

CONSUMER PRODUCTS



Analytics at the Edge Saves Nutrition Company More Than \$215K

RESULTS

- **AMS Asset Monitor** deployed on critical assets across manufacturing lines.
- Cracked motor base and failing gearbox identified, avoiding **18 hours** of unscheduled downtime and **6000 gallons** of lost production.
- **\$215K** in failure-related costs avoided.
- **Easy integration with MES dashboards** for plantwide visibility of asset health.

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The embedded Edge Analytics have been very helpful and surprisingly accurate. They point me in the right direction and give me a good starting point to dig deeper.

Reliability Technician
Multinational Infant Formula
and Nutrition Manufacturer

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AMS™


EMERSON™



APPLICATION

Critical assets in the primary global facility manufacturing infant nutrition formula.



CUSTOMER

Multinational Infant Formula and Nutrition Manufacturer, Evansville, Indiana.



CHALLENGE

The site manufactures multiple product formats ranging from powdered to liquid and serving both North American and global markets. Saving even an hour of unplanned downtime in any of the production lines is worth more than \$10,000 in addition to the cost of scrapping contaminated product and/or replacement of entire assets rather than merely replaceable components such as bearings and seals.

Evansville has been an AMS customer for many years, relying historically on portable data collection as the basis of its condition-based asset reliability strategy. However, it was recognized that some of the assets in each of its three production lines were better addressed by continuous online monitoring given the potential impact of failure.

The site needed a cost-effective solution for continuous monitoring to complement that walk-around strategy that was suitable for many but not all assets. Although the facility placed considerable weight on using the same analysis environment (AMS software) for a continuous system as was being used with their AMS 2140 portable machinery health analyzer, that was far from the only criteria. An evaluation of several online solutions ensued, including wireless sensing approaches that streamed data to the cloud for remote analytics rather than “at the edge”.



SOLUTION

After a thorough evaluation of several different online approaches from various providers, the AMS Asset Monitor was selected. While some of the wireless solutions incorporated innovative sensor power options, there were multiple aspects of a wireless solution that were not appealing. One was the relatively steep cost-per-point from some providers. Another was that wireless solutions only intermittently collect data rather than continuously. This strongly favored a conventional wired solution with its ability to deliver continuous data. As was previously mentioned, going with a wireless solution from a different provider would mean deploying, supporting, and using parallel software in addition to the AMS software already in use with the plant's model 2140 machinery health analyzers. An overriding concern, however, came down to the accessibility of data. Some of the wireless solutions did not allow access to the raw waveforms and delivered only extracted variables and conditioned data rather than also raw data. This was not acceptable to the manufacturer for those times when a deep dive might be required to validate the prescriptive analytics delivered by a sensing solution either locally or in the cloud.

After deciding on a wired solution, a trial installation of an AMS Asset Monitor was conducted. The ease of this pilot installation factored heavily into the plant's decision to roll the solution out permanently to nine different assets. The first unit was up and running in just one afternoon and very little adjustment needed to be made to the embedded intelligence “at the edge”. Another eight units were quickly added, rolling the solution out to nine different assets across its production lines.

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It's all about the data. While a solution that delivers 'intelligent analytics' is valuable to us, that can't come at the expense of data transparency. One of the reasons we chose the AMS Asset Monitor is because, when necessary, we can drill down to see all of the data including raw waveforms – not just conditioned data and extracted data characteristics

Head of Engineering and Automation
Multinational Infant Formula and Nutrition Manufacturer

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CASE HISTORY 1

The first save delivered by the system occurred in April 2025 when a crack in the motor base was identified by the AMS Asset Monitor on the soft water booster pump in the plant's aseptic production line.

The crack did not develop gradually and was instead quite sudden. It was thus highly unlikely it could have been caught before progressing to total asset failure within the monthly intervals used as part of the manufacturer's portable data collection rhythm. Because the motor was continuously monitored, it was flagged and reported instantly by the AMS Asset Monitor's embedded analytics as looseness, and this was confirmed via a visual inspection (Figure 1).

