SUMMARY

Ansaldo Energia

Industry

Power Generation; Construction

Business Value

- Remote Equipment Balancing and Tuning
- Predictive Maintenance
- Knowledge Transfer
- Business Intelligence
- Automated Remoting
- 24x7 Customer Support
- Cloud Based Infrastructure

PI System™ Components

- PI Server™
  - Data Archive
  - Asset Framework (AF)
  - Advanced Computing Engine (ACE)
  - Notifications
- PI ProcessBook™
- PI WebParts™
- PI Vison™

Ansaldo Energia Implements Predictive Maintenance with the OSIsoft PI System

Ansaldo Energia is a 160-year old company headquartered in Genoa, Italy and a leading producer of thermoelectric power generation plants with a focus on plant engineering, manufacturing, and service. The company has over 100 power plants and 300 gas turbines around the world and provides remote monitoring services for customers in 13 countries. At the 2016 OSIsoft EMEA Users Conference, Sandro Gollini, a Diagnostic System Engineer at Ansaldo Energia, and Giuseppe di Bartolo, owner of TQService, discussed how Ansaldo is using the PI System for remote asset monitoring and predictive maintenance.

A Multilayer Solution

Ansaldo's business model follows the entire process of a power plant from design to operation. As Gollini explained, "one of the most important services that we have in our portfolio is the Operations Support and Remote Diagnostic Center". Central to the center's operation is Ansaldo's Advanced Diagnostic Analysis (ADA™) system which was built solely using OSIsoft products.

The multilayered system allows Ansaldo to collect data across locations and make faster support decisions. ADA collects an array of data and parameters from each turbine including: vibration, combustion, control, pressure, temperature, mass flow, and chemical composition. It then performs combustion and vibration analysis, allowing Ansaldo to quickly identify performance declines. "We can see the frequency contained inside each signal. We can make specific bandwidth analysis. And thanks to this we [are] able to [do] remote balancing and remote tuning," said Gollini. Ansaldo also uses ADA for post-analysis, to drill down into specific queries, and shares the data internally with engineering, manufacturing, and maintenance.

Ansaldo shares data from ADA externally with customers via monthly reports. Gollini pointed out that, while customers need information about machine health, it's also important to share information about how customers have been using their equipment and how that has affected performance. Ansaldo also gives customers with expert recommendations for improving performance. Previously creating monthly reports was largely a manual process. Now, with ADA, all customer reports are created automatically in less than two hours. As Gollini explained, "our technician has just to analyze the graph [and add] a comment or suggestion to share with the customer."

Predicting Needs and Potential Failures

With ADA Ansaldo has real-time connectivity to every plant. Technicians can share screens with headquarters to troubleshoot problems and solve issues. Ansaldo can create personalized maintenance strategies for each turbine using real-time performance data and historical asset information. Real-time notifications instantly alert the Ansaldo team of changes in asset behavior so they can identify performance decreases and immediately

advise customers. ADA is also leveraged for predictive analytics. Ansaldo can compare actual asset performance against predicted performance which helps identify potential breakdowns so preemptive, corrective, action can be taken. In short, ADA has allowed Ansaldo to implement a comprehensive remote asset monitoring and condition-based maintenance solution. "Practically it's like [being] in the power plant," Gollini said. "There is no difference."

Improving Availability with the Cloud

The original deployment of ADA leveraged a sophisticated, multi-tiered, on premise architecture that used a combination of local PI Servers at the plants, a central PI Server, and redundant deployments in Genoa and Florida to collect, analyze, and deliver data. While the original design worked well, di Bartolo explained that Ansaldo Energia wanted a simpler, geographically dislocated, solution. The new design had to offer the same reliability, availability, and redundancy as their on premise system and be accessible to both Genoa and Florida. "The solution," said di Bartolo "was to move all infrastructure into the cloud."

Ansaldo transitioned their ADA deployment in Florida from on premise to the cloud in just 6 weeks with "no loss of data, no interruption in the work..., no interruption to the end customer," said di Bartolo. And Ansaldo is now transferring Genoa operations to the cloud. "At the end we [will] have only one box in the cloud with all the PI System infrastructure and the two different diagnostic centers will work on the same machine and share the same data, same tool, same application," said di Bartolo.

Planning for the Future

The new level of connectivity and visibility available through ADA has helped Ansaldo increase asset availability and reliability while reducing maintenance costs and time for customers. ADA is assisting Ansaldo with a variety of tasks including remote asset monitoring, remote diagnostics, operations support, analytics, and reporting. To further enhance ADA, Ansaldo is now working on a 3-D modelling add-in for PI Coresight[1] that will enable new types of analysis and use the Asset Framework to drive navigation. Ansaldo is also developing new KPI and ROI calculations.

> "Thanks to the OSIsoft connector and our predictive system, we can run comparisons of actual versus estimated data and have real-time notifications arrive in the customer support mailbox so they can immediately react. The result has been increased availability and cost and time savings for problem resolution."
>
> – Sandro Gollini
>   Diagnostic System Engineer

[1] PI Coresight was renamed to PI Vision in 2017.

Gollini, Sandro and Giuseppe di Bartolo. *Ansaldo Energia: ADA and APEX: A Global Diagnostics Platform For Power Generation.* OSIsoft.com. 27 September 2016. Web. 17 February 2017. <http://www.osisoft.com/Presentations/Ansaldo-Energia--ADA-and-APEX--A-Global-Diagnostics-Platform-For-Power-Generation>.