



Turning Insight into Action

Presented by

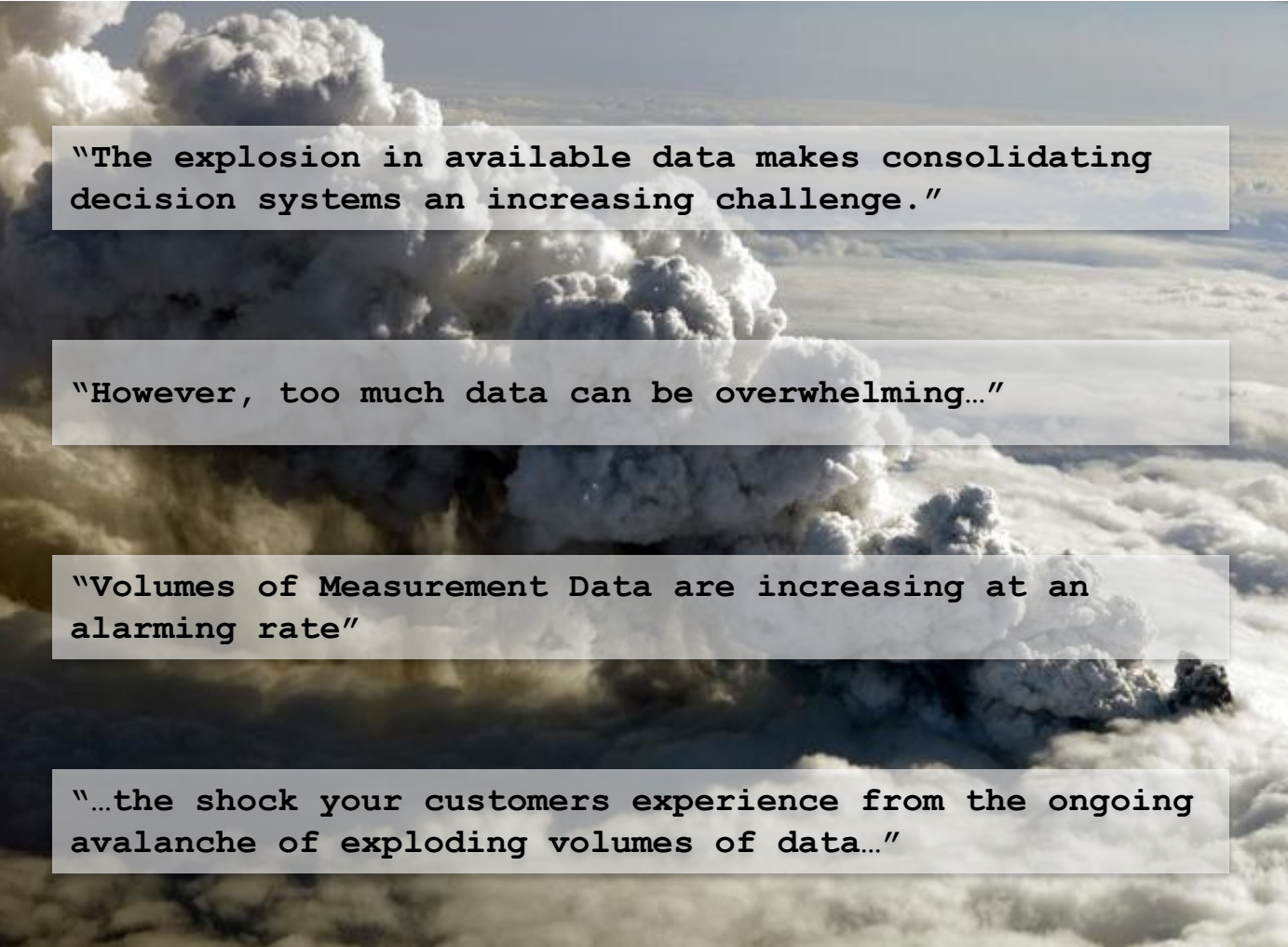
Marc Gallant

Regional Sales Manager – US Midwest



Seminar Statistics

- 101 attendees
- 42 companies
- Industries
 - Chemicals: 17
 - Food & Beverage: 3
 - Mining, Metals & Materials, MM: 3
 - Pharmaceuticals: 7
 - Power Generation: 33
 - Power Transmission & Distribution: 11



