IS YOUR EAMS ISO 55000 COMPLIANT?

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Many consultants and service providers are claiming to be “ISO 55000 compliant” or promising prospective clients that their offerings will guarantee ISO certification.

One claim which does warrant further discussion, is the one made by suppliers of Enterprise Asset Management Systems (EAMS) that their system is “ISO 55000 compliant”. This white paper will aim to investigate this claim in more detail.

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1 Executive summary

A lot has been said and written about ISO 55000, the international standard for asset management since its long awaited release in January 2014. Industry experts have applauded it and predicted that not only will it change the world of asset management, but the world of business as well. Others have responded with a surprised feeling of: “Is that all?” Its true value lies somewhere between these viewpoints and time will tell whether it will have the same uptake and impact as ISO 9000.

ISO 55000 has created a strong global focus on asset management and senior management will have to pay attention to its requirements as insurers, shareholders, regulators, insurers and other stakeholders start to demand compliance with it.

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2 ISO 55001 overview

ISO 55001: Asset Management – Management Systems – Requirements contains the requirements of the standard, while the other two parts (ISO 55000 and ISO 55002) contain its principles, terminology and implementation guidelines.

ISO 55001 states as its intent "to specify the requirements for the establishment, implementation, maintenance and improvement of a management system for asset management, referred to as an asset management system."
It continues to define a management system as "a set of interrelated or interacting elements of an organisation to establish policies and objectives and processes to achieve those objectives."
It is important to note that this system refers to a management system to guide and enable asset management activities and not to an information system as such.

It provides the following diagram to show that the asset management system is a subset of the overall discipline of asset management:

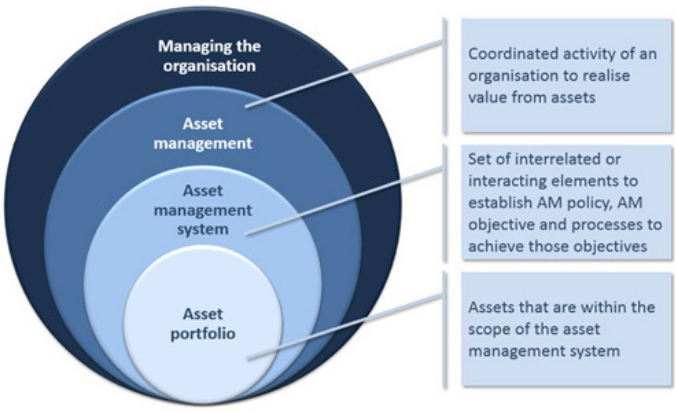

Fig. 1. Relationship between asset management and an asset management system

It also uses the following diagram to illustrate the relationship between the key elements of an asset management system:

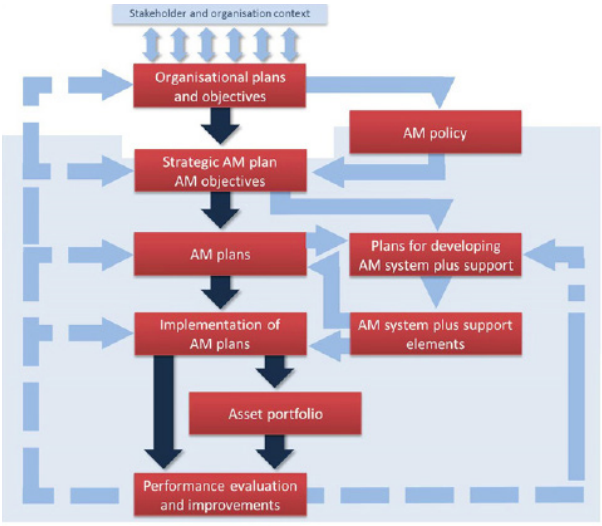

Fig. 2. Relationship between the elements of an asset management system

3 Information requirements of ISO 55000

A large part of the management system involves information. To be successful in attaining ISO 55001 certification, the organisation needs an information system which provides this information in a structured and accurate way. ISO 55001's specific information requirements for each of its seven main clauses are listed below. In this white paper we will focus on and only address the information normally found in a computerised information system (and exclude documents such as policies and procedures, contractual documentation, minutes of meetings, assessment reports and supplier manuals).