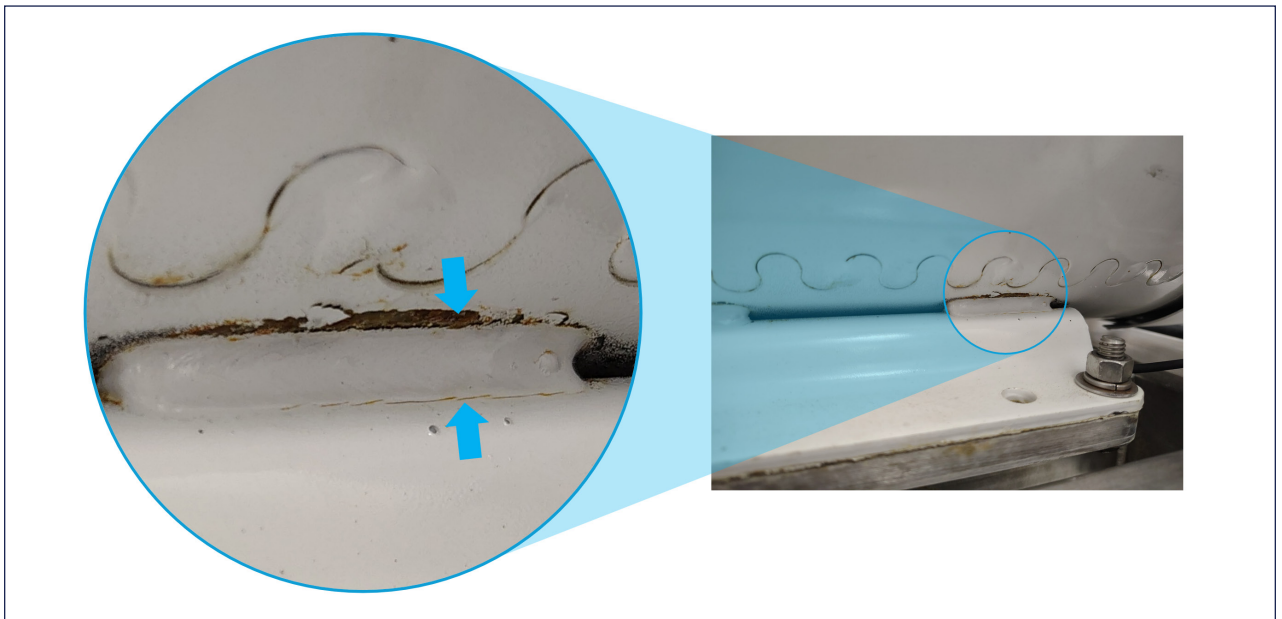


Figure 1: The AMS Asset Monitor flagged a crack in the P435 Soft Water Booster Pump. Visual inspection verified that there was indeed a crack and it was serious enough to warrant immediate intervention.

Because a spare motor was on hand, it was changed out the next day between production runs without incurring six hours of unplanned downtime at a cost of more than \$65K or scrapped product as would have occurred had the crack progressed more fully and stopped the motor in the middle of a production batch.

A set of before/after plots are shown in Figure 2, capturing the sudden increase within the span of one day and the dramatic reduction in vibration when the motor was replaced during the next 24 hours.