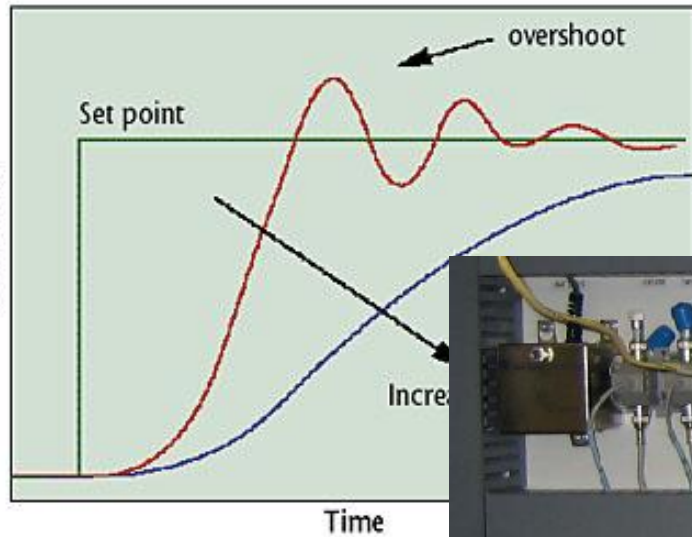
"The explosion in available data makes consolidating decision systems an increasing challenge."

"However, too much data can be overwhelming..."

"Volumes of Measurement Data are increasing at an alarming rate"

"...the shock your customers experience from the ongoing avalanche of exploding volumes of data..."

Did Your Company Lead the Data Renaissance?



Internet Brings New Focus on Data

“Information has gone from scarce to superabundant. That brings huge new benefits, but also big headaches.”

Data, data, everywhere

The Economist, February 25, 2010

(<http://www.economist.com/node/15557443>)





Emerging concept “Big Data”

- New term has been introduced:
“Big data” refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze.
- 10 terabyte to petabyte size range
- 10 TB is only 72 days of PI System data at 100,000 events/second

Source: Dobbs, Richard; Bugin, Jacques; Hung Byers, Angela; Roxburgh, Charles; Manyika, James; Global Institute, McKinsey; Brown, Brad; Chui, Michael (2011-05-13). Big data: The next frontier for innovation, competition, and productivity (Kindle Locations 95-96). McKinsey Global Institute. Kindle Edition.



Leveraging the Data

- Spell checkers
 - Mascarade
 - <http://www.bing.com/search?q=mascarade&go=&qsn=&sk=&sc=8-9&form=QBLH>
- Amazon's Kindle
 - Spying on how we read
 - Read speed, most abandoned, trophy books, biggest slogs, etc.
- Personalized advertisements
 - What you purchased in the past
 - Where you have browsed



Other Interesting Trends

- Data is widely available now—what's lacking is the ability to extract the insight
- Increased demand for those with data mining skills
 - Hal Varian, Google's chief economist, predicts that the job of statistician will become the “sexiest” around.



Some Concerns and Responsibility

- Privacy violation?
- Use the data to improve the experience not intrude
- Fortunately, we are looking at inanimate objects—manufacturing equipment and processes



