White Paper

Agribusiness Orchestrates Transformative, Enterprise-wide Intelligent Device Management and Workflow Automation

Learn how one manufacturing leader tapped into field instrumentation data with AMS Optics to streamline work orders into IBM Maximo and drive corrective action across global teams.

AMS

EMERSON

Upholding Asset Health in a Large Organization

With the immense complexity of managing an industry-leading enterprise on a global arena, pressures for cost-control, supply-chain assurance, and personnel safety are prominent throughout every aspect of operations. Leading indicators of equipment failures may be detected by modern sensing technologies and edge analytics, but the challenge of distinguishing meaningful insights amidst a tsunami of data noise is a daunting one. A multinational food producer in North America sought to gain a better understanding of which assets were or soon would be experiencing mechanical or electrical faults — an indicator of potential runtime disruptions.

The company needed an enterprise-level solution that would simplify data management, automate workflows, and facilitate timely decision making. With tens of thousands of intelligent field devices and valves scattered across facilities worldwide, this meant knowing not only what to monitor, and how often, but also how to discern critical from non-critical issues when problems were detected. Furthermore, decision makers would be required to accelerate turnarounds and repairs in the safest and most expedient fashion possible to minimize lost production, prompting better understanding of root causes and the ability to diagnose them.

Beyond verifying the sources of reliability issues, the company's plants would then benefit by following a scheme for ranking and classifying problems proportionate to their respective impact on safety, environment, and production. The company could then optimally apply resources. And finally, after following a digitally transformed work practice of prioritizing and resolving plant upsets, company stakeholders would then need to rely upon a means of preventing future recurrences with advanced analytical and predictive maintenance tools trained for isolated repeat offenders.

With the solution, the company's teams aimed to gain the ability to:

- Deliver instrument and valve health information to relevant personas, no matter where they are located geographically (Emerson instruments as well as those from other automation vendors)
- Connect their numerous AMS Device Manager systems/instances to a single AMS Optics installation and display KPIs in a common, unified dashboard that is easy to interpret.
- Collaborate more efficiently across multiple users and departments to resolve issues based on data from intelligent field devices (like control valves).
- Generate work requests for instruments and valves and move towards implementing closed-loop work processes with CMMS (in conjunction with their IBM Maximo system).
- Track and monitor overall site asset health to meet or exceed established asset health KPI metric.

Creating the Foundation for Scale-Up

For many years the company used Emerson's intelligent field device management software, **AMS Device Manager**, as a foundational digital transformation solution. Using the solution, the company could manage tens of thousands of automation assets such as analytical and process instruments (pressure, flow, level, industrial wireless devices, and temperature) and digital valve controllers, which communicate using HART industrial field protocol. The versatility of AMS Device Manager allowed the company to communicate with both Emerson automation assets (**Fisher** control valves, **Rosemount** and **Micro Motion** instruments) and those from other manufacturers.

Over years of steady success with its software-based intelligent field device management work practices using AMS Device Manager, the company had scaled its AMS Device Manager system count to more than 30 individual systems globally. Typically, one unique AMS Device Manager system may be assigned to manage a specific plant or production zone and are able to be managed semi-independently by local maintenance in each physical location.

Expansion

In 2020, the company successfully debuted its active and operational AMS Optics platform, and in recognizing its value, has subsequently expanded the system by adding data connections to ingress data from additional AMS Device Manager systems (corresponding to more plant sites or zones). In 2024, the system has grown to include 12 AMS Device Manager systems monitoring around 21,000 devices globally—and now includes a portion of the company's European operations, in addition to North America. The company is in the process of adding eight additional system connections from across North America, South America and Europe during the remainder of 2024. This would bring them to 20 connected systems and around 24,000 devices.

Once connected, the further contextualized alert data and dashboards proved to add quick value to system users. Now, alerts on health and other process alert data derived in the field could be viewed, accessed, and purposed across the business network, helping to break down organizational siloes. Previously, the information was only available locally, requiring a sign-into AMS Device Manager at the plant level and further manual work to deliver the data in the format needed.

As a baseline, the company classifies assets using criticality ranking. One of the criteria is **Failure Effect**—the company utilizes **Safety Critical**, **Environmental Control** and **Production Control** associated with these specific classes of assets. This allows for an enterprise-level view of the most critical assets considering safety of workforce, the environment, and production output that directly impacts revenue.

The company is also expanding to include **AMS Machine Works** systems in AMS Optics, which enables monitoring health of rotating equipment likes pumps, motors, or gearboxes. Just as was done with its network of valves and instrumentation, the company teams will now be notified of emerging mechanical issues like rolling element bearing defects, lubrication, misalignment, imbalance, and others. This increased level of awareness and timely notification enables users to perform exception-based analysis versus inspecting every piece of data collected, which drives increased productivity and efficiency. It also allows the user to extend the powerful capabilities of AMS Optics workflow and collaboration benefits to its reliability teams who perform vibration analysis, as well as the maintenance teams that are responsible for control valves and instrumentation.

A Focus on Corrective Action: Work Practice Optimization

As with any new use of technology, work practices follow. The company shifted its work practices by leveraging the Optics platform within weekly cadences to distill device information into more informed decision-making and more action-oriented tasks. These changes would directly and positively impact its bottom line. AMS Optics has allowed the teams to create and maintain a historized library of issues they tackled previously. The teams now use the library to better inform future work.

In one such success, the company used key device information — data derived in the field at the instrument, then fed through AMS Device Manager, and finally contextualized and visualized the data uniquely in AMS Optics to set the stage for corrective action. This information related specifically to control valves and was displayed on the Optics Portal software dashboard. In this case, the information helped the team detect emerging issues with a “bad actor” valve. The valve was able to be serviced and replaced during a planned downtime rather than letting it run to failure and causing a process interruption and troublesome, costly downtime.

AMS Optics and IBM Maximo Connection

Now the teams consistently leverage AMS Optics Portal to use diagnostic device data derived in the field to inform and initiate work orders in IBM Maximo. Over time, the company plans to fully automate this process to the point of closing the loop on these actions via a **CMMS workflow**.

Future Expansion

Working with Team Emerson, the company intends to continuously expand its AMS Optics system globally as part of its global modernization program. Over the next decade, they plan to add around 40 additional individual systems associated with around 70,000 devices. Once complete, this would total around 60 connected systems, and more than 100,000 devices. Other enhancements will be associated with device replacement, allowing swaps in the field, logging device changes into the system, as well as deleting user messages, editing properties, and other enhancements.

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