Achieving Rapid Business Transformation in Midstream Operations

Cindy Crow  Global Industry Principal  OSIsoft
Who is DCP?

- One of the largest U.S. natural gas processing companies
- One of the largest U.S. producers of NGLs
- One of the largest NGL pipeline operators

Fast Facts

- 63 Operating Gas Plants
- 11 Operating Frac Plants
- 57,000 Miles of gathering PL
- >400 Booster Stations
- 1400+ Compression Units
- 1M+ gathering system HP
- >42,000 meters
- >500K BPD NGL capacity
- 4,500 miles NGL PL

Who are DCP’s customers?

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Recognition of **OT Data & Information as Strategic Asset**


Digitally enabled operational excellence

Major focus on foundation & cultural alignment - 2016

Rapid rollout and momentum
Digital Operations of the 21st Century

DCP 2.0 journey at a glance

TIRED

WIRED
DCP 2.0 Journey at a Glance

Genesis & Vision
The initial conceptualization of DCP 2.0 and digital transformation emerges from the changing state of the industry.

2015

Foundation & Focus
Set the foundation for transformation through learning, growth and a focus on people, process, and technology.

3 People and a vision
Learning tours
Refining the vision

2016

Transformation
Achieve operational excellence through people, process & technology transformation; delivering business solutions and ROI.

2017

Partnered with OSIsoft (Makers of the PI System)
Summarizing DCP2.0

Key takeaways

- Culture of Innovation and Agility
- Delivering Value
- Integrated Collaboration Center
- Business Solutions

DCP 2.0 is transforming our business... changing the way we work

- Established a culture of innovation and agility, created the workforce of the future and positioned DCP to accelerate our transformation
- Optimizing our $13 billion asset portfolio via improved margins, lower costs and better reliability
- ICC stood up tying together numerous data sources and optimizing full value chain asset performance
- Transforming operations, commercial and corporate functions with focus on people, process and technology to automate, streamline and digitize our business
- With a remarkable one year payback in 2017, DCP 2.0 is driving $20 million of incremental EBITDA in 2018 with potential for additional upside

DCP 2.0 is a game changer... delivering value to the bottom line
Data Foundations - Embracing the Challenge

We need a deep understanding of our operational data in context, transformed into information and knowledge, but:

Our existing data architecture was focused on process control and operations, with analytics and reporting almost an after-thought

There was no centralized and normalized set of operational data across the company

Multiple versions of the “same data” emailed in spreadsheets to multiple parties

To get our operational data house in order, we deployed an enterprise-wide PI System
**Natural Gas Production**

**Gathering & Compression**

**Processing & Treatment**

**Transportation & Storage**

**NGL Fractionation**

**End Use Markets**

- Utilities
- Industrial
- Residential
- Chemical Plants
- Refineries
- Propane Distributors

**FIELD METERING**

35,000

**PIPLINES**

63,000 Miles

**COMPRESSION**

2,000+

**PLANTS**

60 ~ 7.9 BCF

**SALES**

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DCP Midstream PI System Development

Building the Tools for Reliability

**PI Asset Framework (PI AF)**
- Develop Hierarchy of Gas Plant, Compressor Station, Pipeline Assets
- Organization of Data Into Useful Sets
- Templates for Scalability
- Translation/Integration With Other Business Systems

**PI Vision**
- Dashboards for Operational Monitoring
- Multiple Sources of Data Combined Into Single View
- Pair Analytics w/Real-Time Values
- Single Point Access Across Organization

**PI Alerts & PI Notification**
- 24/7 Monitoring & Communication of Anomalies
- Failure Detection, Efficiency Monitoring, Work Mgmt.
- Improve Operational Awareness
- Eliminate “Digging” for Issues

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Real-Time Compression Optimization
Using PI AF & First Principles Models to Predict & Optimize Compressor Operations

Case Study: Real-time Compressor Optimization using PI Data and First Principles Models

Background
• Historically, we run compressor performance curves during design and then periodically to confirm proper performance
• Changes in gas volume, composition, field pressures can significantly change the optimal operating point

Solution
• Compression Health Monitoring Team runs first principle models using real time PI data. Model output is used to define optimal compressor settings for current operation.
• PI Vision displays provides operating conditions based on optimal load step

Results
• More quickly identify optimal compressor operating parameters
• Reduced operating costs
• Improved equipment reliability
The Smart Gas Plant – “Layers of Analytics”
The PI System as an Operational Analytics Infrastructure

• End to end view of plant
• Operational and financial targets
• PvA calculations

Optimization Model

Gas Plant Visualization including mobile

“Human Analytics”

“Advanced Analytics”

Visual
Dashboards & Multidimensional Assessment

Gas Plant asset configurable templates

Financial Table
• Real-time Commodity Pricing
• Financials based on contract mix

“real-time/streaming Calculations & Analytics”

PI AF Linked Table

PI AF Client Link

Digital Gas Plant

Physical Gas Plant

OSIsoft.

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Linking Operational to Geographic Data

Using Operational and Geospatial Data to Optimize Gas Flow and Gathering Performance

**CHALLENGE**

- DCP’s assets are spread over a wide area, requiring lots of driving miles for operations and maintenance
- With its long distances and extensive interconnections, our gathering system operations must consider geography of our assets

**SOLUTION**

- Linking operating data with geospatial wellhead and gathering system information will allow rapid understanding of issues and responses to normal and upset conditions.

**RESULTS**

- Optimal gas routing
- Increased volumes
- Greater reliability
- Fewer miles driven
Integrated Landing Page

Decision Support System is our Company Overview and Path to all Tools
Transforming our business
Driving stronger margins, lower costs, better reliability

Building on the foundation put in place in 2017 to create value for stakeholders

EMBEDDING A CULTURE OF INNOVATION IN OUR DNA

EBITDA benefit

- $20-25MM
- One year payback!

~$20MM Incremental EBITDA benefit

~$40MM

Potential for additional upside

DCP 2.0 INVESTMENT

- $20-25MM
- 2017

- ~$20MM
- 2018