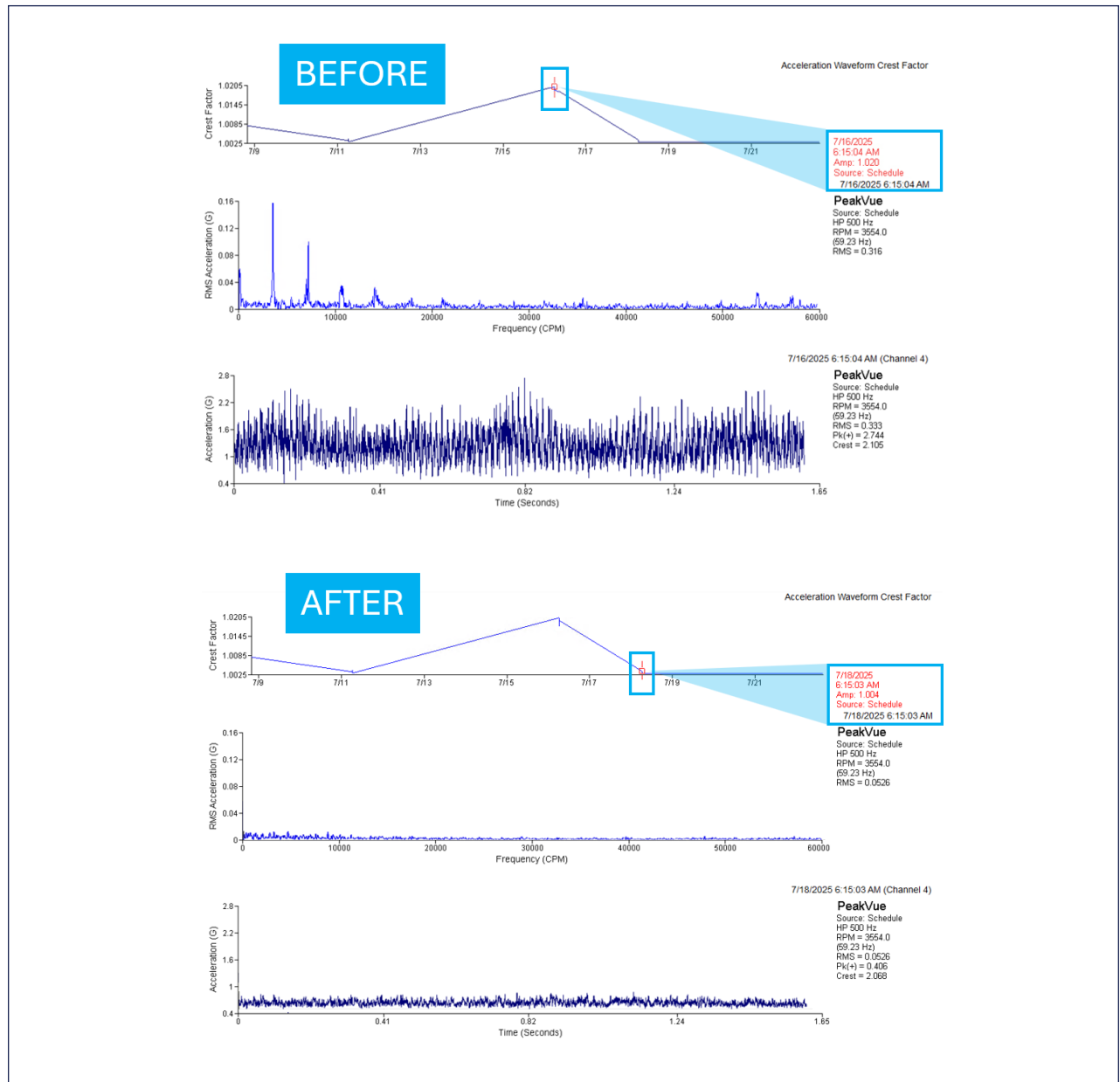


Figure 2: Contrast in vibration data before and after replacement of the cracked motor base. The data in the top set of plots was collected automatically by the AMS Asset Monitor on 16 July 2025, when it spotted the issue and correctly flagged it as looseness. The bottom set of plots reflects the same readings just two days later, after the motor was replaced.

