



## SUMMARY

Flowserve®

Industry

Manufacturing

Business Value

- IoT
- Remote Performance Monitoring
- Collaborative Data Ecosystem
- Industrial Aftermarket Service Provider
- Connected Services
- Original Equipment Manufacturer

PI System™ Components

- PI Server™
  - Asset Framework
  - Asset Analytics
  - Notifications
- PI OLEDB™
- PI Webparts™
- PI ProcessBook™

## Connected Services Enables Remote Rotating Equipment Monitoring Solutions

Rotating equipment, pumps, valves and seals are embedded in virtually all industrial operations. At the 2015 EMEA User's Conference, Josh Lyon, Senior Manager of Emerging Technologies and Greg Herr, General Manager of Operations presented how Flowserve, a global rotating equipment manufacturer, has leveraged OSIsoft's Connected Services to drive equipment reliability and performance through global active monitoring solutions. With wireless IoT technology and the PI System, Flowserve engineers can leverage their expertise to monitor "real-time equipment data, KPIs, and analytics at customer sites." Flowserve's Technology Advantage® platform "[empowers] engineers to collaborate with customers" ultimately to help them "better manage their assets, reduce costs and improve operations."

Mr. Lyon and Mr. Herr introduced their talk by describing the opportunity to better serve customers through data-driven aftermarket services. As background, Mr. Herr relayed that, "Flowserve [has] been around for 200 years and [is] historically, a "big iron" company," meaning that "we are a traditional OEM" and "manufacture pumps, valves, and seals for the oil and gas, power, chemical and general industries." Flowserve has also been "an aftermarket support company [by providing] parts and repair services to customers...who actually own and operate the equipment." Mr. Lyon described how the relationship with their customers is shifting by saying, "our customers are coming to us, asking us, "what we can do for them?" How are we going to continue to partner with them [beyond] just [supplying] them with pieces of metal?"

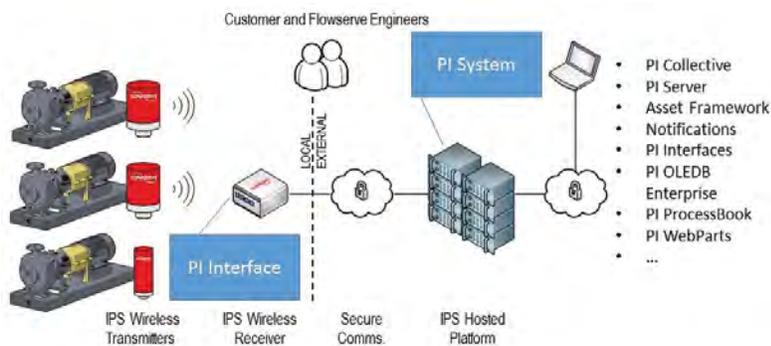
Mr. Lyon described some market trends and that are stimulating change for OEMs. He cited studies that state that, "there are only 2 billion devices connected today", but "by 2020, an estimated 26 billion devices around the globe will be connected." Furthermore, "3 out of 4 companies are exploring how to use the Industrial Internet of Things (IIoT), or Industry 4.0, [not only] to improve their internal operations but also to improve their services." Mr. Herr went on to say, "IIoT is changing our markets...whether we do or not. We need to make sure that we are staying ahead and changing with it."

Mr. Herr and Mr. Lyon went on to describe how Flowserve has seized the opportunity to meet customer demand by "undergoing a cultural shift away from [being] just a "big iron" manufacturer" and adopting "more of an IIoT strategy" to offer data-driven services and solutions.

For the rest of the talk, Mr. Lyon and Mr. Herr described the technical aspects enabling their solutions, examples of how their solutions have benefitted their customers and some lessons learned as Flowserve has "evolved [toward] more monitoring, reliability services, field services and training."

Mr. Lyon described the technology behind their service offerings. First, he states, "the Industrial Internet of Things isn't something you just buy. It is... partnering with companies...to strategically [build] your IIoT platform" and asking things like, "how can I get information from assets in the field to a central location where my engineers can look at [it] to provide value to themselves, to customers? How can I do that so that it is scalable? How can I do that where it is cost-effective? And now that I have that data, what do I do with it?"

At the edge, Flowserve's "IPS Wireless products...[capture] things like pressure, temperature, vibration and transmit data wirelessly back to an IPS Wireless Receiver. From the IPS Receiver, we aggregate data at the site and then transmit it up to Flowserve's IPS Hosted Platform. At the Hosted Platform, Flowserve and customer engineers are collaborating with one another" to solve performance, maintenance and reliability challenges. Mr. Lyon added, "how does OSIsoft fit into this? At the IPS Wireless Receiver level, we have a PI Interface which is collecting data...and securely communicating it up to the PI System [and] to our hosted platform." Together, Flowserve and OSIsoft technology enables Flowserve engineers to apply expertise to real-time data to create actionable information for their customers.



Mr. Lyon described an example where their services helped a customer avoid catastrophic failure. "One customer had come to us to instrument their equipment to collect things like vibration, temperature and pressure. [When] they needed to do planned maintenance, we saw vibration levels drop [during] maintenance, which is completely normal. When they brought the equipment back online, the vibration levels actually jumped but in a bad direction. We called up the customer and said, "hey, we think something is going on here. Can you take a look at this piece of equipment?" They did and [saw] that a foreign object had been dropped into [the equipment] and was stuck in a suction strainer. They were able to pull it out and bring the equipment back online. The customer said that if they had let this go, it would have resulted in a potential catastrophic failure [and] 10-14 days of downtime - a significant impact in terms of process, [costing] around \$650,000."

To summarize, Mr. Lyon asked, "What does this all mean for us? We have been doing this for several years now." He added that, "we have heard from our customers that they want more from us. They want the reliability, they want the throughput." Flowserve has leveraged sensor technology and worked with OSIsoft to become "a better reliability partner for customers." Finally, he stated that, "technology is an enabler. It has allowed us to be more responsive, more adaptive, more intelligent. We continue do it because it is a win-win for both Flowserve and our customers."

Lyon, Josh, Herr, G. OSIsoft's Connected Services enables Global Rotating Equipment Monitoring. OSIsoft.com, Oct. 2015. Web 11, November 2015  
<http://www.osisoft.com/Templates/item-abstract.aspx?id=12794>

**"IIoT is changing our markets. We are staying ahead... and changing with it to supply services and solutions for our customers."**

- Greg Herr, GM  
Operations