MODERNISING OIL AND GAS EQUIPMENT AND MAINTENANCE STRATEGIES

While the major price swings of oil in the last decade may seem like they’re firmly in the past, the future of the oil and gas sector is anything but certain. Many companies have learned lessons from the industry’s unexpected turns and implemented processes that are designed to avoid past mistakes and oversights. But one area that’s too frequently overlooked by oil and gas companies are their maintenance systems, processes and strategies.

In today’s highly competitive landscape, it’s no longer enough to simply track and fix equipment assets. A more aggressive asset strategy is needed — one that ensures equipment efficiency and effectiveness that maximises the return on investment (ROI), especially that of physical assets. Today’s maintenance strategies need to go deeper. Asset data needs to be collected and analysed so that companies can not only better understand what the maturity of their assets means, but also assess equipment condition and predict why and when assets are likely to fail.

Using operational data to track and fix assets

Asset downtime is costly in any industry, and no less in the upstream, midstream and downstream oil and gas sectors, where it can equate to millions of dollars in lost production, extra materials additional labour costs. Across the industry, equipment problems can go well beyond just the loss of output and product; faulty equipment can even result in serious safety and environmental complications.

Most oil and gas companies have maintenance programs in place to prevent equipment failures. However, many of these programs still focus on tactical procedures that track and fix assets — they don’t provide much in the way of analysis into why assets fail or even predict when they will. With today’s focus on reducing operational expenditure across the enterprise, oil and gas companies need to gauge their current procedures; determine what kind of asset management system they have in place; and, depending on what they find, move to a more strategic process that incorporates predictive practices.

Understand the maturity of assets

We believe there are five stages in an oil and gas company’s asset management maturity process — starting from the very basic and progressing to a comprehensive, enterprise-wide maintenance strategy.
These five stages are:

1. Operate
   In this stage, the company is reactive to all of its maintenance issues; it fixes something when it’s broken. The company takes few or no preventive measures. This approach increases downtime costs and often results in lost opportunity. It prompts excessive safety stocks that reduces inventory turn and increases pressure on cash flow.

2. Consolidate
   Here, the company recognises their approach to maintenance could be improved, but can't properly fund a major overhaul in systems and practices. It continues to focus on reactive procedures, but adds some element of planning, such as ensuring critical spare parts are in inventory and, when practical, overhaul instead of replacing equipment.

3. Integrate
   This is the stage when the company begins to emphasise financial aspects of maintenance. In this stage, the company should communicate its expected ROI to senior leaders, stressing the importance of securing extra funding for additional preventive maintenance measures such as routine inspections, lubrications, adjustments, and scheduled service plans. Planning ahead will help improve equipment ‘Mean Time Between Failures’ (MTBFs).

4. Optimise
   As time goes on, enterprise participation grows. That means having the support of management is critical and mandatory. With a growing shift towards predictive maintenance, more data will be collected and analysed. This is need for organisations to understand when failure is likely to occur and its impact on the business. The MTBF will significantly improve during this stage because the company is proactively managing risk.

5. Innovate
   The final stage includes maintenance as part of a total company system where the company combines prior techniques with operator involvement that frees maintenance technicians to concentrate on repair data analysis and major maintenance activities.

These stages have followed the evolution of enterprise asset management (EAM) systems, from computerised maintenance management systems (CMMS) to today's advanced asset performance management systems. CMMS is usually tactical in nature and provides an understanding of when to repair assets. It also sets the flow for issuing and tracking work orders. Such a system is well suited to small single-plant operations with limited resources. However, it doesn't consider the hierarchical nature of complex assets.

Achieving the highest ROI from your equipment

According to a strategy report from PWC, one of the top issues impacting global oil production is deferred maintenance. This report states, ‘some operators have put off non-critical spending in recent years to help reduce operating costs.’ This is especially troubling for an industry that often relies on ageing assets — some that are used long past the expected lifespan. When a company invests in a mature asset management strategy, it’s much better positioned to ensure that it maximises MTBF and achieves the highest potential ROI on equipment — aging or otherwise.

Next Edition

In our next edition we will discuss the importance of maintaining an Asset Ecosystem, how to build a system around industry best practices, assessing and identifying strategic assets for you can apply a comprehensive asset maintenance strategy.