



ASSET MANAGEMENT

THE RISE OF RELIABILITY

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INTRODUCTION



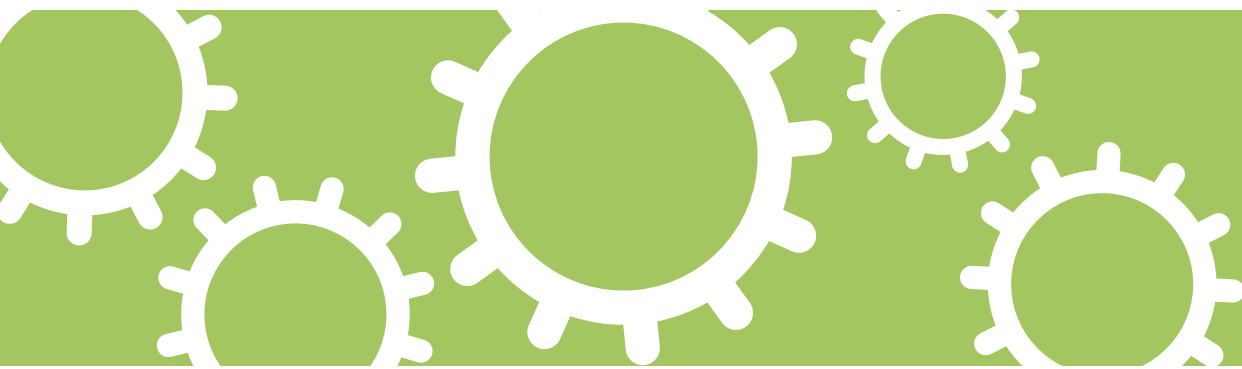
After a long period of economic downturn, industrial-sector businesses are finally recovering, recommissioning long-dormant assets and even investing in new technology.

But many of these same companies are now running into serious issues as they reintroduce legacy machinery or facilities, attempting to integrate the latest acquisitions into standard operation. Apart from the upfront costs of bringing assets online, companies are also incurring downtime losses and avoidable expenditures pertaining to replacement components and labor.

What these organizations lack is a data-driven asset management regimen that will ensure reliability throughout asset life cycles, reduce long-term maintenance costs and optimize workflows around asset upkeep.

The operational and organizational experts at USC Consulting Group agree that all asset management operating systems should contain the following seven pillars to support best practices.

1. WORK MANAGEMENT



A single work order passes through many hands, so a dedicated work management system is integral to ensuring the entire process is carried out to the letter.

Typically, the work management process looks like this:

- A worker either notices irregular asset behavior or a scheduled preventive maintenance task.
- He or she places a work request.
- A manager or supervisor vets the request and chooses whether to convert it into an official work order.
- A planner further investigates the order, which may involve engineers or procurement specialists depending on its complexity.*
- The planner schedules the work order for completion.
- A maintenance professional carries out the work order, possibly over several sessions.
- Once maintenance professional completes the project, he or she submits an invoice for services rendered.
- The business pays the professional and accounts for the labor costs.

Strict adherence to work management will drive success as asset-intensive industries adopt and instill the disciplines of reliability-centered maintenance (RCM).

* All work orders require approved lists of materials, lists of vital instruments, relevant work instructions, identification numbers for the assets in question and any lockout-tagout procedures that technicians must observe.



2. DOWNTIME TRACKING



Scheduled and unscheduled maintenance both create downtime. The difference lies in how much and how fast workers can resolve it.

Proper downtime tracking provides visibility into the cause of a failure, what discrete functionalities are lost because of a failure and how that failure impacts the large-scale flow of productivity.

Moreover, downtime tracking data feeds the development of equipment hierarchies, which inform work management decision-makers as to the dependencies among assets. That a motor breaks down is far less important in the grand scheme of asset management than knowing the details of its functionality losses and what equipment downstream of it will suffer from its incapacitation.



