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IMPLEMENTATION OF INTEGRATED MANAGEMENT SYSTEM (IMS) FRAMEWORK FOR ISO 14001, 45001 & 55001 IN THE POWER GENERATION SECTOR

Manmit Singh Jasbeer Singh[1*]

[1] Department of Mechanical Engineering, Universiti Tenaga Nasional (UNITEN), Malaysia
Email: manmit.singh@uniten.edu.my
[*] Corresponding Author

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Abstract:

The implementation of ISO MS in power generation sector are important to increase confidence level of stakeholders in the procedures and processes of the company. The power generation organization has three existing standalone ISO MS namely the ISO 14001, ISO 45001 & ISO 55001 and the organisation successfully implemented the Integrated Management System (IMS) where the common clauses and terms of the three separate MS are integrated into one "Integrated Manual". The process of implementing IMS in the organisation begins with the development of a robust framework with the PDCA cycle followed by document review for level 1 and 2 documentations. The integration journey is supported by the quality secretariat as well as the top management to address teething issues. Working Committees at both station and HQ level support the implementation of the IMS across the organization while the top management provides support and guidance in the Steering Committee. The outcome of the IMS is a more efficient organization which has streamlined its ISO documentations and processes which has various benefits such as less duplication of paperwork, reduced management and certification cost as well as effective internal and external audits which support the Environment, Social and Governance (ESG) of the power generation organisation. This paper is beneficial as a reference for other power generation industries throughout the world who are keen to implement the IMS in their governance and quality management systems.

Keywords:

ISO, Management Standard, Integrated Management System

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Introduction

It is vital that an organization is able to adopt ISO Management Standards (MS) in order to increase the confidence level of stakeholders in the procedures and processes of the organization. The implementation of ISO MS requires full commitment and dedication from the top-level management to the grassroots levels of the organization to maintain the MS in good order.

The main objective of this paper is implementation of the IMS in the power generation sector in Malaysia is unique as the power generation organization is based at its Headquarters (HQ) and has various power generation stations throughout Malaysia including thermal power plants (coal and gas fired) as well as hydroelectricity plants. These unique arrangements of synergy between the HQ and power (station) level are novel as other industries do not have such an operating model or arrangement. Therefore, this paper is beneficial as a reference or guide for other power generation industries throughout the world who are keen to implement the IMS in their governance and quality management systems.

There are various types of ISO MS that an organization may adopt based on the nature of the business as well as local regulatory requirements. A power generation organization employing approximately 3,200 personnel with 11 power plants previously implemented the following individually certified MS, namely the ISO 14001 (Environmental Management System, EMS), ISO 45001 (Occupational Health & Safety Management, OHSE) and ISO 55001 (Asset Management, AM) and all three of these MS obtained individual certification from SIRIM. However, the power generation organization then decided to embark on a journey of "integrating" the three separate MS into one Integrated Management System (IMS) which will cater for three individual ISO MS under one IMS framework. This is possible since all three MS have common clauses which may be integrated in one "Integrated Manual (IM)".

It is simpler to carry out the integration journey as the power generation organization is already certified for the three MS individually. The first step of carrying out the integration journey is to develop a sound and robust framework. Next, several intricate steps are needed to integrate the existing Level 1 and Level 2 documents into one IM and one set of common procedures. The staff of the power generation organization also need to be exposed to the process of integration through training sessions from the relevant body.

There are numerous benefits of implementing the IMS, such as cost savings in terms of reduced frequency of Internal Audits (IA) which saves travelling costs, reduced certification costs as well as reduced training costs. Furthermore, there are other intangible benefits such as reducing the burden of operational staff at plants and streamlining documentation as the power generation organization's Headquarters (HQ) will be responsible for managing all the documents while the plants will be implementing the procedures and processes.

The robust IMS framework described in this paper aligns with the Environment, Social and Governance (ESG) goals of the organization. The IMS system streamlines the quality management system and associated processes as previously discussed. The savings in monetary value and reduced carbon footprint due to streamlining are all aligned to the ESG goals of the organization or any other organization keen to implement the IMS and IMS framework.

