



Improve Reliability and Reduce Your Costs

Up to 5 percent of production availability is lost annually due to unscheduled slowdowns and shutdowns. Six asset classes account for a significant part of this loss.

What if you could...

- ...mitigate production losses caused by unplanned shutdowns and slowdowns—sometimes worth millions per year?
- ...use predictive diagnostics to reduce your maintenance costs?
- ...identify accelerated heat exchanger fouling—saving significantly on your energy bill?

Your critical business challenges are all interdependent. A single unplanned shutdown or slowdown can have a cascading effect, whether you manage a chemical facility or refinery. If equipment reliability suffers, so will throughput and margins. Poor reliability can even cause safety and environmental incidents. On top of all this, experienced operators and technicians are retiring, and regulations are becoming more stringent every day.

Reliability and efficiency suffer not because critical assets are unmonitored. It's often because less critical, but still essential assets lack adequate monitoring. Issues with these assets can cause a slowdown, shutdown, or HSE incident, while also draining efficiency and reliability across your facility.

UNPLANNED SHUTDOWNS AND SLOWDOWNS SACRIFICE VALUABLE PRODUCTION

Studies have shown that up to 5 percent of production is lost annually due to unscheduled slowdowns and shutdowns. Failure of equipment in just six asset classes accounts for a significant amount of this lost production. The majority of these essential assets are only periodically monitored due to the perception that online, real-time measurement is expensive. This leaves operators and maintenance personnel without sufficient insight into the health of their equipment. The situation is becoming more of a concern as experienced personnel retire and take their vast knowledge with them.

MAINTENANCE COSTS ARE INCREASING

Maintenance of these same six asset classes can consume close to 10 to 20 percent of the total maintenance budget. These assets are usually maintained using preventive maintenance where the asset is serviced on a routine basis whether it needs it or not. If the equipment does fail, repair costs are typically higher than if the problem had been addressed prior to failure.

<i>Critical Assets</i>	<i>Essential Assets</i>
<ul style="list-style-type: none"> • <i>Already monitored</i> • <i>Higher probability of failure and higher impact</i> 	<ul style="list-style-type: none"> • <i>Medium probability of failure and medium-to-high risk of impact</i> • <i>Could cause slowdown, shutdown, or HSE incident</i> • <i>Unmonitored or monitored with periodic manual rounds</i>
<i>Six Essential Assets</i>	
<ul style="list-style-type: none"> • <i>Air cooled heat exchangers</i> • <i>Blowers</i> • <i>Cooling towers</i> 	<ul style="list-style-type: none"> • <i>Compressors</i> • <i>Heat exchangers</i> • <i>Pumps</i>

RELIABILITY ISSUES MAY CAUSE ENVIRONMENTAL AND SAFETY INCIDENTS

People are put in harm's way during trips to hazardous areas for preventive maintenance or diagnostic data collection. Equipment reliability problems can lead to leaks and fires, and operators often lack the information they need to identify abnormal operations and avoid incidents.

Integrated Solutions for More Effective Decision Support

Historically, many plants were built with the minimum instrumentation needed to safely operate. Additional measurements are often required to optimize and monitor asset health. However, the chemical and refining industries have changed in the last 20 years, making automated monitoring more affordable. With affordable monitoring, plants no longer have to just accept unplanned shutdowns, high maintenance costs, and decreased reliability.

INCREASE PROCESS AVAILABILITY

With Emerson's Essential Asset Management solution, you'll gain the insight to process and equipment health needed to help you avoid slowdown and shutdowns. You'll get the full picture of what your process and equipment are doing because the system captures key operating parameters over the operating range of the equipment. This allows your maintenance experts to quickly evaluate the performance data and take corrective action.

IMPROVE ASSET RELIABILITY

Emerson's solution allows you to perform condition-based maintenance before assets fail. With online updates on equipment health, your operators will know when equipment has reached a warning stage, or has escalated to critical, without being overwhelmed by nonessential alarms. You'll also be able to easily gather and analyze fault-alert data to determine the root causes of "bad actors" and reduce repeat failures. With this solution, you'll only perform turnarounds and maintenance on equipment that needs to be repaired because with predictive diagnostics you'll see important trends of an asset's health and know when the cost to operate exceeds the cost to maintain.

