

3 Reasons Routes for Predictive Maintenance Programs May Be Dead

By Brett Burger

This topic likely elicits strong reactions from operations and maintenance professionals with turbomachinery industry experience, and I suspect many of those reactions are along the lines of “Routes. Are. Needed.”



Figure 1 Connected, intelligent data collection systems help subject matter experts spend time solving problems rather than gathering data.

I don't want to imply that human expertise, along with the five senses, isn't needed (at least for now). I'm focused more on the routine and highly manual checkups that happen periodically. Sending trained experts to the field, sometimes hours away, only to have them see, hear, smell, feel, and measure nothing out of the ordinary doesn't seem sustainable. My prediction is most of the walk-around manual data collection (routes) to ensure reliability will be replaced with automated data collection from connected, predictive maintenance systems, and that this shift will make the subject matter experts (SMEs) more productive. I see three compelling reasons for this shift.

1. The field expertise is retiring and not being replaced in sufficient numbers. Covering more assets with fewer experts doesn't scale without a change, and I think justifying the waiting required to get the right person with the right equipment to the right plant to remedy the problem will grow more difficult. With automated data collection, asset information reaches the expert in near real time. This is possible because of the second reason for this shift: improvements in technology.
2. Measurement, communication, and data management technology is improving for data collection while decreasing in cost to implement. High-frequency data from permanently installed sensors is already being screened in plants by rugged processing elements. Routes that review equipment once every three months can't compete with multiple measurements per second that are continuously screened. Additionally, wireless technology and MEMS sensors are advancing to the point that diagnostic-quality measurements will be conducted without the overly burdensome installation costs associated with cables, conduit, and engineering drawings. We've seen technology evolve like this in the sensor-packed computers in our pockets, our cars, and our home appliances. These same technologies fueled by the IoT megatrend and delivered to the massive consumer market are going to help connect industrial assets to maintenance experts.
3. The final reason is that the business impact is huge. McKinsey & Company postulates that operations and equipment optimization will have a potential economic impact of \$1.2 trillion to \$3.7 trillion per year for factories by 2025. For some assets, preventing a single critical failure can pay for an entire system. Some plant operators today are seeing payback in four years, according to an [IHS Markit case study](#), and others are seeing productivity gains of 8X in their diagnosis data collection workflow. The value from recaptured downtime is too large to be ignored, and industrial technology companies are driving to deliver this value to market with fully autonomous systems that help keep turbomachinery running.

Human expertise for condition-based and predictive maintenance programs will likely be needed for years to come, but we won't need to send the expert on a plant trip to pull data from healthy assets. With automated data collection, SMEs will spend more time focused on the risky asset of the day, as reported by the automated data collection, and less time focused on manual data collection. SMEs will be more productive. Routes will be dead

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Duke Energy Takes Advantage of IIoT for Predictive Maintenance Applications](#)

Brett Burger joined NI in 2003. He holds a bachelor's degree in aerospace engineering from Texas A&M University and works on market strategy for software, measurement, and communication technology in online monitoring and Industrial IoT applications.