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Literature Review

Benefits of the Integrated Management System (IMS)

To create competitive advantages, achieve sustainable development and overcome the challenges posed of having multiple management systems, it has become a trend for organizations to implement IMS (Bak & Nowak, 2019; Abisourour et al. 2020). There are various benefits of having an effective IMS such as the elimination of departmental barriers and higher collaboration with fewer stakeholders which translates into improved organizational culture and better communication (Simon et al., 2012). Furthermore, the implementation of IMS can improve the external image of the company, improve customer satisfaction, enhance employee motivation, and improve organizational efficiency while making better use of internal and external audit results (Barbosa et al., 2018).

Organisations implementing multiple MS into the IMS have better corporate performance, product quality and marketing advantages than other organizations (To et al., 2012). In addition, different combinations of MS lead to different levels of performance (Blasco-Torregrosa et al., 2019). In the process of implementing IMS, it is important to map elements of different MS and common processes to ensure smooth implementation (Jorgensen et al., 2006). To ensure continuous performance improvement, competitive advantage, and sustainable development, IMS must be embedded in the entire organization and all stakeholder relationships (Carvalho et al., 2019). The prerequisites for this degree of integration seem to be a common understanding of internal and external challenges, a learning organization and a responsive culture and interaction with stakeholders (Chaudhuri & Jayaram, 2019).

By understanding the key issues involved in implementing IMS effectively and efficiently, there are benefits to implementing Integrated Management Systems which include less paperwork, reduced management cost, reduced internal management complexity, simplified certification process as well as conducive continuous improvement (Zeng et al., 2016; Drozyner, 2020; Francisco et al., 2024). The greatest benefits of integration are the harmonization of objectives, procedures and resources, increased effectiveness and efficiency of the organization and avoidance of duplication (Savino et al., 2015; Dahlin & Isaksson, 2017; Barbosa et al., 2021). Organizations that integrate MS on an average level (computing as the integration of goals, processes, and documents) benefit most from the integration process (Kafel, 2016).

There are various motivating factors that lead to effective implementation of IMS in the organization such as image improvement of the organization which serves as a marketing tool and improves relationships with stakeholders, as well as process optimization, reducing documentation and improving internal organizations as shown in Table 1. Almeida et. al (2012) highlights the IMS as an asset for highly integrated organizations because it improves metrics and control procedure which has a positive impact on organizational motivation, particularly in terms of improving efficiency and control systems, as well as responsiveness to certain customers with specific requirements. For organizations with a high level of integration, the primary perceived benefit is to improve organizational function at the organizational process level due to changes in behavior and better definition of responsibilities while less integrated organizations have substantially benefited from the reduced documents as seen in Table 1.

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Table 1: Motivations & Benefits of the Integrated Management Systems

	High level of integration	Low level of integration
Motivations		
Marketing tool/image improvement	✓	✓
Internal process optimization	✓	
Marketing differentiation	✓	
Give response to customers with specific demands	✓	
Improve effectiveness & control of systems	✓	
Top management decision	✓	
Economic support for investment projects	✓	
Cost reduction associated to resources involved	✓	
Customers & suppliers relationship improvement	✓	✓
Internal organization improvement		✓
Documents reduction		✓
Benefits		
Interested parties' relationship improvement	✓	
Procedures organization	✓	
Behaviour changes at environmental& safety levels	✓	
Responsibilities definition improvement	✓	
Documentations reduction	✓	✓
Indirect cost reduction	✓	
Allow the global vision of the organization	✓	
Better work& organization	✓	
Employee's communication improvements	✓	
Effectiveness& efficiency gains	✓	
Systematization& procedure speed increase		✓

Challenges of IMS

The IMS is an ideal solution for organizations to improve the quality management and boost the efficiency of MS (Muzaimi et al., 2017; Fonseca & Domingues, 2018). However, the challenges of IMS implementation are a huge task that need to be addressed to establish this system. One common problem faced by many organizations around the world when a new work culture or system is to be implemented among the employees is resistance to change (Susanto & Mulyona, 2017). The main reason people resist changes is due to lack of information regarding the new system. In fact, the implementation of IMS is able to ease their daily task and provide better efficiency, but the fear of additional workload builds resistance towards IMS implementation which may be addressed by providing proper training and workshop to employees for better understanding on the IMS structure and benefits (Idrissi et al., 2014).

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Another challenge faced in the implementation of IMS is that employees are not aligned with the management goals. This phenomenon will dilute the attention of employees on the importance of this new implementation (Gulua, 2018). Therefore, it is very crucial for the management to address employee's satisfaction when a new implementation such as IMS being implemented in the organization (Nunhes et al., 2017).