MITIGATE SAFETY AND ENVIRONMENTAL RISKS

In addition to having asset health information that can prevent costly slowdowns and shutdowns, you'll receive early warnings on degrading equipment so that you can prevent leaks before they cause hazardous incidents. This will help you reduce periodic, schedule-based maintenance rounds and minimize trips into hazardous areas that put your people in harm's way.

"Reliability of our plant and equipment is priority number one. It would be useful to obtain real time information on equipment health in a way that is visible to our operators and is simple to access and understand."

Technology Lead
Major Petrochemical Site
in Europe

ESSENTIAL ASSET MONITORING

With Emerson's Essential Asset Monitoring Suite, you'll be able to detect abnormal situations, spot imminent failure, and receive timely alerts to potentially hazardous situations involving your equipment.

AIR COOLED HEAT EXCHANGERS



Avoid cooling-constrained operations caused by:

- High vibration and bearing temperature
- Operating near known resonance frequency
- Louver/pitch actuator mechanical defects
- Exchanger fouling and excessive cooling
- Fan icing

BLOWERS



Ensure fired heaters and boilers don't trip due to blower failure as a result of:

- High vibration and bearing temperature
- Low differential pressure
- Operating near known resonance frequency
- Louver mechanical defects
- Plugged suction filters

COMPRESSORS



Receive early warnings to avoid unexpected compressor outages as a result of:

- High vibration
- Low differential pressure
- High differential temperature
- Instability
- Control vane defect
- Plugged suction filters

COOLING TOWERS



Prevent limited cooling tower capacity caused by:

- High and low cooling tower efficiency
- Excessive and insufficient makeup and blowdown flow
- High and low cycles of concentration
- Scaling and corrosion potential
- Issues with pumps and fans

HEAT EXCHANGERS



Avoid unit turndown and improve the cleaning strategy of heat exchangers by detecting:

- Accelerated fouling
- Heat duty and energy loss
- Optimal cleaning time

PUMPS



Prevent pump damage and failure (even on second-tier pumps) resulting from:

- High vibration and bearing temperature
- Low differential pressure
- Pre-cavitation and cavitation
- Seal flush faults
- Hydrocarbon leaks
- Plugged suction strainers

Ready to Explore Essential Asset Monitoring at Your Facility?

An effective essential asset monitoring program has been shown to save up to 5 percent of maintenance costs, reclaim 1 percent of lost production, and save significant energy cost.

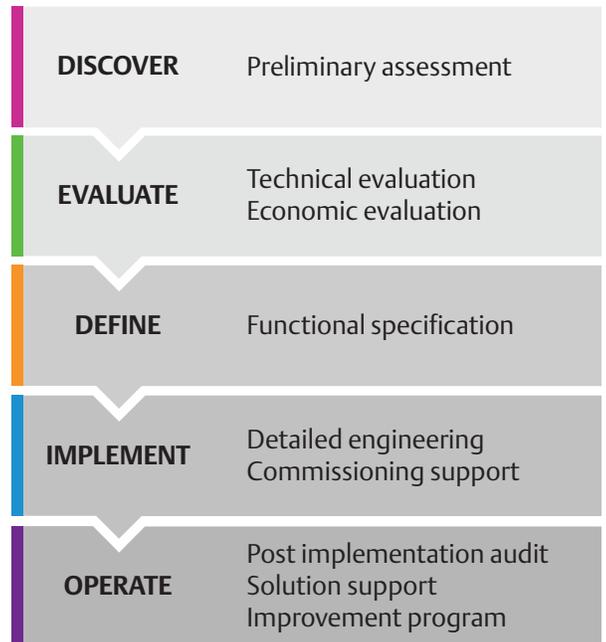
You can achieve a low-risk and effective solution to improve reliability and reduce costs with an assessment from Emerson. Bringing decades of experience solving complex problems at plants across the globe, Emerson's experts can help you identify and justify asset monitoring improvements that will reduce unplanned shutdowns, slowdowns, and maintenance costs. You will be able to deliver quantifiable and lasting improvements to give you a proven edge over your competitors.

After your assessment, you can choose which steps to take to begin improving your plant's availability and reliability. Emerson's experts can help you identify where automation would have the most significant benefits, including reducing your risk exposure.

You can trust that your solution will be scaled to meet your needs and that you will be supported from project justification to installation and beyond.

START SAVING NOW

Take steps to improve your chemical and refining facilities today by contacting us at: www.EmersonProcess.com/Explore-EAM



www.EmersonProcess.com/Chemical

©2015 Emerson Process Management. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co.

The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

