How INS3 Helped MSD Improve Asset Maintenance and Dramatically Reduce Work Orders

From Data Rich, Business Value Poor to 50% Gain

Utilizing existing systems and architectures and adding nonintrusive modern tools we improved asset monitoring and existing maintenance systems moving from preventative to condition based and predictive maintenance.

50%

reduction in the amount of work orders

Condition-Based Maintenance led to a reduction in costs
And Predictive Maintenance to a reduction in risk

Technologies Involved:

INS3 Monitor, Historian, Maximo CMMS

Metropolitan Sewer District

Wastewater USA

HIGHLIGHTS

Challenge

Current Maximo CMMS was primarily used for preventative maintenance based on time, they wanted improvement and to control costs by moving to a **more predictive and condition based solution.**

Solution

Using existing SCADA and Maximo systems, we added INS3's Monitor to watch **real-time data, calculate run-time hours per asset, and other key parameters** to alert Maximo to generate work orders on demand.

Results

INS3's Monitor System **delivered significant reductions (2x)** in the amount of work orders, more timely alerts, and **decreased maintenance time** by sending the right person to the job properly prepared, enabling a move towards condition-based maintenance.

The Challenge

For many years the District was doing preventative maintenance, and in fact had dashboards showing compliance with the time-based preventative maintenance. Asset failure still existed, and there was a large cost in doing the regular maintenance. They knew there had to be a better way.

There was a large volume of raw data in the SCADA Historian, as well as data in their Maximo CMMS, the data and knowledge existed, the challenge was how to optimize the system. They also had a number of available equipment sensors that needed to be connected to get data and correlate to the maintenance data. One pump could be running almost constantly for months inefficiently, and another pump that was running great and was barely utilized was getting serviced at the same time. The Maximo CMMS was scheduling maintenance based on assumptions, not real data, and those schedules were not optimized for the business.

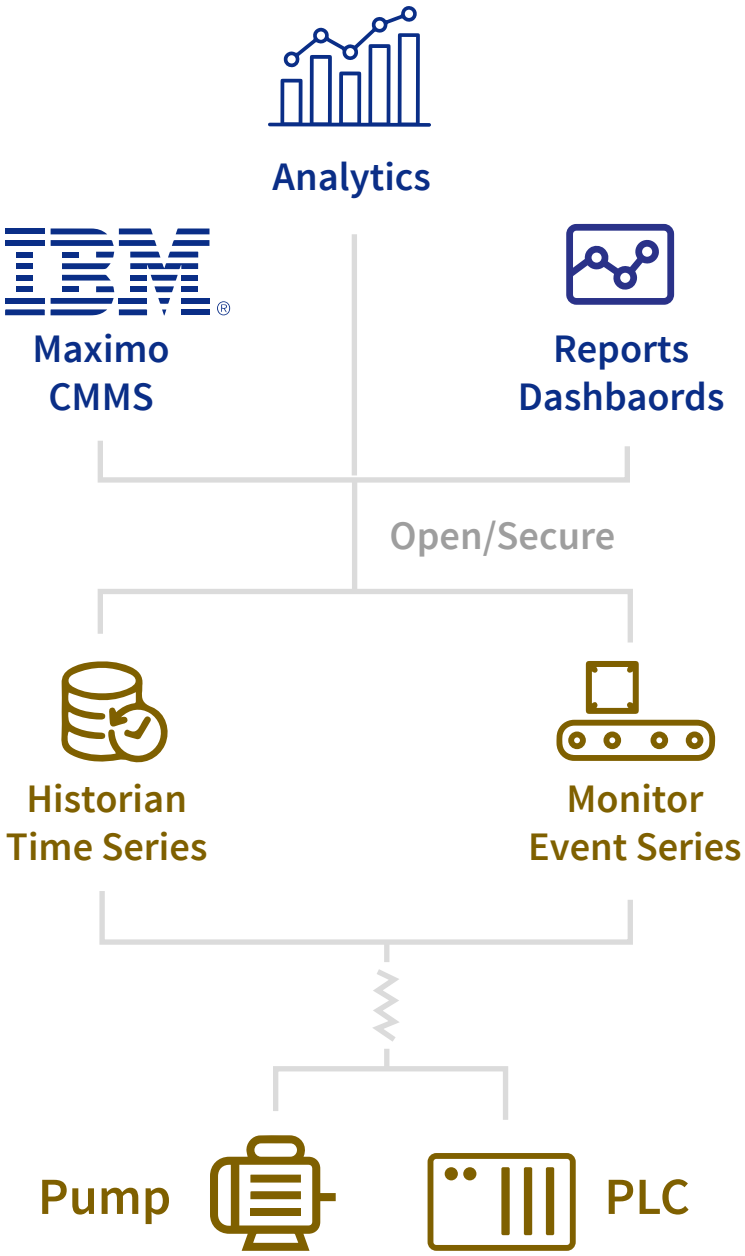
One major challenge, was some assets were moved around constantly, so data was duplicated in multiple systems, making it almost impossible to correlate data collected by the devices to the asset, since the PLC tags we based on location and not assets.