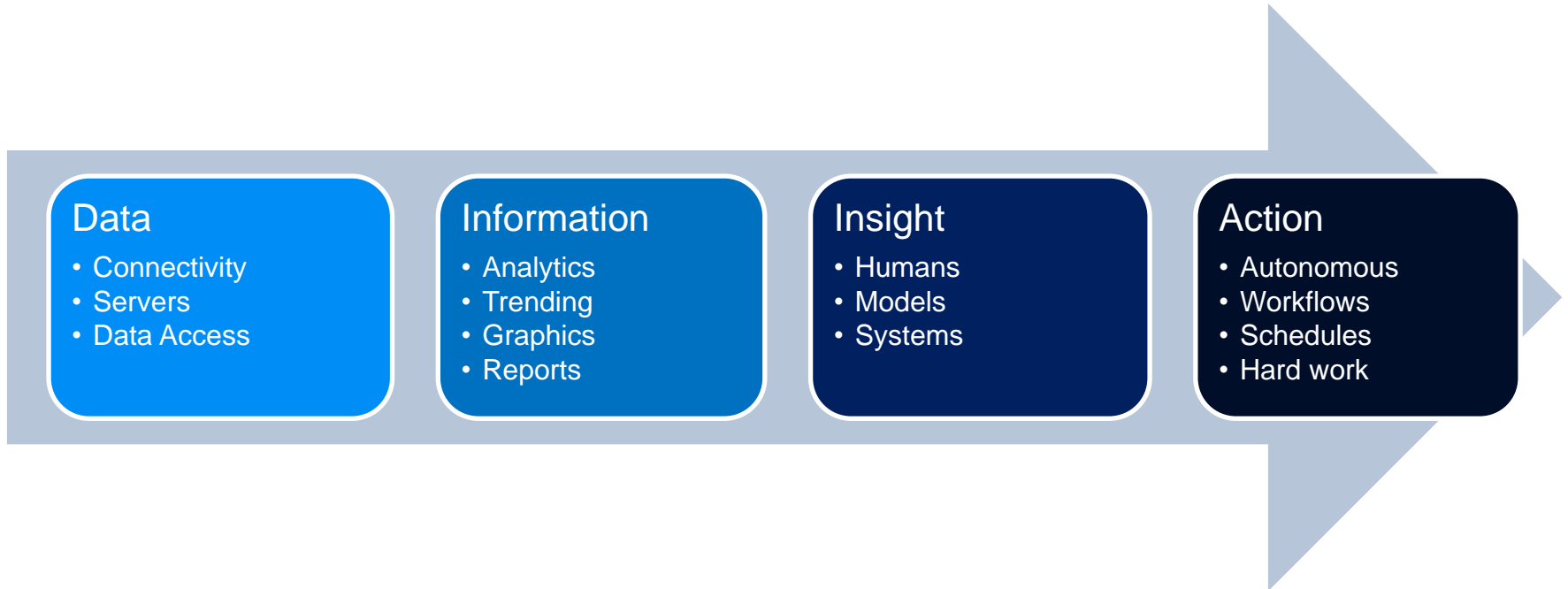
Value to be Gained Leveraging Big Data

- \$300 Billion/year in US Healthcare
- €250 Billion/year in Europe public sector administration
- \$100 Billion revenue for service providers
- 60% increase in net profit in US retail
- 7% reduction in working capital in manufacturing
- Up to 50% in product development and production costs in manufacturing

Source: Dobbs, Richard; Bugin, Jacques; Hung Byers, Angela; Roxburgh, Charles; Manyika, James; Global Institute, McKinsey; Brown, Brad; Chui, Michael (2011-05-13). Big data: The next frontier for innovation, competition, and productivity (Kindle Locations 95-96). McKinsey Global Institute. Kindle Edition.

Turning Insight Into Action

- Information Value Chain





The PI System and “Big Data”

