Focus on reliability to improve availability, profitability and safety.
Prediction and Protection for Production Assets

Unreliable equipment increases risk to both safety and profits

Unscheduled downtime caused by equipment failure eats into both the maintenance budget and production goals. Routine maintenance can help, but it doesn’t reveal the developing issues that result in process slowdowns or shutdowns. You simply aren’t able to avoid these preventable failures.

Introducing technology to monitor these assets sounds like the solution, but where do you start? The budget won’t allow you to install the same monitoring system on every asset in the plant, so how would you choose what equipment to monitor and what equipment to ignore?

In addition, your critical assets are required to have API-certified protection systems so the equipment is tripped under unsafe operating conditions. But sometimes those trips aren’t necessary – and again your production is shutdown while you determine the nature of the problem.

To keep your plant assets available and producing revenue, you need solutions that are custom to the criticality of the asset being monitored and that identify the assets at risk of failure.
A key strategy to improving reliability is to monitor the condition of production assets in your plant. Emerson offers a variety of condition indicator technologies specific to the nature and criticality of those assets – portable handheld and asset management solutions, wireless transmitters, and online continuous monitoring systems that can include protection capabilities.
Improve Asset Reliability Using Predictive Field Diagnostics

In a perfect world, your process would be consistent, day in and day out. But the reality is that field device performance, like most things, can degrade over time. Variability is a natural occurrence that must be dealt with.

Predictive diagnostics from field devices help your maintenance team keep sensing devices configured, calibrated, and operating effectively. And the measurements and control from those devices protect the reliability of your production equipment. Emerson’s AMS Device Manager provides real-time online access to intelligent instrument and valve diagnostics and alerts, delivering a view of device health and troubleshooting information when an issue is found. The AMS Trex Device Communicator and 475 Field Communicator allow your personnel to assess health and repair devices from the field. Whether online or offline, Emerson gives you the tools to ensure your field devices are performing as expected.

Production capacity is lost to as much as 5% every year as a result of unplanned shutdowns.


What’s your challenge?

What’s your opportunity?

Even small fixes have big impact. While using AMS Device Manager, Braskem S.A. found a calibration error on a pressure control valve, causing the valve to open 3% when it was supposed to be closed. Fixing the calibration error saved the plant $300,000 a year.

– Braskem S.A. in Brazil

300k

Saved

5% Production Capacity Lost

LEARN MORE

AMS Device Manager
AMS Trex
AMS 475
Drive Maintenance Schedules and Budget by Improving Reliability

When your assets aren’t reliable, you can’t maintain your schedule or operate within budget. Your assets become the drivers of your success. But with predictive intelligence, you gain the insight necessary to schedule maintenance that supports your production goals. Emerson’s technology for delivering predictive intelligence puts you back in the driver’s seat.

Vibration data is the cornerstone of predictive intelligence. However, vibration data has historically not been routed to the control room because it required specialized training to extract actionable information. But plants performing at top-quartile reliability leverage both asset condition and process data together in the control room.

Emerson’s vibration data collection technologies feature a unique methodology - PeakVue technology – to cut through the complexity of machinery analysis and provide a simple, reliable indication of equipment health that is easily understood by both operations and maintenance. PeakVue filters out traditional vibration signals to focus exclusively on impacting, a much better indicator of overall asset health on pumps, fans, motors, or any other type of gearbox or rolling element bearing machine.

What’s your opportunity?
Reduce repair expense. By making use of predictive data to improve the reliability of their rotating equipment, Saudi Aramco, Ras Tanura refinery, reported a total program savings of over $10 million annually and a 9% reduction in maintenance costs.

– Saudi Aramco, Winner
– Reliability Program of the Year 2015.

What’s your challenge?
It costs approximately 50% more to repair a failed asset than if the problem had been addressed prior to failure.

– U.S. National Response Center

50% MORE
Repair Costs

5% Reduction in maintenance cost

Click below for more information.

Safeguard critical assets 24/7 with online monitoring
Maintain availability through periodic monitoring
Supplement your team with expertise and manpower

LEARN MORE

Prediction and Protection for Production Assets
Improve Availability, Profitability, and Safety
Improve Reliability Using Field Diagnostics
Drive Maintenance Schedules and Budget
Be Confident a Shutdown is Necessary
Responsibility for the Entire Measurement Chain
Protect the Value of Your Investment
Impacting the Bottom Line

PEAKVUE
AMS 6500
AMS 9420
AMS 2140

50%
MORE
Repair Costs

AMS improving
asset reliability
Safety regulations and often insurance requirements necessitate the installation of a shutdown system on your expensive and critical production assets to protect both lives and investments. But protection doesn’t have to be just a necessary expense – the right protection system can be a path to integrating the predictive intelligence that allows you to avoid false or missed trips.

