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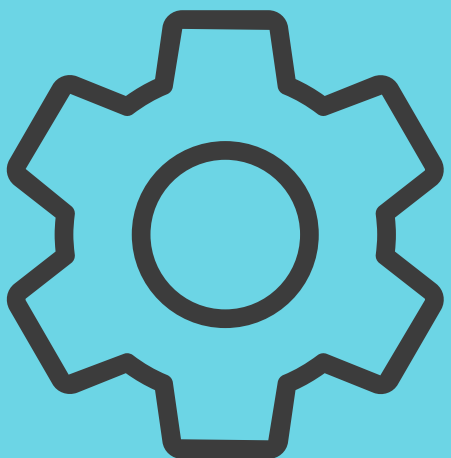
Security

ISO 55001: A guide to understanding the requirements for asset management systems



The challenges of lifecycle asset management in asset-heavy industry

Lifecycle asset management isn't easy, even in the best of times. And nowadays, physical asset-reliant industries (think, mining, oil, and gas, transport and logistics, utilities, airports and aviation, etc.) are more likely than not to find themselves in the midst of fundamental change: new imperatives for safe, high-quality service by hyper-engaged consumers and aggressive regulators[i].

Of course, the ramifications of this disruption are currently affecting companies on the ground – not just market incumbents but newcomers, as well. After all, many of these businesses are already overseeing vast stockpiles of aging infrastructure, which must remain available and reliable. The simple question is how.

Firstly, it will take a cool appraisal of the myriad, thorny issues facing asset owners; assets are not just things that you can purchase, see or use, they can also be intangible things such as a right of way, a brand, a business relationship, an organization's culture which fosters innovation, opportunities or a license to operate. Foremost among those core business challenges: the necessity to maintain, if not increase, operational effectiveness, revenue, and customer satisfaction, while simultaneously reducing capital, operating, and support costs[ii].

Indeed, many physical asset management programs *have been* architected around these maintenance management goals – after all, asset management is less about what to do with assets and more about extracting value and helping an organization achieve its business objectives. Yet, they haven't been successful, especially on the cost side, where costs get fixed in at the design and acquisition (not maintenance) stages: an estimated 65 percent when it comes to facility lifecycle costs[iii].

What becomes clear, then, is effective asset management is greater than the sum of discrete facilities and infrastructure management improvements. Case evidence regarding the latter, for instance, points to instances of intra-organizational misalignment; also, improved practices and procedures getting implemented incompletely. The picture emerges not just in for-profit industries but in government agencies and educational institutions, too[iv].

So, what's the solution? Though core objectives of asset management seem to be universally understood, i.e. linking real-property asset planning, programming, budgeting, and evaluation to program mission projections and performance outcomes, the requirements to achieve those objectives are not. Asset owners are finding it specifically difficult to implement programs that effectively identify those requirements and establish reporting mechanisms and responsibility for asset management. It's, then, imperative to understand what a successful asset management program looks like?

The key benefits of an asset management system

Well, a cornerstone of best-practice asset management programs has long been the development of a best-practice asset management system (AMS). An AMS is defined as "a set of interrelated or interacting elements of an organization to establish policies and objectives for asset management and processes to achieve those objectives"[v]. At an organization, the AMS doesn't manage physical assets *directly*. Instead, it manages asset *activity* with the goal of increasing the value of those assets, and better aligning action, leadership, and assurance through the *entire* lifecycle of the asset (See, total asset management life cycle below).

As you can imagine, the benefits of an effective AMS are manifold. Foremost, an effective AMS provides companies with a common frame of reference (i.e. documentation of key processes and procedures) and language to work on infrastructural problems that often occur across diverse supply chains. It's across these supply chains (and vast assets) that silos are most likely to develop, exacerbating the safety risk profile of the company in question.

Breaking down these siloes with an effective AMS not only provides a means to gauge risk, but also to improve safety outcomes, as well as build awareness and understanding of how specific assets support business objectives. From there, senior stakeholders can make structured, asset-related decisions, balancing factors like performance, risk, and cost. Those decisions inspire confidence in relevant stakeholders (especially regulators), assured in the company's capabilities, continued viability, and commitment to safety. Other markers of a successful AMS include the following:

Facilitates achieving the organization's purpose, mission, and strategic goals

Focuses attention on relevant risks; enables data-based, risk, cost, and performance trade-offs

Signals to stakeholders that the organization intends to and is capable of taking a risk-based approach to managing a physical asset's performance over its entire lifecycle.