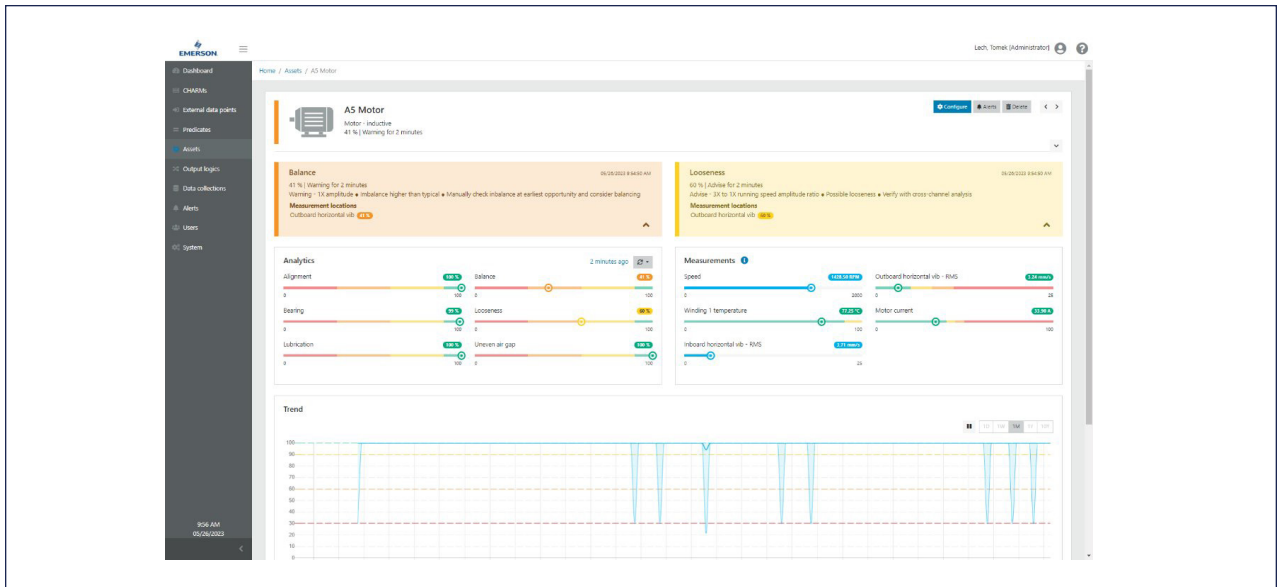


Figure 3: The AMS Asset Monitor delivers intelligent advisories such as this one showing a motor exhibiting both looseness and imbalance. The intelligence is embedded in the AMS Asset Monitor itself and is why it is described as having “analytics at the edge.” In the spirit of “supporting evidence”, users can drill down to see the actual data giving rise to such intelligent alarms using the AMS Asset Monitor’s web interface (shown here) or full-featured AMS Machine Works software.

RESULTS

Not only did this incident save the plant six hours of lost production, it also used the embedded analytics capabilities of the AMS Asset Monitor to bring attention to a relatively infrequent asset issue: a cracked motor base. The embedded analytics did not have to be programmed by the user and simply worked out of the box. Rather than merely delivering an elevated vibration reading, it analyzed the data and correctly flagged it as looseness rather than other malfunctions that also manifest as elevated 1X vibration such as imbalance and misalignment. Such a malfunction as a cracked base is indeed so infrequent that plant personnel were at first skeptical. However, a visual inspection verified its legitimacy and allowed rapid intervention, increasing trust in the system while averting unnecessary downtime and associated costs.

CASE HISTORY 2

A large, 10,000-gallon tank is also part of the plant's aseptic line. It uses an agitator, driven by an electric motor through a right-angle, speed-reducing gearbox (Figure 4).



Figure 4: This 10,000-gallon tank is part of the plant's aseptic line and uses an agitator turned by means of the motor and right-angle gearbox visible in the photo. The AMS Asset Monitor is also visible along with three of its four connected sensors on the gearbox and inboard end of motor.

Shortly after the plant's annual maintenance outage in July 2025, it was discovered that the gearbox's inboard bearing was exhibiting signs of wear. The timing was unfortunate as it would be another 12 months before the next annual outage – the preferred time to address such an issue. However, there was still useful life remaining in the gearbox and immediate replacement was not warranted. To this end, the AMS Asset Monitor was able to provide “intensive care” monitoring (Figure 5) for a full 12 months to closely watch the machine without necessitating either a forced outage or a reduction in throughput.