Through system integration and unique data access, Emerson protection systems allow you to confidently determine when critical assets can be allowed to continue running safely.

By recording data during equipment start-ups, coast downs, and other transient events, Emerson protection systems provide you the information necessary to make informed operational decisions. Systems are compliant to a variety of API standards and SIL environments, meeting the strict safety and insurance requirements such as those in the refining and petrochemical industries.

**What’s your challenge?**

A typical refining facility will spend less than 10% of its time in transient operations. However, 50% of all process safety incidents occur during this time.

– Tame Your Transient Operations, Chemical Processing June 2010

**What’s your opportunity?**

Operate safely during typically dangerous conditions. The startup and coastdown of turbo machinery is potentially the most dangerous operating state due to the rapidly changing conditions. Rather than just snapshots of data, Emerson delivers real-time data on multiple channels simultaneously for the most powerful, accurate diagnostics and safer operating conditions.
Responsibility for the Entire Measurement Chain

One Source of Responsibility for the Entire Measurement Chain

When there is a problem with your data, where is the source – your sensor? Your collection system? When your tools come from multiple vendors, it can sometimes be difficult to pinpoint the responsibility and address the problem.

Emerson offers a full line of quality sensors to complement its prediction and protection systems. Working with a leading third-party sensor supplier, Emerson has introduced a variety of specialized sensors to improve the accuracy of the measurement as well as the ability to physically capture early stage asset failure data.

Better Connectivity and Reduced Voltage

Another aspect to improving the accuracy of an accelerometer is ensuring that it can be easily and properly installed and interact efficiently with the collection device. With this in mind, Emerson introduced accelerometers with unique features to address these concerns:

- Swivel-based, low profile designs to eliminate cable strain in tight, small-space environments.
- Low voltage accelerometers for use in wireless transmitter applications, resulting in longer battery life in the transmitter.
- An integrated magnetic base with a matching keyed base as part of Emerson’s exclusive triaxial sensor for faster route-based, periodic monitoring. The integrated base ensures solid and secure placement for the most accurate measurement.

Accelerometers – Emerson offers a wide range of options for all applications and budgets.

Velocity sensors – Ideal for protection systems, both economical and premium velocity sensors offer optional additional cable protection.

Displacement sensors, converters and transmitters – Options range from field and enclosure mountings, small and large shaft measurements, and industrial safety ratings.

Speed sensors – Selection includes options for tight installations, portability, and magnetic mounting.

Pressure sensors – Dynamic pressure pulsation measurements are important to analyzing and troubleshooting pumps and optimizing fluid processes.

Sensor accessories – Offers cable armored jackets, probe holders, and other optional accessories to protect or improve your data measurements.
Protect and Expand the Value of Your Technology Investment

While many companies recognize a significant ROI following their technology implementation, companies that commit to maintaining their technology advantage reap the benefits for years to come.

Guardian Support Services

Improving reliability in the plant requires more than just acquiring the right monitoring and analysis technologies. You need to actively manage those investments and their lifecycle costs. Emerson offers Guardian Support services designed to optimize the reliability and performance of your machinery health products. It is designed to help improve your competitive advantage and bottom line business results through critical service and support information. Specific, critical information is matched to your system and proactively delivered to you through a secure dashboard portal available 24x7x365. Guardian Support also delivers incident management with access to experts to help you through critical issues. An accurate inventory of all system components and licensing combined with in-depth documentation and resources aids in your troubleshooting.

Machinery Health Training and Certification

Every year, more than 1,500 individuals attend courses on various machinery health topics across the country. Our instructors share their own real-world experiences and guide classes through hands-on exercises that reinforce the lesson. Emerson’s strategy for understanding machinery health includes training courses designed to help you start up and maintain your mechanical equipment. Our goal is to provide you with the knowledge to keep your plant running smoothly.
Implementing predictive intelligence and protection technologies from Emerson will deliver positive results in reduced scheduled and unscheduled downtime. But for companies pursuing top-quartile reliability, the return on investment is huge.

A study* of reliability practices measured maintenance costs as a function of the replacement value of the assets. If a top-performing site spends 10 million dollars per year on maintenance, a poor performing plant will spend 3 1/2 times more for the same size plant. In most cases, the value of the operational benefits is 3 to 7 times the value of the maintenance-spend reduction. According to the same study, top-quartile plants also experience very little downtime as a result of equipment problems. Fourth quartile (poorest) performers experience disruptive levels of down time that is almost 15% greater than top performers.

Top-quartile performers also demonstrate an integrated set of elements shown in the Reliability Value Chain. Ultimately, the ability to achieve top performance status is dependent on the robustness of each element and, perhaps more importantly, on the effective connectedness of all of the elements into a continuous improvement cycle.

*2013 Solomon RAM Study, Solomon Associates, LLC.