Transforming Data into Action

How the PI System and OSIsoft’s Enterprise Agreement are Being Utilized for Asset Reliability and Performance at Columbia Pipeline Group

Presented by Dave Johnson
NiSource Inc.

Gas Distribution
- One of the Nation’s Largest Natural Gas Distribution Companies Serving More Than 3.3 Million Customers
- Established Best-in-Class Platform for Sustainable Earnings Growth Through:
  - Comprehensive long-term infrastructure-investment programs
  - Thoughtful customer programs
  - Creative regulatory approaches

Gas Transmission & Storage
- 15,500-Mile Network of Interstate Natural Gas Pipelines
- One of the Nation’s Largest Market Area Storage Systems
- Strong Strategic Footprint in the Growing Marcellus Shale Production Region of Appalachia

Electric Generation & Distribution
- Environmentally Compliant Fleet of Electric Generation Facilities
- Total Generating Capability of 3,322 Megawatts
- More than 450,000 Industrial, Commercial and Residential Electric Customers in a Growing Marketplace

From the Gulf Coast through the Midwest to the Northeast, our portfolio of companies serves some of the nation’s highest-value energy markets, with services ranging from natural gas transmission, storage and local distribution, to electricity generation, transmission and distribution.
Pipeline
- More than 15,000 Miles
- Delivers Approximately 1.3Tcf per Year
  - 5% of U.S. Market
  - Serves Customers in 16 States

Compression
- 1.1 Million Horsepower
- 104 Stations

Storage
- 280 MMDth
  - 4.7 Bcf/d Deliverability
  - 37 Storage Fields in Four States
Business Challenges

- Major compression asset failures affecting reliability of system and customer satisfaction

- Reactive use of data instead of Proactive

- Concerns around operational data integrity
Enterprise Agreement

- Signed late 2011
- Asset basis = Certified Horsepower (CHP)

Elements

- Unlimited Licenses for enterprise
- Enhanced support
- Services

Perspective of Value Add

- Cost reduction
  - Maintenance
  - Energy/fuel
  - IT
- Improved reliability/reduction of “incidents”
- Continuous Improvement/Collaboration
ENTERPRISE ANALYTICS
TRANSFORMING DATA INTO ACTION
Enterprise Analytics (EA) is a program aimed at leveraging leading technology tools to analyze data (primarily real time data) to allow for proactive actions to be executed to avoid a negative event entirely or minimize the impact of such an event. Other uses include the ability to analyze static data in a more dynamic way so that knowledge based conclusions can be drawn quickly and swift targeted actions can occur.

To the right are areas in which CPG is focusing such efforts. Select a link to access the relative tools.

**NOTE:**
In order to view the real time dashboards, Adobe SVG Viewer needs to be installed. To install Adobe SVG Viewer please click [here](#). Follow the instructions to complete the installation and restart your browser.
Enterprise Analytics Identified Issues
Hartsville CS Unit 307
Gas Producer Thrust Bearing Potential Failure
Hartsville CS Unit 307
Turbine Combustion Chamber Potential Failure
Lost River CS Unit 5
Engine Balance-Cylinder 3 Lifter
<table>
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<th>Incident</th>
<th>Station</th>
<th>Unit</th>
<th>Date</th>
<th>Notification</th>
<th>Estimate of Potential Failure Cost</th>
<th>Estimated Failure Avoidance Savings</th>
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**Total Exposure to Failure** $9,995,000

**Estimated Total Savings** $1,579,250
Enterprise Analytics

“The term Enterprise Analytics refers to a program aimed at leveraging leading technology tools to analyze data to enable the execution of proactive actions intended to avoid a negative event entirely or minimize the impact of such an event.”

Business Challenge

- Major compression asset failures affecting reliability of system and customer satisfaction
- Reactive use of data instead of Proactive
- Concerns around operational data integrity

Solution

- Implement Real-time monitoring system
- Enter into Enterprise Agreement and expand use of OSI tools across company
- Design and build robust HA PI System Infrastructure

Results and Benefits

- Minimize risk of major failures at critical compression facilities
- Deployment of the PI System Infrastructure and tools across system
Dave Johnson

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Columbia Pipeline Group
Please don’t forget to……

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