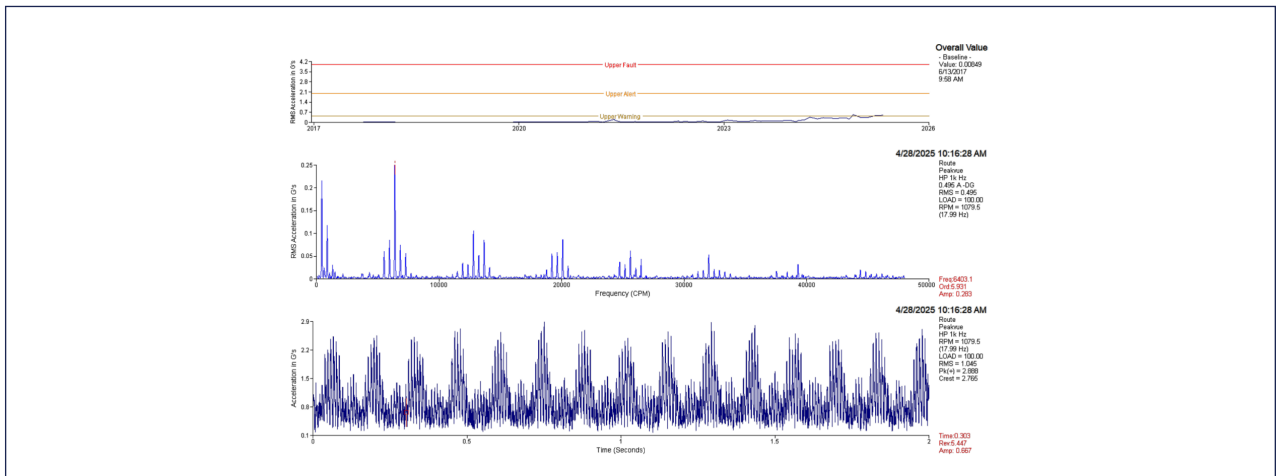


Figure 5: Trend, spectrum, and time waveform plots of gearbox inboard bearing showing characteristic “pinging” of an inner race defect and easily detected by the embedded Peakvue Plus analytics in the AMS Asset Monitor. Although the trend has exceeded the yellow “warning” threshold, it has not yet exceeded the orange “alert” or red “fault” thresholds, indicating substantial useful life is remaining. Monitoring such parameters continuously allowed the machine to operate safely at full load until a July 2026 outage when the bearing issue could be addressed.

Without continuous, online monitoring, such an operating decision could never have been made confidently and an outage to address the issue would have been conducted prematurely “just in case”. Instead, the plant was able to secure the replacement parts (which had a lead time of 12-16 weeks) without incurring any expediting costs. This allowed them to have the necessary parts on hand when the July 2026 outage rolled around and remedy the problem without issue.

RESULTS

Not only did this incident avoid 12 hours of unplanned downtime and the scrapping of 6,000 gallons of product, but it also allowed a confident operating decision to be made that the unit would continue running for a full year without incurring undue risk, nor were rush charges to obtain necessary parts incurred. More than \$150K was saved as a result.

CASE HISTORY 3

An initiative throughout the Evansville site is to get asset health information in front of management and other personnel. While platforms such as AMS Machine Works are useful for those with specialized vibration knowledge, they can be too detailed for the needs of operators, managers, and others that simply need a high-level view of asset health in an easy-to-understand format.

Evansville uses a third-party software platform as its Manufacturing Execution System (MES). Because this environment is so widely deployed within the plant, it was highly desirable to get the information produced by the AMS Asset Monitors into the MES's dashboard-type displays.

Most continuous monitoring systems use either analog (4-20mA) and discrete (relay) outputs or insecure protocols such as Modbus for transmitting current values and statuses. In addition, they transmit only low-level data and statuses rather than more intelligent advisories and informatics. Analog outputs mean that intermediate apparatus is required, such as a PLC, and individual hardwiring for each and every transmitted variable or status, making installation costs very high. At the other end of the spectrum are digital communications, but in most monitoring systems these are available only in the form of older, insecure protocols such as Modbus, Profibus, or Profinet. While OPC UA is a far more modern, sophisticated, and secure protocol, it is rarely available in most monitors because it requires an embedded operating system running on an embedded PC.

