Bringing a *human touch* to equipment analytics

Experienced professionals can help close the data gap for asset-heavy industries

Much of the American energy-generation infrastructure is aging. **The average age of a refinery** in the US is 80 years, and often consists of mechanical assets installed decades ago. And **hydropower plants** are some of the oldest generating stations in the US, with some dating back to the 1930s.

Though there is a wealth of operational history at these kinds of facilities, much of it is not digitally recorded because of the cost to install and maintain sensors, the slower upgrade frequency of operational technology equipment, and limited data overall. Even if data is digitally recorded, it's still often locked up in silos like maintenance reports or standalone asset-performance modeling tools.

While there is a drive to rely more on data to transform businesses, analytic programs that support equipment insights are only as good as the data provided. If key information about a facility is missing, the program will fail.

Companies that choose to rely on only one source of data will limit the understanding of the asset or maintenance process. To fill the gaps, asset-heavy industries need to rely on a different, and often very valuable, source of insight: the experienced maintenance and operational professionals working with the equipment.

A successful analytics program will consider all sources: sensors, operator routines, inspections, physics-based models, maintenance reports, and the maintenance and operational professionals tasked with managing the target assets and processes.

Consider all inputs

Many analytics programs begin with the best intentions. But if an asset fails, relying only on one source of data could mean spending more time troubleshooting. Considering past maintenance activities could identify the best next step and get the asset operational sooner.

Decisions made using insights garnered only from asset sensor data – for example, when an asset should be brought out of service for maintenance, or what components should be replaced during maintenance – often fail or under deliver. Available digital data often portrays an incomplete picture that decreases confidence and accuracy in analytical outputs.

This is where facilities rely on experienced professionals to make sound judgements based on other pieces of information and their own experiences. An experienced professional who has worked with an asset for years has a wealth of information analytics can't access, often due to a variety of technical challenges.

Build a program that works

Asset-intensive industries should not attempt to replace decisions that experienced professionals make. Instead, they should seek insights that lead to more desirable outcomes.

This process should include a strong understanding of current operations, how maintenance is handled, and how solid the available data is for decision making. This will create a higher level of confidence in the conclusions, which is critical for reducing costly downtime.

Change the mindset

Equipment analytics are meant to make operations and maintenance easier, but there is no one magical dashboard that fixes everything. The tendency is to fall into old habits by continuing to use existing processes or focusing on reasons why change cannot happen. Working closely with experienced employees like engineers and operators drives everyone involved towards a better implementation mindset.

Experienced professionals are also aware of the broader picture and tangential information, like asset criticality and likelihood of upcoming planned downtime. This data can be coupled with analytics to provide maximum insight and value. It is also important to realize that experienced professionals bring a factor that monitoring equipment and management systems do not: enthusiasm. People think about how to do things differently and can see a bigger picture.

Engaging professionals early will build support for the initiative, so invest in building a dialogue. For example, using analytics to decrease unplanned downtime due to an asset failure is a common objective. Companies may attempt to use analytics to identify why the failure occurred, but build in a way that lacks transparency in why a particular failure mode was identified. It is better to first build analytics that provide a summary and new insights into what led to the failure. That approach is more likely to be adopted by the experienced professional who is responsible for deciding next steps.

Find the right path

Analytics programs should be driven by experienced professionals and developed closely with the analytics team. Start by considering various use cases, like:

- Moving plant or unit maintenance maturity away from a run-to-failure or firefighting approach to planned maintenance, before moving to more advanced maintenance tools
- Increasing certainty in decision making and providing insights to optimize outcomes
- Identifying critical assets that would benefit from deeper analytics and reduced downtime
- Understanding equipment accessibility and the value of remote monitoring
- Measuring the availability of the data via sensors, walking rounds, and reporting
- Determining data quality and the timeline needed to improve it.

It may be tempting to seek benefits across the entire company, but starting small is the key. Building appreciation of better equipment data insights will take time and change management must be part of the process. Experienced professionals are a wealth of information and value, but collecting that data and ensuring it is part of the equation requires planning.

Capgemini understands the challenges of asset-intensive industries and the value of collecting data from equipment and professionals. We can help companies connect equipment insights and experienced professionals to ensure data programs deliver real insights and business value.

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