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Figure 1. Total Lifecycle Asset Management, "Strategy through to disposition".

A deep dive into ISO 55001: 2014

Management systems can increase collaboration across the asset lifecycle, which cuts down on safety and operational risk, as well as improves asset performance. Only question is: how, then, do companies achieve the business benefits of an effective asset management system? Luckily, standards prescribe management system best practices. The best of them, ISO 55001, is an international standard that specifies requirements for a best-practice asset management system. The standard is applicable to all asset types in organizations of all shapes and sizes.

The international standard derives from PAS55: 2008, put out by the British Standards Institution as a publicly available specification to demonstrate competent governance of critical infrastructure, specifically physical assets. Largely superseded by ISO 55001, PAS55 provides detailed guidance and best practices in all facets of physical asset management, through the entire lifecycle of those assets.

The differences between the two standards are minimal: the PAS standard is meant exclusively for physical assets; the international standard can be applied to other asset types. As such, ISO implementation is relatively straightforward for PAS55-compliant organizations. Indeed, the ISO standard, like the British specification before it, takes advantage of the Plan-Do-Check-Act cycle, thereby ensuring continuous improvement of the asset management system.

Nevertheless, ISO standards are by definition full management system standards. They also come with their own format. Implementing ISO 55001 makes it easier for companies to integrate other, relevant ISO standards, principally ISO 45001 (safety management) and ISO 31000 (risk management).

But is ISO-compliance overkill for organizations without an international footprint? The simple answer is no. A key benefit of implementing ISO 55001 (even if a company doesn't seek certification) is fundamentally retooling the way assets are managed.

Instead of a traditional, time-based maintenance and replacement program, ISO 55001 encourages companies to take a risk-based approach to physical assets.

To remain financially viable, companies must understand the criticality and condition of their assets in order to better prioritize investment. By building redundancy and resilience into the asset management process, ISO 55001 helps organizations retain their assets longer, which results in cost savings. Stipulations for consistent auditing helps to confirm efficiencies as well as identify deviations, i.e. where different parts of the organization have departed from industry best practices. Along these lines, ISO 55001 allows companies to assess their current maturity, benchmarking themselves against competitors and partners. The comparison itself facilitates continuous improvement of the asset management system.

Now, for a deep dive. The ISO standard is flexible by design – not one size fits all. Requirements are generic; and application is governed by the individual organization's own operating environment.

The complying company must, therefore, determine external and internal issues that might affect its ability to achieve intended outcome(s) for the asset management system. Those objectives should be memorialized in the strategic asset management plan (SAMP) and created in alignment with larger organizational objectives (e.g. promote a positive safety culture).

Similarly, the ISO standard places the onus squarely on the organization to understand and document the needs and expectations of its stakeholders. The Asset team centrally involved in ISO-compliance must come up with the following:

- List of stakeholders relevant to the asset management system
- The requirements and expectations those stakeholders have
- Criteria for asset management decision making going forward
- Stakeholder requirements for recording and reporting the financial and non-financial information that's relevant to asset management

The team must also determine the full scope and applicability of the asset management system, where it interacts with other systems. The scope of the system should be aligned with the SAMP and existing asset management policy. Other points to consider when establishing the scope of AMS:

- External and internal issues
- Stakeholder requirements
- Potential interaction with other management systems, e.g. safety and risk management

The remaining ISO 55001 clauses lay out the following:

Leadership 	ISO 55001 centrally implicates senior leadership in the asset management lifecycle, a proven way to improve asset management outcomes. The standard calls for top management to show leadership and commitment in asset management, allocating the necessary requirements so that the system is not only viable but successful. Senior leaders must also help establish asset management objectives and policies as well as ensure that those objectives are compatible with larger, organizational objectives. Further, they must integrate asset management system requirements with major business processes. Senior management must also ensure that the responsibilities and authorities for relevant roles are assigned and communicated. That means establishing and updating the SAMP, ensuring that the asset management system supports delivery of the SAMP, and ensuring that the asset management system conforms to the requirements of the standard.
Planning 	Planning, as prescribed in the standard, must focus on actions to address risks and opportunities for the asset management system. That means when planning, the company must consider factors like organizational context and stakeholder needs. The actual outcomes envisioned in the planning clause include the following: • Prevent or reduce undesired effects • Achieve continual improvement • Provide assurance that the AMS can indeed achieve intended outcomes Planning to achieve those objectives involves integrating organizational planning activities, including financial, human resources, and other support functions, as well as determining and documenting the processes and methods necessary to asset lifecycle management.
Support 	The support clauses lay out preconditions for the establishment, implementation, maintenance, and continual improvement of the asset management system. Those preconditions are clustered around the following broad themes: • Resources • Capabilities • Awareness • Communication • Information required
Documented information 	The size, complexity, and type of activities, processes, products, and services undertaken by the organization structure the documented information required for a best-practice asset management system. Nevertheless, most organizations should keep track of documented information as required externally (by regulators/ policymakers) and internally (by the organization itself in order to ensure the effectiveness of the asset management system).
Operation 	Maintaining the asset management system in working order necessitates a constant focus on operations. And therefore, the standard calls for the organization to plan, implement, and control processes needed to address risks and opportunities for the AMS. Being that those risks change, the standard underscores the need for effective change management, by assessing subsequent risks that might impact the successful achievement of asset management objectives. The same logic guides the standard's approach to the outsourcing of responsibilities that might impinge on the effectiveness of the asset management system.
Performance evaluation 	A key innovation of the ISO approach is the focus on what happens after the management system is fully implemented, i.e. evaluating how it performs and finding ways to improve it. With regards to the former, ISO 55001 stipulates that the company should conduct regular internal audits to assess the continued effectiveness of the asset management system. What's more, the standard lays out various internal audit mechanisms, like carefully selecting auditors to ensure the objectivity and impartiality of the audit process, which are intended to guarantee the AMS is effectively implemented and maintained. Top management is also called on to participate in the regular auditing of the AMS.
Improvement 	Audit findings then inform the improvement cycle, whether the improvements (or corrective actions) stem from nonconformities or incidents. Improvements might also come in the form of preventative actions, too, once potential failure points have been identified. Like all ISO standards, ISO 55001 taxes compliant organizations to continually improve the suitability, adequacy, and effectiveness of asset management protocols and the asset management system.

Conclusion: Safety benefits of ISO 55001 in high-risk industries

Commenters have noted that implementing ISO 5500 enables companies to realize new value from their physical assets quickly. This is in large part due to the siloing of asset management operations at companies, which means that once organizations decide to integrate asset management, they log quick wins simply from "improved knowledge of their assets" among a wider band of relevant stakeholders[vi].

Those immediate benefits aren't necessarily monetary – monetary benefits often come a little later. But strategic asset management can yield impressive safety dividends (for workers, customers, and the assets themselves), as well, especially if ISO 55001 compliance is undertaken after or alongside ISO 45001 (safety management) and ISO 31000 (risk management) compliance.

How does it work? The main intervention of ISO 55001 is to bring visibility and predictability to asset management; information is captured and disseminated (in system) to relevant stakeholders who can then make informed decisions based on substantive data about how assets are performing today and how they are likely to perform in the future. This improved information management matters, because assets interface with workers, contractors, and customers. Bringing predictability to future performance of those assets reduces the likelihood of safety incidents affecting your relevant publics – not to mention the assets themselves.

Finally, asset owners should find a technology partner to go along with their ISO 55001 certification, especially one that incorporates the strategic planning and compliance management capabilities of ISO 19600 with the flexible and user-definable asset management capabilities of ISO 55001. That partner will help asset owners bring together all stakeholders, including contractors, supply chain collaborators, distributors, and customers, and incorporate resilience, case management, quality management, risk management, emergency management and safety & environmental management into a single, unified platform where innovation can be driven by users themselves[vii].

Asset management capabilities to consider in an integrated safety and security platform

Track important asset, site, equipment, or business process information, such as which assets are affected by incidents or risks, or which resources are used to respond prepare for them

Manage any kind of asset or resource with custom types, forms, and fields

Easily capture any information about your assets in forms, attachments, logs, messages, or images

View assets using a simple form, or for richer views, use dashboard templates for different types of assets

Define assets as resources that can be used to prepare for, or respond to, events, or risks

Maintain key response information about each asset, such as incident plans and procedures

Citations

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