

## Improving asset value maturity with reliability engineering

Arveen Gobind, one of Martec's Asset Reliability Specialists, talks about the difference between reliability engineering and maintenance engineering and gives some tips about how companies can improve their business maturity through reliability.



**R**eliability engineering is often associated with maintenance engineering; however, a reliability engineer's skill set is more diverse, driving business strategies to achieve goals through a well-structured path utilising vast amounts of data. The maintenance engineer's skills are used for day-to-day fire-fighting activities to ensure assets that have failed are brought back into service in the shortest amount of time, without compromising on quality.

In attaining business maturity through reliability engineering, an organisation must define goals. The existing systems will go through an evaluation process, to determine their suitability for integration, as organisations tend to have vast amounts of useful data on various platforms. The goals

will determine which data has the quality and integrity to be transformed into information, providing insight into asset performance and reliability. Analytics are performed on the information and interpretations result in effective decision making, with recommended actions. The results are then presented on dashboards and business intelligence reporting visualisations.

The reliability journey begins with a risk-based perspective, comprising an understanding of criticality, risk, failure-modes, effects analysis, predictive maintenance technologies and analytics. Furthermore, elements such as business goals, asset reliability, KPI selection and asset life cycle modelling play a crucial role.

When considering support for the business

goals, there has to be alignment between the following elements:

- **Financial factors:** Return on investment and capital investments.
- **Customers:** Serving customer needs and reducing product delays while maintaining quality.
- **Internal processes:** Enhanced operational efficiency, availability and reliability.
- **People:** Developing the workforce with training and structured growth paths.

An asset reliability KPI selection should incorporate the following:

- Evaluating the effectiveness of a condition-based maintenance tactic by measuring work orders generated by a CMMS.
- Managing the risk of critical asset failures, utilising Weibull analysis techniques.
- Monitoring the impact of changes to the maintenance and business strategy on reliability.
- Understanding the maintainability, availability and reliability of an asset through performance comparisons and trending.

Asset life cycle modelling KPI selection should incorporate the following:

- Identify underperforming assets based on utilisation, availability and running costs.
- Monitoring performance after modifications or changes related to failures (MTTR and MTBF).

- Identifying assets that show signs of premature ageing or approaching end-of-life.
- Evaluation of a repair versus a replacement strategy.

An example for the measurement of overall equipment effectiveness is adopting a condition-based maintenance tactic such as vibration analysis, oil analysis, or thermography surveys, which can be evaluated with the asset's mean time between failure (MTBF) and mean time to repair (MTTR). These will have a direct effect on business goals and the alignment thereof.

When utilising these basic techniques and data analysis, the overall plant effectiveness will prove sustainable. Over time, the data quality will incrementally be improved, which will result in improved information quality and reliable decision making. The adoption of a continuous monitoring programme utilising data analytics reap the benefits of improved asset performance with increased return on investment.

With our integrated solutions, Martec is perfectly positioned to assist companies with the improvement of their asset value maturity. □

## Wheel slogging and slogging hammers locally upgraded

BMG's Slogging Hammer and Wheel Slogger, which form part of the company's extensive range of tools and equipment, have recently been upgraded by local inventors, Slogging International, for greater efficiency and improved safety.

"The versatile Slogging Hammer and Wheel Slogger series, which are used in many industries to loosen and tighten bolts and nuts quickly and easily, ensure highly efficient operation and safe use for operators," says Andrew Johns, BMG business unit manager for tools and equipment.

"Recent advancements include a combination of two sizes, a new safety clip on the Slogging Hammer that prevents the shaft from sliding out when the tool is not in operation, and an all-in-one torqueing clip on the Wheel Slogger. This new clip allows the user to leave the tool attached to the wheel and gives the option of selecting different torque settings – from 450 to 650 Nm – without having to change the clip. Previously each torque was specific to a particular clip.

"There are many advantages of using the Slogging Hammer and Wheel Slogger over conventional slogging methods. Productivity is significantly improved through the controlled and effective impact between the hammer and the spanner, resulting in minimal downtime when compared with other conventional methods of loosening and tightening nuts and bolts. Safety, irrespective of the industry or application, is non-negotiable and the slogging range ensures a better working environment. Properties include ergonomics, high power to weight ratio and single operator deployment. When the Slogging Hammer is used in combination with the Wheel Slogger, applications are extended even further.

"Conventional hammer and slogger spanner systems require two operators to tighten and loosen nuts and bolts. This method is not only dangerous when the working area is cramped and there are other people in the vicinity, but it is also unsafe for the operator holding and guiding the slogging spanner. The operator is then at risk

of shrapnel and is effectively at the mercy of the operator swinging the hammer.

"The Slogging Hammer was developed to overcome the hazards associated with the traditional hammer and slogging spanner method and to improve operator safety when loosening bolts and nuts. Other uses for this tool include pin extractions, and with an adaptor this can be used with standard impact sockets, tyre bead breakers, as well as in the removal of coal picks and other custom chisels.

Safety features of the Slogging Hammer include a built-in hand-grip, which means there is no need for the operator's hand to be near the impact zone, and an eye-bolt that prevents accidents when tightened in overhead working conditions. No heavy lifting is necessary, as only the shaft weight needs to be managed.

This tool is used easily in confined spaces and in areas that are difficult to access. The Slogging Hammer provides greater direct impact, ensuring that the job is completed quickly and safely, with fewer blows than with conventional methods. □



BMG's upgraded Slogging Hammer forms part of the company's extensive range of tools and equipment.

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