Vital in maintaining
Situational Awareness

- Know where your business is now

Cornerstone of Continuous
Improvement

- Be a Learning Company

Foundational for
Sustainability & Innovation

- Build Longevity & Competitiveness

Capabilities



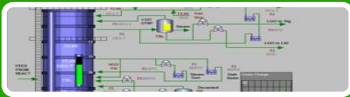
Acquire Data

- Interface systems and acquire streaming data and events



Historize

- Store at resolution of acquisition and trend on demand



Present

- Engineered and Ad-Hoc displays



Analyze

- Pre & Post processing including simple to complex calculations



Organize

- Structure PI data through PI Points, PI Elements and PI Events



Monitor

- Process rules & Notify, Alert on event

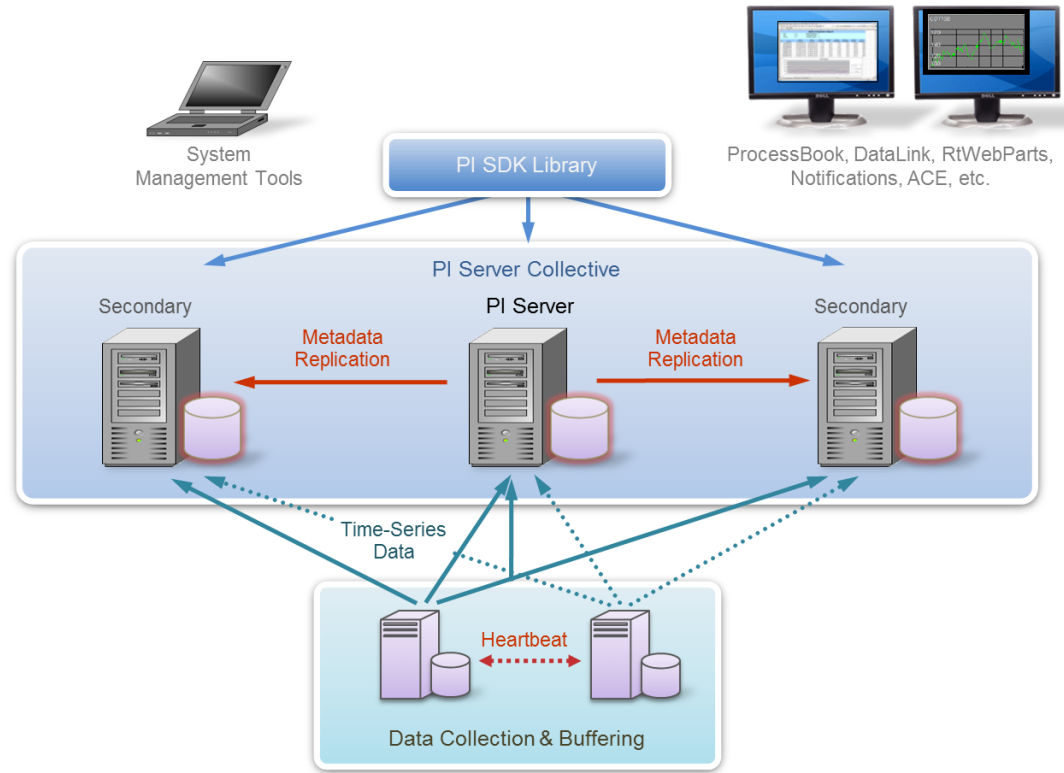


Integrate

- Data Exchange with other Systems

Intrinsic Values

- Reliability
- Availability
- Interoperability
- Scalability
- Extensibility
- Security





