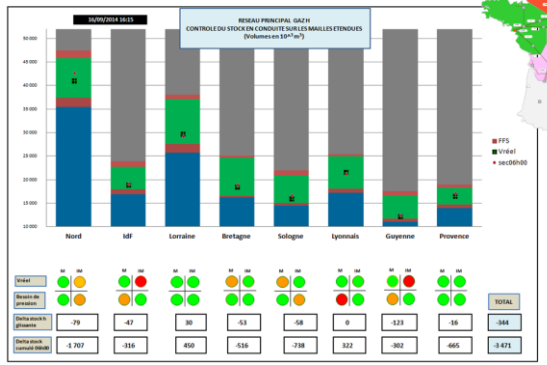
Realtime Linepack Management

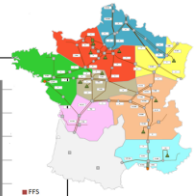
GRTgaz

Realtime Linepack management is a key contributor to reaching the operating cost reduction objectives determined by the Energy Regulation Commission. Benefits include:

- Significant input data improvement as part of the current fine-tuning of real-time optimization & supervising applications
- Reduction in operating costs connected with intra-day sourcing
- Extra level of control of intra-day consumption forecast

Anne Leray – Gas Operations





CHALLENGES

Meet operating cost reduction targets set by European Regulators

Improve ability to manage intra-day supply fluctuations

Provide France with a transmission capacity in order to meet market demand and enhance security of supply

SOLUTION

Configure PI-AF to model the Country, Regions, Sub-Networks, and Blocks.

Developed linepack calculations at each level (using rollup functionality)

Real-time data delivered via dashboard depicting operating conditions for each region

RESULTS

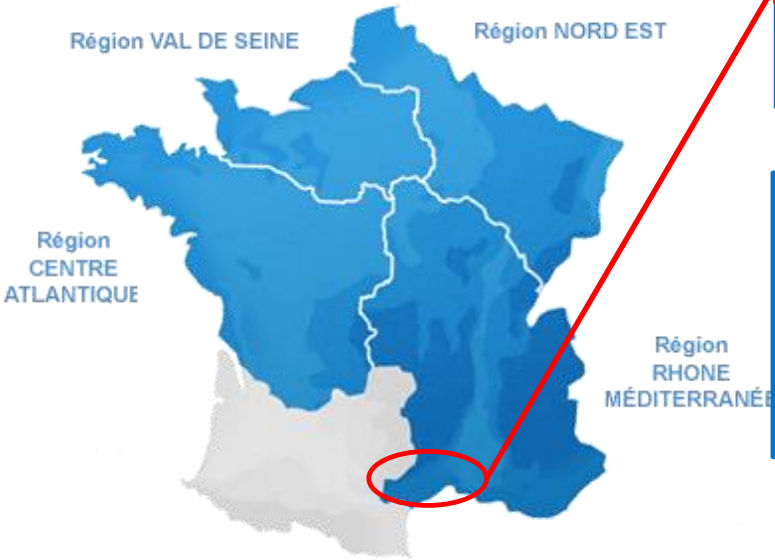
Eliminated external models and 3rd party services for determining optimum operations (reduced costs)

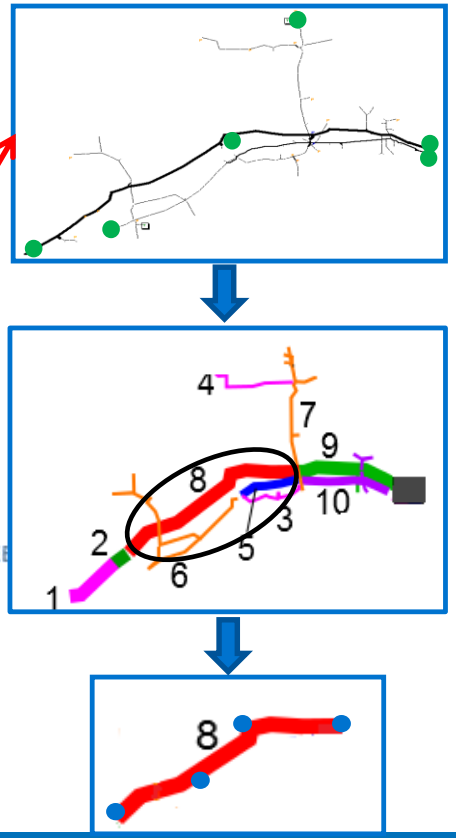
Greatly improved intra-day supply sourcing decisions (more efficient operations)

Reduced level of safety margin to ensure supply commitments (reduced risk and costs)

V – The solution

The Grtgaz network is divided into 4 operating **areas** with each about 15 **sub-networks.**





High Heating Value and Density sensor

Pressure sensor

Model's Hypothesis

A **Sub-network** : set of pipelines with homogeneous higher heating value and gas density

