A Reliable Effort Creates Quick ROI

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When it comes to manufacturing equipment, reliability is more than just preferable — it's required. With the cost of downtime in some applications valued in the thousands of dollars per minute, it's safe to say manufacturers who take a reliability-centered strategy are hedging their businesses against potentially catastrophic impacts.

And the proof is in the payoff, according to Mark Latino, president of Reliability Center, Inc., provider of root cause analysis, training, and software. According to Latino, the key measures of a reliability-centered strategy are OEE (overall equipment effectiveness), MTTR (mean time to restore), MTBF (mean time between failure), and process uptime — and the biggest ROI comes from solving chronic issues. "Chronic issues are very expensive when measured over a year. There are usually many and the combined costs add up quickly," he says. Latino goes on to explain that when chronic issues slowly adapt into "the way we do business," they must be budgeted for. That way when chronic issues are eliminated, the savings are registered directly to the bottom line.

The Tech Factor

While downtime is an age old issue, there are many new strategies to address it. For many manufacturers, real-time access to information has become a way to keep a better handle on what's happening. "Communications have improved in the age of continuous multi-media connectivity – with email, text messages, and other apps providing constant notifications of emerging events – and industrial asset monitoring is no different," explains Joe Van Dyke, P.E., VP of operations for the predictive maintenance analytical services and products company Azima DLI.

“Monitoring systems that receive and process condition monitoring data can be set to notify a broad range of individuals or activities using a variety of methods.” Van Dyke explains that this makes it easier to know more about the assets – and know it sooner – which can minimize the time that elapses between an event and a response.

From Latino’s perspective, technology also augments human weaknesses in areas like alertness, precision, and memory. For example, technology helps remind a plant floor employee of key parameters like torque specifications. “An example would be using a digital notebook to enter torque values,” he explains. “If the entered values are out of the tolerance range, an indicator alerts the user of a problem.”

Additional checks and balances come in the form of high value technology that helps users see things they wouldn’t normally be able to. These include tools relating to vibration analysis, infrared thermography, ultrasonic thickness, eddy current, acoustic emissions, alloy analysis, and many others. “I believe the most effective tools are the ones that provide information about heat and vibration,” says Latino. “In any manufacturing facility, heat and vibration are the main two mechanisms that significantly reduce equipment life.”

With these points in mind, it's easy to see where reliability and predictive maintenance go hand-in-hand. “Using predictive maintenance can forecast machinery failure,” says Van Dyke. “This is through early detection of faults that lead to mechanical failure and/or collateral damage.” Ultimately, the biggest benefit here is in allowing a maintenance team to address repair issues during a planned outage, says Van Dyke, as well as allowing for timely ordering of parts and appropriate scheduling of labor.

First Steps

According to Latino, many plants are in variety of different stages when it comes to reliability. “I believe the first key steps are determining what site data is available and how current the available data is,” he explains. “I usually start with site maps and verify the equipment is where the map says it is.” If there is a discrepancy, users should start by correcting them, and determine that all the equipment is physically tagged in the field with an identification number that matches the maps.

The next steps, says Latino, should be more administrative. His recommended path forward includes:

• Determining the reliability mission – reflecting tangible goals like extending time between repairs or assuring spare parts are available through a routine stores provisioning program.
• Determining equipment criticality – use plant and process engineering, along with maintenance personnel.
• Deciding how many positions will be needed – how many different engineers and technicians will this effort require?
• Determining the reliability roles and responsibilities – laying out the detail for each role within the reliability effort.
• Determining data needs – Starting with the most critical equipment, determine

data collection strategies, training, verification, etc., where required.

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