3.1 Clause 4: Context of the organisation

This clause requires consideration of the asset management system's internal and external contexts, such as the social, economic and physical environments, as well as the needs of all stakeholders. This clause also requires that an organisation defines the scope of assets covered by the management system.

Finally it specifies the need for a strategic asset management plan (SAMP) to establish an asset management system.

In terms of an information system, it requires that a register should exist of all assets covered by the management system. This register should contain the information required by the stakeholders and management to support decision making (such as asset criticality, location, rated capacity and supplier).

All KPIs and reports also need to have a clear link to the organisational objectives.

Finally, it should contain the forecasted demand for products or services to ensure that the required asset capacity is available.

3.2 Clause 5: Leadership

This clause defines the requirements for leadership behaviour, the asset management policy and the asset management responsibilities, rather than the specific asset information contained in an EAMS.

3 Information requirements of ISO 55000

3.3 Clause 6: Planning

This clause defines the requirement for identifying all asset-related risks with plans on how to treat them. It also defines the asset management objectives and plans on how to achieve them.

It implies that the EAMS should provide for a risk register to list and classify all asset-related risks with their associated priority and treatment plans, as well as progress against these plans. It should be linked to the asset criticality in the asset register and be used to drive the definition and prioritisation of asset care plans (like risk-based inspections).

The organisational objectives should be translated into KPIs to measure the health and performance of assets, as well as the success of the asset management system. Each of these deployed KPIs needs to have SMART (specific, measurable, attainable, relevant, time-bound) targets against which the performance is reported.

The actual AM plans will probably reside outside of the EAMS.

> Clause 6 defines the requirement to identify all asset-related risks with plans to treat them, as well as the asset management objectives and plans to achieve them.

3.4 Clause 7: Support

The purpose of this clause is to ensure that sufficient resources are available to execute the asset management plans and achieve the agreed objectives. It also includes the process to define the required competencies for people involved in asset management activities and to ensure that the people are competent to do their work. It firstly specifies that the technical asset register must be integrated or aligned with the financial asset register.

Detailed task descriptions must be available on how to operate and maintain the assets effectively, with reference to the associated tools, facilities and equipment required. The competencies required for these tasks should be specified and the actual competencies of the staff members tracked against them. When planning asset management activities, the availability of these resources should be visible.

Asset managers need to know the current condition and performance of all assets to make decisions about risks, maintenance priorities and replacement of assets. In addition, they need records of the maintenance history (failures, repairs and components replaced), the associated costs and financial information about the value of assets.

Vendor information, warranties and third party agreements are required for effective contract and contractor management.

3 Information requirements of ISO 55000

3.5 Clause 8: Operation

This clause refers to the actual use of the assets according to prescribed processes and procedures. It also defines requirements for the outsourcing of any asset management activities. Where changes are made to assets, processes or responsibilities, the associated risks should be evaluated and all documentation updated accordingly.

The EAMS should contain detailed descriptions of operational and maintenance activities in terms of sequential tasks, performance standards, resources and competencies required, to the extent that these activities can be planned and audited.

Any asset-related work done by contractors must be captured in the EAMS and the performance of contractors monitored against the contract.

Processes and controls also need to be in place to maintain the accuracy of the abovementioned information and prevent any unauthorised changes to master data.

3.6 Clause 9: Performance evaluation

This clause defines the need for the organisation to evaluate the performance of its assets and the asset management system. The EAMS should enable the establishment of specific financial and non-financial KPIs with SMART targets. Real-time data should be recorded directly from the assets, from the asset management activities and other relevant systems, wherever possible.

The EAMS should provide regular aggregation and reporting about the performance against these KPIs on all levels in the organisation. It should provide both trended and instantaneous measurements against the agreed targets and enable further analysis if the performance deviates from the target.

It should also be possible to monitor the compliance of the asset management system against specific statutory or regulatory requirements.

> Clause 9 defines the need for the organisation to evaluate the performance of its assets as well as of the asset management system.

3 Information requirements of ISO 55000

3.7 Clause 10: Improvement

This final clause of the standard completes the PDCA cycle to enable continual improvement. These improvements could be triggered by performance measures, by audits or by specific emergency situations, such as accidents. It is important that these improvement actions are properly implemented and monitored for success.