Block : set of pipelines with homogeneous pressure

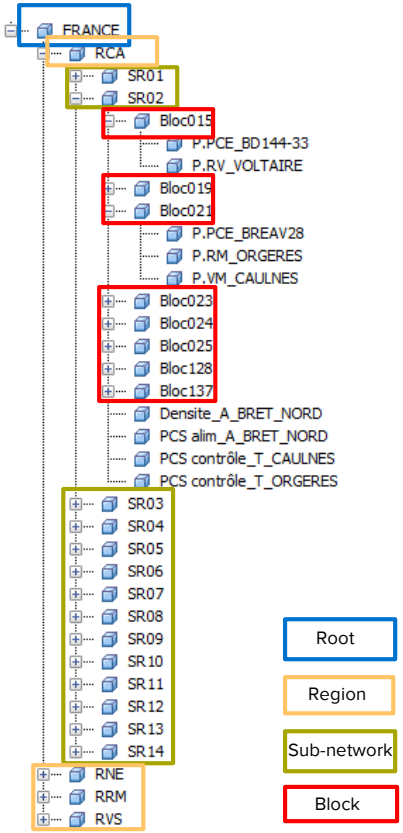
$Z = f(HHV_{ave} ; Density_{ave})$

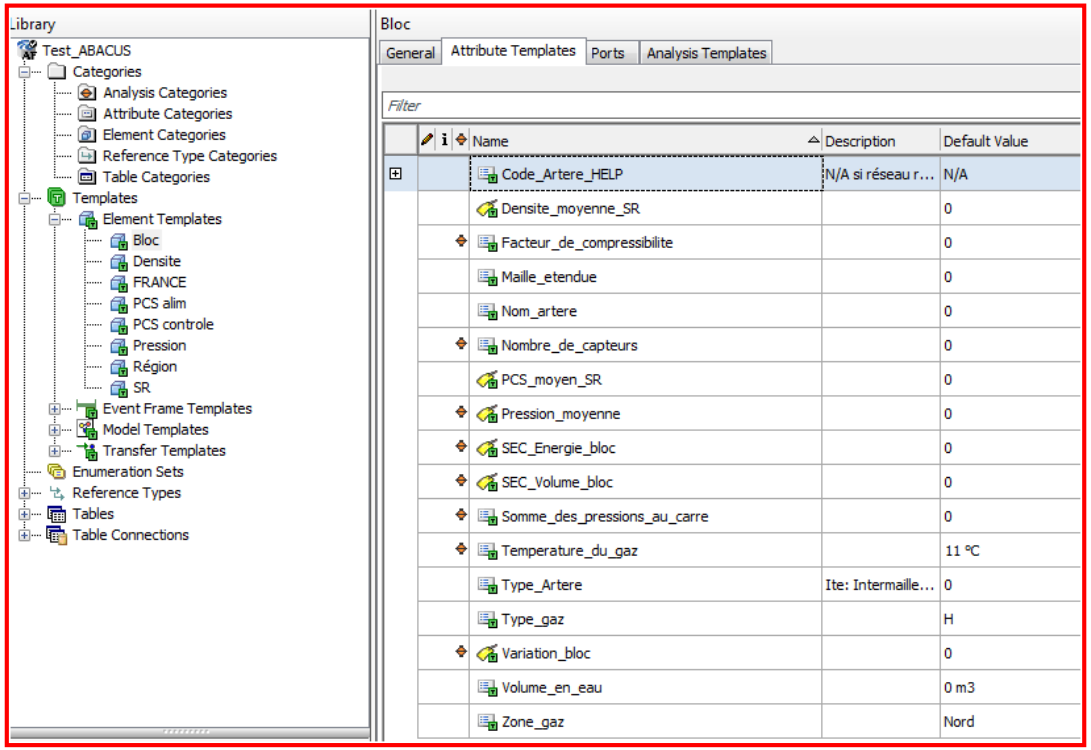
$LP = f(Pressure_{ave} ; Z)$

figures:

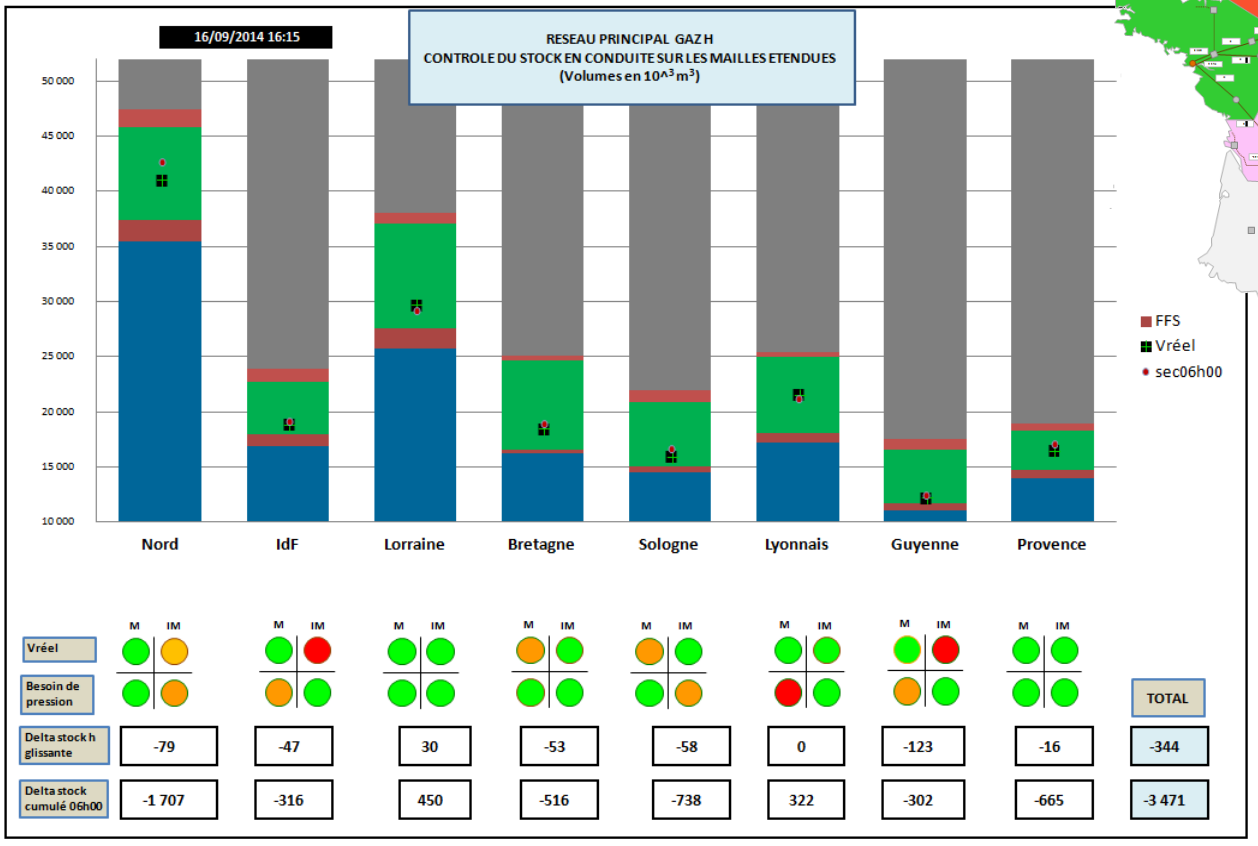
- **60** sub-networks
- **500** Blocks
- **1500** pressure sensors
- **250** HHV sensors
- **150** density sensors

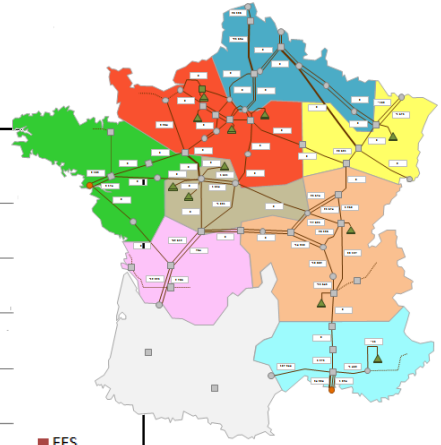
The solution





Exploitation of results



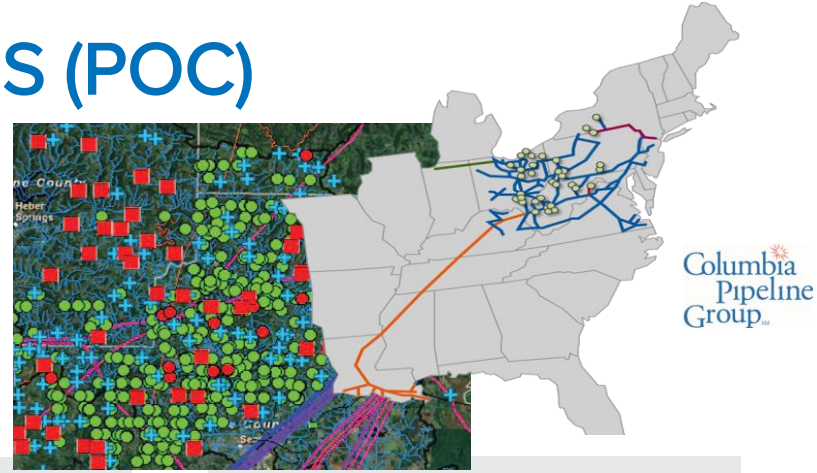


Gas Quality Mapping – PI/ArcGIS (POC)

Columbia Pipeline Group

We are very interested in exploiting the capabilities of our investment in PI and ArcGIS. A real-time spacial view of gas-quality entering and leaving our system would be very helpful to ensuring we meet our delivery commitments.

CPG Gas Operations



CHALLENGES

Improve visibility into gas quality variances across the system

Improve gas quality communications to producers, shippers, and markets.

Achieve more value from investments in PI and ArcGIS

Reduce the need for 3rd party applications

SOLUTION

Launch a POC in 1H2015:

Implement the PI Integrator for ArcGIS

Display real-time gas quality information on key POR's and POD's.

Extend access to gas quality information to broader audience within CPG

RESULTS

Expected results include:

Improved understanding of BTU rating and variances across the system

Better decisions from Gas Operations to adjust in-line blends

Greater situational awareness of gas quality

PI/ArcGIS Integration

Thank You

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