Old, Out of the Way and All Over The Place

The Future of IoT and Industrial Devices

Michael Kanellos
IoT Analyst OSIsoft

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First, The Commercial

The PI System: Insight on Demand
The Right Data to the Right People, at the Right Time in the Right Format
ArcelorMittal
$40 million in extra production via supply chain mods

Maynilad
Finding leaks = Delivering 640 million more liters a day

IBM
$10 million saved in fab water and power

Tyson Foods
“Lost” production cut by over 1M pounds
Some Peculiar Things About Industry

The Equipment is Ancient

Large Power Transformers
- $2-$7 million
- 40,000 in U.S.
- 6 mo. to 2 years to install
- Avg. age is 42-44 years
It’s Often Out of the Way

Predictive Maintenance: can cut turbine repairs by 90%

650 data streams per wind turbine (300-1000 range)

Tracked every 10 mins = 93,600 reads per day

57,636 turbines in US = 5.4 billion reads a day
10,000 Feet Out of the Way

A Blow Out Preventer: The Achilles Heel of Offshore Drilling

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And All Over the Place

The Age of U.S. Water Pipes
From pre-Civil War to Civil Rights era, U.S. water systems reflect a range of ages.

- Milwaukee, WI
  - Half of Milwaukee’s water pipes were installed before 1969.
- Philadelphia, PA
  - Half of Philadelphia’s water mains were installed before 1950.
- Phoenix, AZ
  - Phoenix ramped up its water main replacement program in the 2000s, which helped cut water main breaks by 80 percent.
- Baltimore, MD
  - The average age of a water main in Baltimore is 55 years.
- San Antonio, TX
  - San Antonio’s water pipes are relatively young, half were installed after 1985.

Each year about 240,000 water main breaks result in lost water and disruptions to daily life.
(U.S. Environmental Protection Agency)

America’s municipal water systems are responsible for more than 1.2 million miles of water mains.
(Utah State University)

Repairing and replacing old water pipes could cost more than $US 1 trillion over the next two decades.
(American Water Works Association)

Pipe age data requested by Circle of Blue from Baltimore Department of Public Works, Milwaukee Water Works, Philadelphia Water, Phoenix Water Services Department, and San Antonio Water System.
These Are Not Streams

WHUD saving $2.5 million per year
The Future of Industrial IoT Devices

Retrofits

- Sawing Toilet Paper Since the 1970s
- Traditional Upgrade: $31,500
- IoT Gateway and Sensors: $9500
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Stick-on Sensors and Gateways
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Systems As Devices
Thank You

mkanellos@osisoft.com