It is therefore required that all non-conformities are logged in the EAMS to trigger appropriate investigation and improvement, depending on the severity of the non-conformity. The results of these investigations should be recorded for audit purposes. The corrective actions should also be recorded and tracked to evaluate their success.

3.8 Summary

From this analysis it is clear that ISO 55001 requires a large amount of asset-related information (which is summarised in Table 1 below.) It does not specify the information system or even that all of this information should reside in the same system. However, an organisation will be far more efficient if all of this information is available from a single source that eliminates the need for duplication, recapturing and possible errors.

It is also clear that an information system is only one of the enablers of an asset management system and cannot in itself be certified or even guarantee ISO 55001 certification to its owner.

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4 Evaluating an EAMS against ISO 55001's requirements

The abovementioned information requirements can now be used to evaluate to which extent an EAMS will enable and support ISO 55000 certification. These requirements were consolidated into a structured and useful list in Table 1 below.

As an illustration of how to use the table, Pragma's On Key EAMS was plotted against the requirements of ISO 55001, showing the extent to which it satisfies them. On Key provides a solid foundation for effective asset management irrespective of the number of assets or the type of industry. It has a very powerful asset register, making use of its unique Asset Type Tree which avoids unnecessary duplication of data for similar assets and provides a range of user-defined fields for client-specific asset attributes. It also has a very strong interfacing capability through its automated import tool or via published web services, giving it access to a wide range of other information systems with asset related data. Finally, it uses QlikView as its embedded business intelligence tool, which has the ability to import data from other systems into its database to enable comprehensive asset management reporting and analysis.

Table 1 below shows how On Key satisfies the information requirements of ISO 55001.

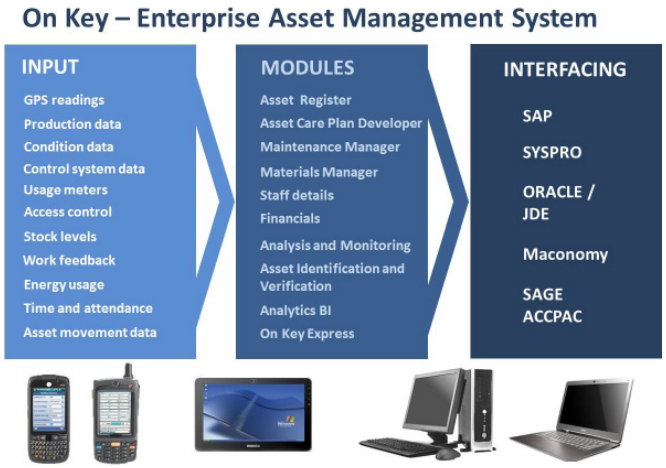

Fig. 3. The On Key EAMS

On Key has a very powerful asset register, making use of its unique Asset Type Tree to avoid unnecessary duplication of data for similar assets and providing a range of user-defined fields for client-specific asset attributes.

4 Evaluating an EAMS against ISO 55001's requirements

Table 1. Evaluation of On Key EAMS against the requirements of ISO 55001

Legend: Nat = Native functionality Con = Can be configured Imp = Data can be imported for reports Not = Not at all