3. PREVENTIVE AND PREDICTIVE MAINTENANCE



Depending on their industry, assets and operations, businesses may choose to adopt preventive maintenance programs (PM), predictive maintenance programs (PdM) or a hybrid of both.

Preventive maintenance uses automated triggers to alert operators or technicians to possible upcoming failure events.

Predictive maintenance uses advanced technology – thermographic imaging, ultrasonics, tribological analysis, remote sensors – to monitor asset conditions in real time.

Ideally, asset-intensive businesses should strive for a 4:1 ratio between preventive/predictive maintenance and reactive maintenance. However, striking that balance will require a thorough strategy for vetting critically all sources of PM or PdM data, be they informal reports from your operators or instructions from the original equipment manufacturer, no matter how well or poorly they've served you in the past.

4. ASSET CRITICALITY REVIEW



Pick any two assets under your purview. One of them is more critical to your mission than the other. But do you know which and why?

No asset management framework can thrive, or even survive, without a detailed and dynamic master list accessible to all maintenance personnel. To create such a list, leaders must first review all their assets, reduce them down to their key elements, delineate their functionality and rank them according to greater business objectives.

Because asset-intensive businesses cannot run critical assets to failure, they must safeguard them with priority over others and invest in backups in case failure is one day imminent.

Asset criticality reviews (ACR) are not one-time occurrences. As these businesses trade out obsolete technology for the latest innovations, they must repeat ACRs as necessary so new investments receive the same attention afforded to all other equipment on site.



5. EQUIPMENT HISTORY CAPTURE AND ANALYSIS



Any data pertaining to an asset's past performance will affect how maintenance professionals approach its upkeep.

Scheduling against potential failure events and optimizing wrench time – the actual time spent calibrating or repairing equipment – means creating standardized workflows for capturing and distributing key asset information, such as the following:

- What is the asset's work order history?
- Which of those work orders were and were not completed?
- How can and does this asset fail?
- What is its mean time to failure (MTTF), mean time between failures (MTBF) and mean time to repair (MTTR) across its most likely failure modes?
- What is the asset's operating tempo?
- What environmental conditions prompted failure or deficiency?
- Are prominent failure modes mechanical, systemic or behavioral in nature?

As valuable as this information is, however, asset managers must also carefully countervail its collection against criticality. Otherwise, rote data entry will undermine efficiency gains.



6. ROOT CAUSE FAILURE ANALYSIS



When an asset degrades and fails, uncovering the root cause of failure is as important as the speed at which it is repaired, if not more so.

Root cause failure analysis (RCFA) goes below the surface to determine the true catalysts of failure events. As previously mentioned, the underlying cause of a failure may be the result of a mechanical, systemic or behavioral issue. Knowing the difference and isolating the legitimate failure starting point could save countless maintenance hours and valuable resources.

Developing a sound RCFA methodology requires a deep understanding of asset functionality, broken down component by component within said asset, as well as rigor in optimizing analysis to deter high costs.

If, during the RCFA methodology development process, stakeholders discover insufficient or incorrect data, they must return to how their CMMS collects data and fix the problem or risk being led astray later on.





7. OPERATOR EQUIPMENT CARE

Asset operators have become frontline defenders of proactive asset management. Often, their unmatched – and singular – experience with equipment is extremely valuable to understanding asset performance.

Operators can be taught, for example, to point maintenance professionals to specific equipment issues during pre-checks or inspections, which structures future wrench time wisely around the repairs that matter most. In certain industries, operators capture data for technicians and carry out routine minor maintenance on the equipment they oversee.

Unfortunately, in others operators are highly underutilized because of a lack of confidence from their superiors. We believe operators are capable of much more than many industrial-sector leaders realize, and a little trust will go a long way toward solidifying long-lasting and rewarding asset management practices.

Does your asset-intensive industry have a plan for incorporating these seven essentials into your asset management processes?

Contact USC Consulting Group to speak to our many industry experts and discover the best, most efficient methods for strengthening asset reliability at your facility.



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+1 800.888.8872

3000 Bayport Drive, Suite 1010
Tampa, FL 33607