

SOLUTION BRIEF

Delivering a strong oil and gas maintenance strategy

Introduction

Oil and gas development projects, especially those offshore, require large amounts of capital. These projects often cost billions of dollars and take years to complete. Asset-intensive industries such as mining and power generation are similar in investment archetype. But the sheer scope of oil and gas development projects and the level of investment they demand put them in a class by themselves.

Once these projects are completed, they must generate reliable and consistent returns. In many cases, asset reliability—focusing on rotating, reciprocating, or other “machines in motion”—can determine the speed at which these investments start to turn profitable.



Oracle’s top objective for its customers in the oil and gas industry is to operate with a safety first mentality.

What is your strategy?

Preventive, predictive, condition-based, or run to fail?

The life expectancy of these moving assets is typically based on a few crucial components, such as their seals or bearings. These assets operate within defined limits, which include environmental conditions and routine maintenance schedules. Assuming these assets are used under recommended conditions, they will perform their intended functions throughout their life spans. Ideally, before an asset is used, maintenance practices such as reliability-centered maintenance and failure mode and effects analysis identify the most important variables to monitor. These variables help determine the health of an asset. Adopting these practices can lead to the most appropriate maintenance strategy: preventive, predictive, condition-based, or run to fail. Once a strategy is selected, it should be well documented in a computerized maintenance management system (CMMS), such as [Oracle Fusion Cloud Maintenance](#), or enterprise asset management (EAM) software. The CMMS/EAM should be flexible enough so that the strategy can be updated or improved.

The assets have natural rhythms that can be measured and therefore monitored or improved. Methods today allow us to measure the health of these rhythms and intervene before unhealthy ones cause substantial physical damages and financial losses. Even a simple pump or a compressor has many unique variables that affect performance. Monitoring these variables can help identify anomalies within an asset's prescribed or designed operating parameters, such as pressure, temperature, throughput, or vibration. Asset owners, equipment manufacturers, and repair technicians alike monitor these variables to ensure equipment health and safety.

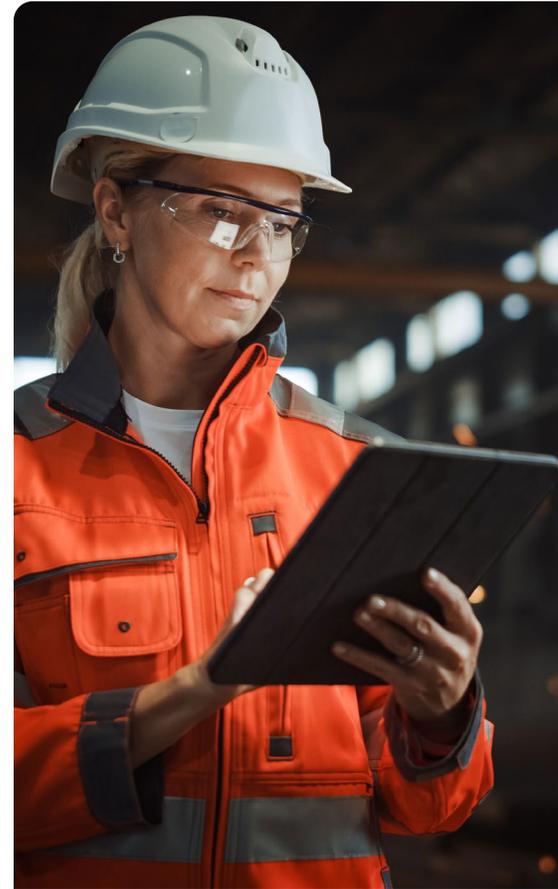


The latest technologies are creating new opportunities for improved performance, and the CMMS/EAM must be able to keep pace with these newest advancements.

The need for an integrated IOT cloud

Today, most machines have sensors that measure key parameters and feed them into a local edge device such as a remote terminal unit or a programmed logic controller via a hard wire. Some of this data is delivered to a large database, usually called a historian. Performance analysis occurs in the edge device and in the historian. But there are crucial differences. The data in the edge device usually has a much higher polling rate—there are more data points for each time period. Well-designed AI focused on anomaly detection can be built into edge devices, which can execute mitigating action if an intervention is required, such as slowing down the machine or even shutting it down. The AI performed in the historian is different, largely because the data sent to it is averaged in a way so that the data volume is smaller. Second-by-second data becomes minute by minute or even hour by hour. There's also latency between the edge device and the historian, reducing the effectiveness of any real-time decision-making based on the historian. That's not to say the AI performed on the historian's data isn't useful—longer-term trends and relationships can be effectively identified in this manner. But a user would need to be involved to interpret the analysis and enact the necessary improvements.

The Internet of Things (IoT) is a big step forward for those who monitor and maintain these machines. Instead of hard wires connecting traditional sensors, it's possible for IoT sensors to send data directly to a historian that can be located anywhere, including the cloud. More scrutiny of the reliability and latency of IoT will be needed before widespread adoption occurs in business- and safety-critical applications.



The advantage of providing data directly to the historian is that improvements to the analysis occur without disruption to the edge device while data can be used in AI engines for improved interpretations.

Technicians and engineers in the field need data for reliable maintenance analysis. Mobile devices have been around for more than 20 years, but only now are they providing information needed to make these workers successful. Early devices were merely electronic clipboards, whereby operations personnel entered data into the devices and docked them after returning to an office or control room. Today, it's essential—and practical—to provide these workers a cloud version of the CMMS/EAM so they can access equipment work history, OEM specifications, procedures, risk assessments, and best practices. Far too many organizations have not yet tapped into the full power of this mobile transformation. Equipment-related master data management relies on well-defined processes and content, as well as world-class software and infrastructure.



Better use of data not only makes equipment performance reporting and analysis and day-to-day operations easier; it also can help make organizations more appealing to investors, streamline operations to increase revenue, and even save a business from financial troubles.

Conclusion

A highly reliable operation requires a myriad of components working in harmony. Equipment strategies, equipment master data management, effective computerized systems, competent engineers and tradespeople, and useful performance measures are critical to such an operation. Companies excelling at safety, uptime/reliability, and managing costs well already know this.

Oracle Fusion Cloud ERP can help you achieve your maintenance goals.

Explore Oracle Fusion Cloud ERP

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