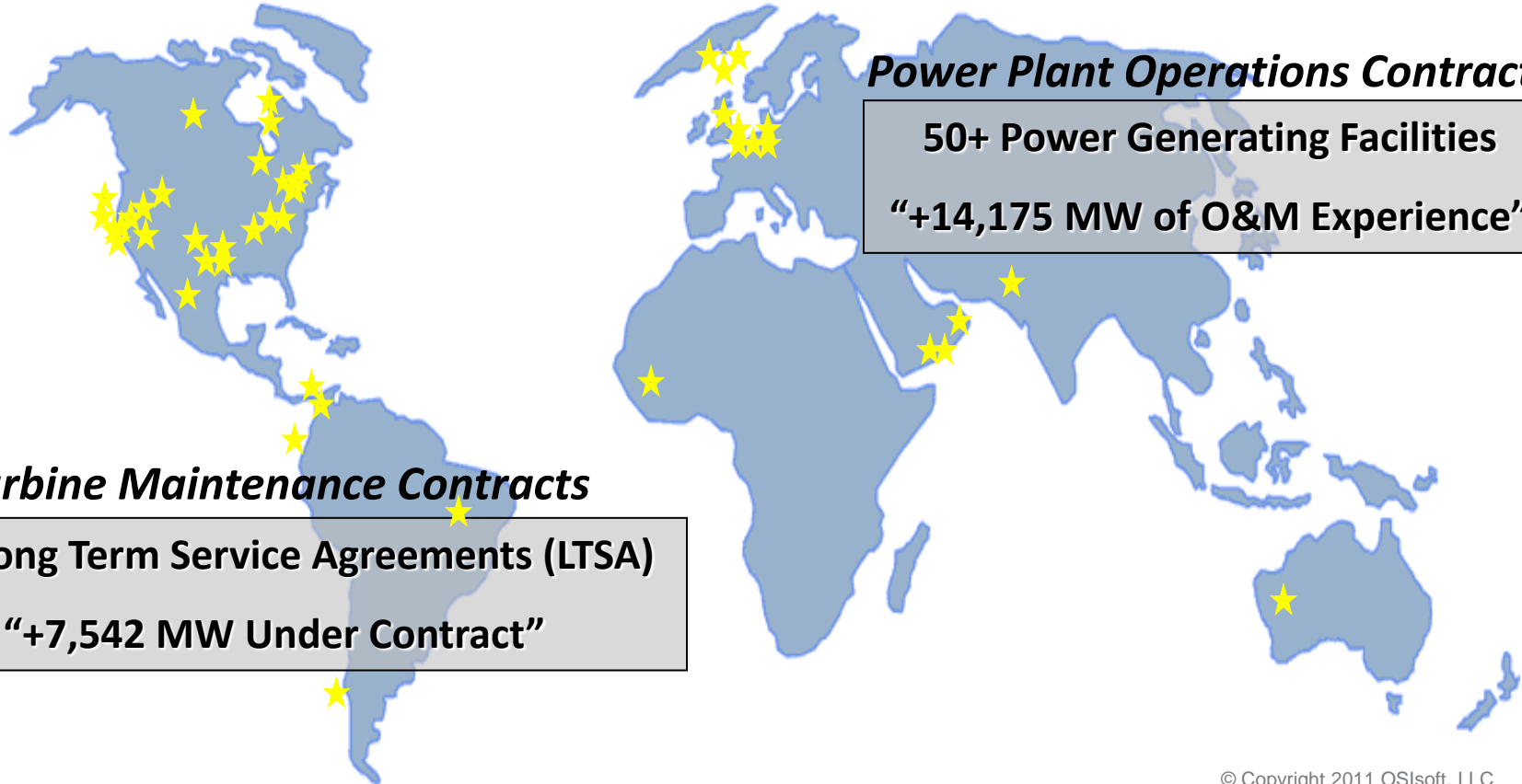
Customer Example

Long-Term Contractual Asset Portfolio

“Diverse Gas Turbine Technology and Geographical Locations”



Wood Group GTS
Keep on turning



Power Plant Operations Contracts

50+ Power Generating Facilities

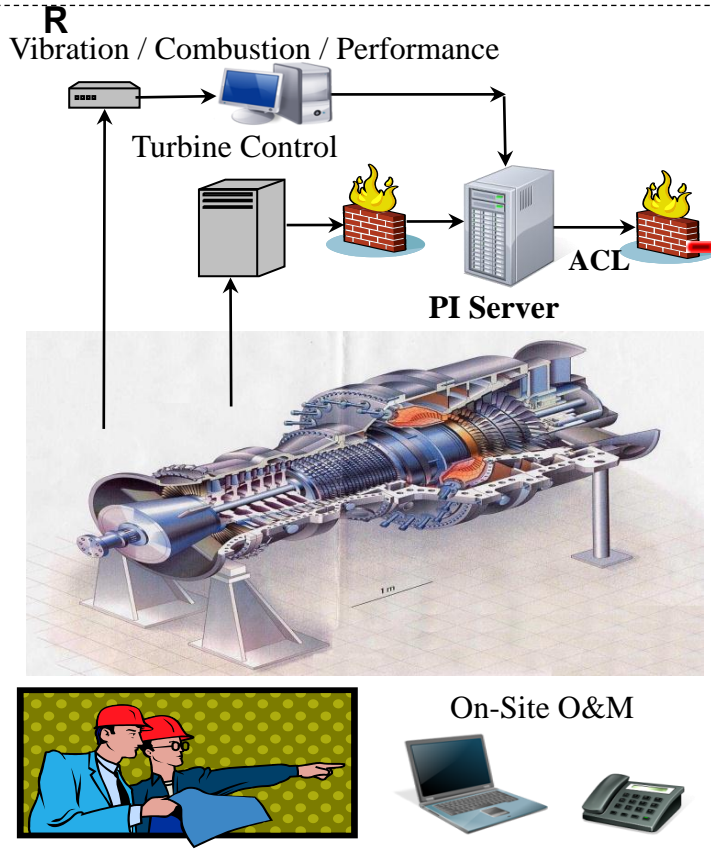
“+14,175 MW of O&M Experience”

Turbine Maintenance Contracts

40+ Long Term Service Agreements (LTSA)

“+7,542 MW Under Contract”