However, the architecture of the AMS Asset Monitor uses an embedded PC and thus supports OPC UA. This meant the Evansville site was able to very easily bring in a wealth of asset data and intelligent advisories to their MES system (Figure 6).

Because the AMS Asset Monitor produces such intelligent advisories locally, the cost of cloud subscriptions for analytics is not necessary and asset health advisories do not need to rely on internet connections or massive uploads of data from “the edge.” Instead, processing is done locally inside each AMS Asset Monitor and conveyed securely to the MES environment using OPC UA. Managers, operators, and all other relevant personnel can view MES screens and intuitive asset health screens without needing to learn another system, incur additional subscriptions, or use special “middleware” to transform data into actionable information.

The plant estimates that this ease-of-integration saves them tens of thousands of dollars each year because it requires no additional hardware, software, subscription fees, or technical support contracts.

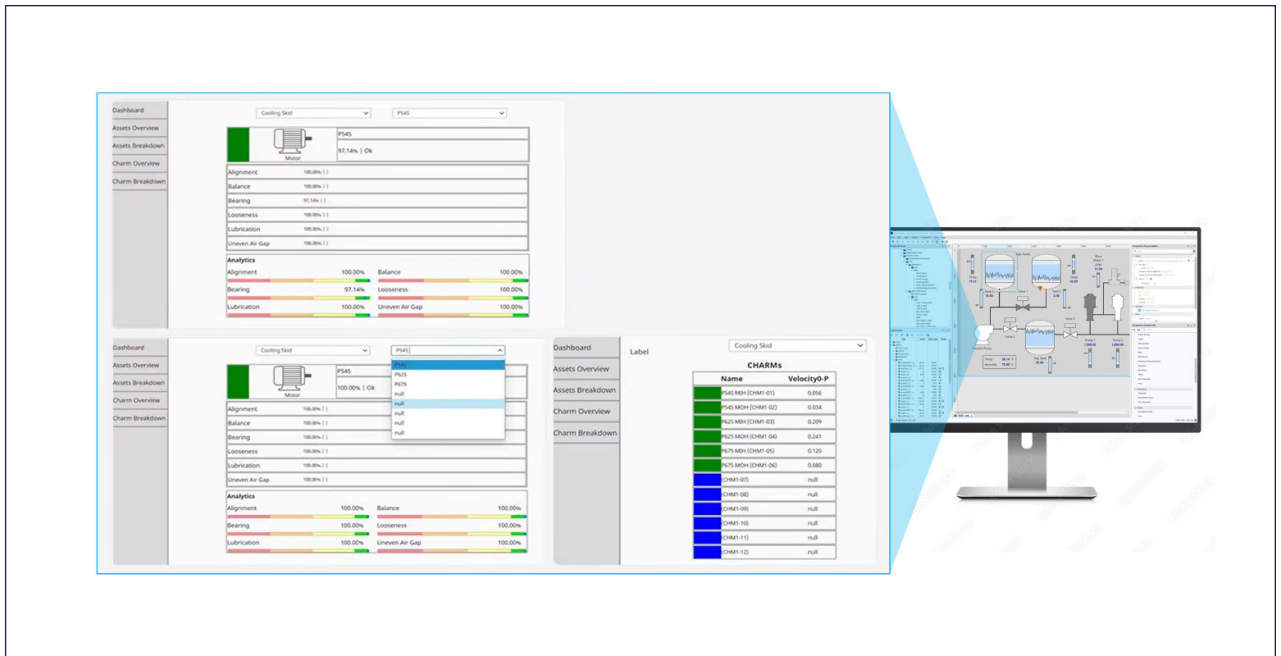


Figure 6: Evansville uses the Ignition platform by Inductive Automation as its MES environment. It allows users to easily create customized dashboards such as the one being built here. These dashboards communicate with each AMS Asset Monitor using OPC UA protocol and convey intelligent, yet simple (red/yellow/green), advisories based on the embedded analytics in each AMS Asset Monitor.