No	ISO 55001 Requirements	Provision of info by EAMS				Comments
		Nat	Con	Imp	Not	
1.	**Asset Register**					
1.1	Register for all types of assets	X				Also linear and IT assets.
1.2	Provision for additional asset information	X				User-defined attribute fields to provide more flexibility.
1.3	Asset criticality classification	X				Comprehensive criticality calculation for assets.
1.4	Integrated with financial asset register		X			Can be aligned to the financial asset register.
1.5	Acquisition/Upgrade costs		X			Information can be stored in one of the attribute fields.
1.6	Condition and remaining useful life		X			Makes provision for configurable condition data which can be used to calculate remaining useful life depending on the policy used.
1.7	Control of changes to master data	X				It uses user rights and has a detailed change log. There is also change control on the roll-out of master data from the asset type tree to individual assets.
2.	**Risk Register**					
2.1	List of asset risks and treatment plans			X		Interface to external risk register. It is can do a failure consequence analysis with the risk treatment plans as part of the criticality analysis.
2.2	Track progress and remaining risks			X		Tracked in the risk register. Information can be imported into Analytics for reporting
3.	**Asset Management Plans**					
3.1	Asset replacement/refurbishment plans		X			Replacement/refurbishment plans can be set up as asset care plans.
3.2	Detailed maintenance task descriptions with resource requirements	X				Detailed task descriptions with links to spares, resources and safety tasks. Inspections have pass/fail criteria to trigger preconfigured replacement tasks. Preventive maintenance tasks triggered by meters, calendar or condition monitoring.
3.3	Ability to plan and schedule maintenance	X				Visual planning and scheduling into weekly events with provision for work prioritisation rules. Visual daily allocation based on resource availability.
3.4	Ability to see resource availability	X				Links MRO store and staff calendar
3.5	Detailed operating instructions		X			Could be linked as a reference document
3.6	Operational plans			X		To be done in a dedicated operational planning software. Plans can be imported into On Key Analytics for reporting or analysis.
4.	**Resources and support**					
4.1	List of staff availability and competence		X			Staff competencies can be defined in user-defined fields
4.2	Tracking of staff training vs competence			X		Managed in a dedicated HR module. Competencies can be updated in On Key via imports on a regular basis.
4.3	Register of tools/facilities		X			A basic tool register can be configured.
4.4	System to track and control MRO items	X				Comprehensive MRO capability with material masters, warehouses, reordering, receiving, issuing, stock takes and reservation.
5.	**Transactional history records**					
5.1	Maintenance history and costs	X				Detailed maintenance history is kept with dates, work done, responsible person, time taken, spares used and meter readings. Full maintenance costing functionality with budgets and tracking of maintenance costs per asset.
5.2	Operational costs (including energy use)		X			Can configure user-defined fields and import the data from other systems.
5.3	Operational performance (downtime, output)	X				Full provision for OEE, availability or throughput. Data is imported from meters or sensors on the equipment and displayed graphically in Analytics.
6.	**Performance Measurement**					
6.1	Provision for AM KPIs with targets	X				Very powerful capability though On Key Analytics (QlikView). Can display trended graphs, bar charts, comparisons, pie charts and much more.
6.2	Link between KPIs and strategic objectives	X				The strategic level AM KPIs can be set up as a senior management dashboard in Analytics and deployed to lower levels.
6.3	Access to raw data for analysis	X				This is one of the strengths of Analytics.
6.4	User-specific dashboard and reports	X				Dashboards can be set up per user, with the relevant KPIs being displayed. It also has a powerful self-help functionality to develop custom reports.
7.	**Tracking of Non-Conformances**					
7.1	Updated register of all non-conformities		X			All asset-related events can be recorded as work orders which need to be analysed and addressed. However, it makes more sense to have a central non-conformance register for safety, environmental and quality non-conformities, forcing people to do the required investigations.
7.2	Tracking of investigations and analysis			X		See above
7.3	Records of results and recommendations			X		See above
7.4	Tracking of corrective/preventive actions			X		See above

5 Concluding summary

ISO 55000 defines the requirements for a management system for asset management. Although this management system addresses processes and procedures, it also clearly stipulates the requirements for information – both in terms of completeness and quality.

Although an EAMS in itself cannot be ISO 55001 certified, it is possible to assess the extent to which it complies with the information requirements of ISO 55001.

The table above shows that Pragma's On Key system complies with most of these requirements, based on its powerful asset register, its comprehensive maintenance management functionality and its strong interfacing capability.

Organisations using a comprehensive EAMS providing the required information, with committed leadership, and a structured implementation process, can look forward to gaining the benefits of effective asset management and successful certification in ISO 55001.

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6 More information

Visit Pragma at www.pragmaworld.net or contact us on +27 21943 3900 for more information on how Pragma can assist you on this journey.

7 References

- ISO 55000:2014, Asset Management – Overview, principles and terminology.
- ISO 55001:2014, Asset Management – Management systems - Requirements.
- ISO 55002:2014, Asset Management – Management systems – Guidelines for the application of ISO 55001.
- AMBoK Publication 001; Companion Guide to ISO 55001, January 2014. Asset Management Council.

> Organisations using a comprehensive EAMS with the required information, with committed leadership, and a structured implementation process, can look forward to reaping the benefits of effective asset management and successful certification in ISO 55001.