Power Plant - ACTION



Process Data

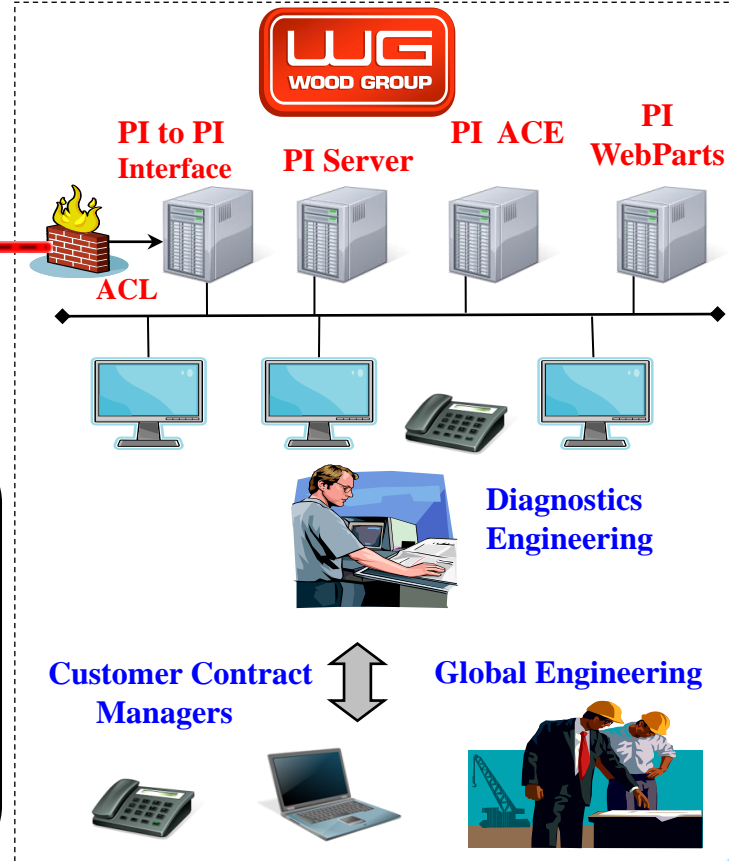
IPsec VPN

Solutions

SERVICES

Remote Monitoring
Web Graphics/Trends
Periodic Reports
Engineering Analysis
Technical Support
Recommendations
Pager / E-mail Alerts

Wood Group RM&D Center - INSIGHT



Gas Turbine Degradation Management

How Did My Scheduled Maintenance Effect Gas Turbine Performance? What's the Economic Bottom Line?

| Asset Configuration CT Technology | E-Tech CTG Pre-Outage | E-Tech CTG Post-Outage | |
|--------------------------------------|--------------------------|---------------------------|------------|
| Assumptions | Base Cogen | Base Cogen | Units |
| Nominal Capacity | 82.2 | 85.7 | MW |
| Nominal Heat Rate (HHV) | 10,879 | 10,692 | Btu / kwh |
| Service Factor | 95% | 95% | % |
| Base Load Run Time % | 90% | 90% | % |
| Part Load Run Time % | 10% | 10% | % |
| Nominal Fuel Cost | \$3.25 | \$3.25 | \$ / MMBtu |
| Nominal Power Price | \$38.00 | \$38.00 | \$ / Mwh |
| Nominal Spark Spread | \$2.64 | \$3.25 | \$ / Mwh |
| Avg Daily Mwh's | 1,827 | 1,905 | Mwh / Day |
| Avg Hourly Revenue | \$201 | \$258 | \$ / Hour |
| Avg Daily Revenue | \$4,830 | \$6,194 | \$ / Day |

- **Output Increased 4.3%**
- **Heat Rate Decreased 1.7%**
- **\$0.60 Increase in Spark Spread**
- **\$1,364 / Day Increase in Revenue**
- **\$42,000 / Month = \$252,000 over 6 months**

There is no Finish Line

- It is a continuous job meeting our responsibilities
 - New technology, for example Microsoft Azure
 - New expectations





Turning Insight Into Action

- Insight:
 - Ability to see clearly and intuitively into the nature of a complex situation
 - Power to discern the true nature of a situation
- Action:
 - Ability to achieve a purpose or a goal
 - Power to redirect and control the outcome



Thank you