> **We had a desire to improve how we maintained our assets, and in partnership with INS we were able to identify key opportunities for improvement, and by utilizing our existing infrastructure, we able to see significant reduction in the amount of work orders generated, and can now justify investments in adding sensors to improve our condition based maintenance with the existing software tools. The INS system improves Maximo by delivering real data and alerts**
>
> ***- Division Manager***

The Solution

By utilizing INS3 Monitor Software and connecting to their existing SCADA Historian System as well as the Maximo CMMS System, and utilizing its aggregation, detection, and analytics models the system was able to deliver a cost saving more accurate solution.

The architecture started with a simple concept of having an asset structure in INS3 Monitor to model the existing equipment. The model included the current location of each asset, which could be in a repair shop, in process, or several other areas, as well as identifying if the asset was in Maximo, SCADA, or other systems. Monitor interfaced to the existing systems provided real-time alerts and tracked all of the Event History.

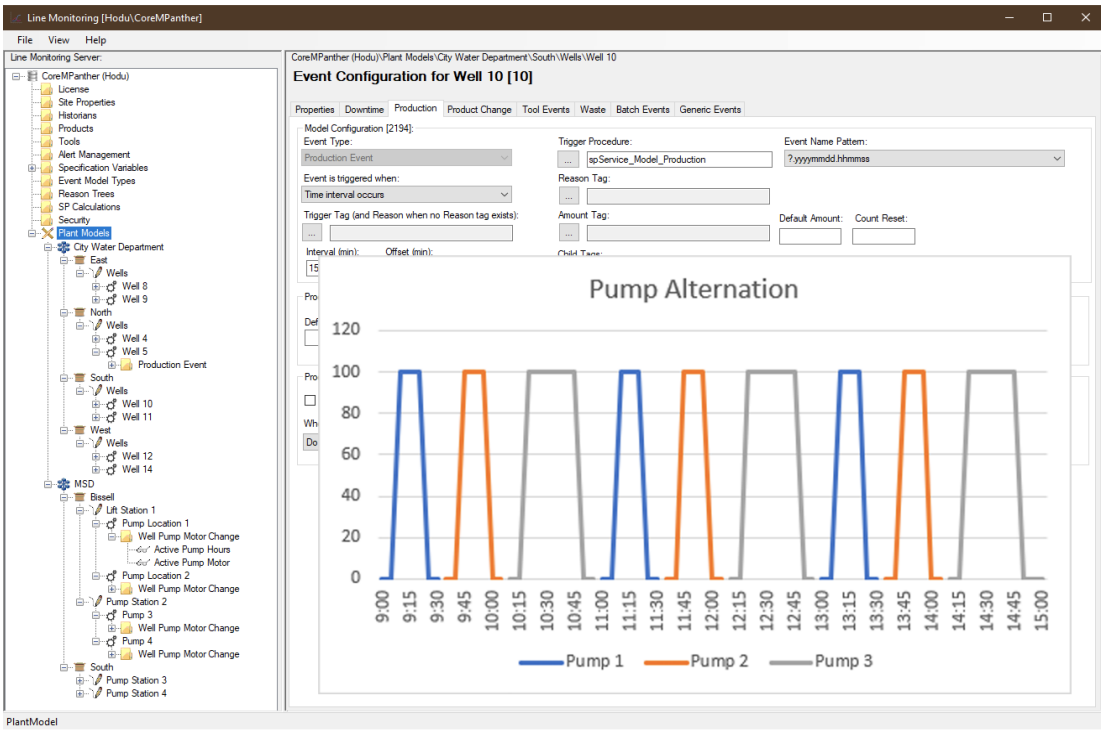


The next step was to tie the running conditions of the pump to the asset model, and totalize them over time, even as the asset moves from location to location. Taking run-time, vibration data, and other key characteristics and storing them logically within the asset model provided the conditions base knowledge.

Finally, alerts were configured based on business rules to tell Maximo an event (such as total run hours since last service) has been triggered and initiate a work order to be generated.

Highlights of the Solution:

- Modeling the Enterprise and Assets
- Dynamic connection to real-time and Historical Data in context (location)
- Seamless Communications to multiple systems
- Flexible and Scalable with no rip and replace.



Results

The district was able to accomplish close to a 50% reduction in the amount of work orders required on the assets included in the pilot. It also set the groundwork for future expansions for further improvements in:

- Condition-Based Maintenance – reduction in costs
- Predictive Maintenance – reduction in risk
- Prescriptive Analytics - optimized

> **This is just the start of optimizing our maintenance plan. The tools utilized will help in a continuous improvement journey of saving money with little to no additional investment**
>
> ***- SCADA Supervisor***

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