Besides, the complexity of processes involved in IMS itself can be a huge challenge (Zeng et al., 2007). As discussed earlier, IMS is an integration between EMS, OSHE and AM MS. When there is different group of people handling individual management system the need of learning other management system is not there, and the process involved is much easier. However, the IMS is a simplified system for the management perspective, but the working level may find it difficult to get the processes together. This can be overcome by conducting engagement sessions with employees to obtain feedback for improvements. A good brainstorming session is also able to address all the loopholes in the new system by comparing the processes involved in the previous system and the new IMS. A new system which is replacing the old system must be able to cater all the features provided by old system or even better to ease the processes involved (Moumen & Elaoufir, 2018).

In addition, the staff backgrounds and specialties also play a vital role in making the IMS implementation successful as IMS involves new integrated procedures which might not be well versed by the senior experienced employees in the company (Mezinska et al., 2015). This phenomenon may be addressed by engaging SIRIM to conduct training and identifying the best framework that suits the employees in the organization to carry out IMS in best possible way. When the employees are clear with the framework the whole process is smoother and efficient for all parties (Wilkinson & Dale, 1999). There are few methods of integration which may ease the whole IMS integration process to be simplified. One of the important processes in the framework integration is communication and most of the cases this process is not done efficiently. There are many platforms to strengthen communication between employees and awareness need to be instilled in every possible way.

Most of the challenges previously discussed originate from employee engagement and acceptance towards IMS but there are other unpredicted circumstances where IMS may face challenging situations. The recent COVID-19 pandemic forced local governments to restrict movement of people to contain the spread of the virus is an example of an unprecedented challenge. The implementation of IMS requires an internal audit process to ensure the standards are always met and that the employees comply to the requirements (Domingues et al., 2016). During the pandemic period there were various challenges in carrying out internal audits at stations due to movement restrictions. This issue may be addressed by implementing "remote audit" approach where the auditor is able to carry out virtual audit (Bailey & Braslin, 2020). Other than that, selecting auditors from green areas which have low risk of COVID and following set of standard operating procedures during audit makes it possible to carry out "hybrid audits" which are a combination of physical site audit and virtual document audit. Therefore, these hurdles of IMS are very challenging, and organizations need to take proactive steps to ensure the success of the IMS as shown in Figure 1.

Journal of Information System and Technology Management
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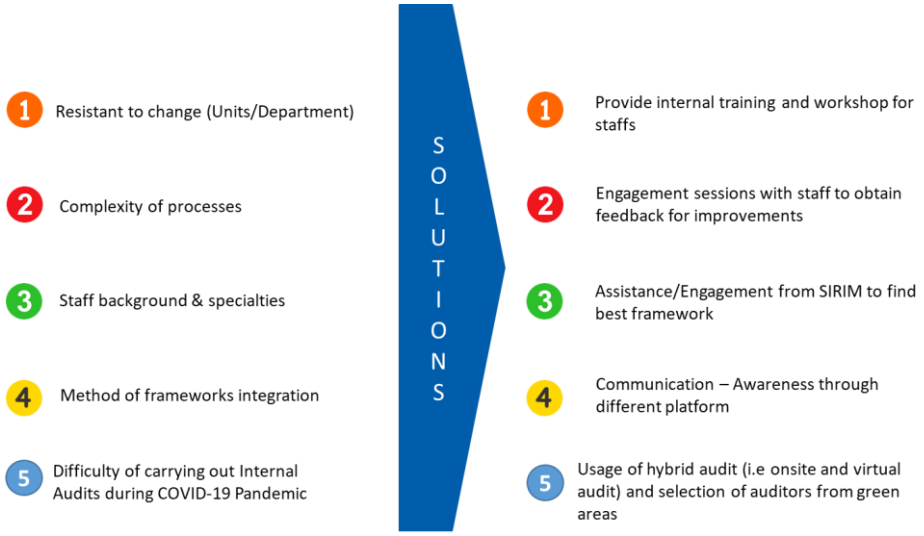

Figure 1: Challenges And Proposed Solutions of IMS Implementation

Summary of Benefits And Challenges of IMS

There are various benefits of implementing IMS. Firstly, the IMS reduces duplication & bureaucracy. By integrating multiple management systems IMS helps streamline processes, reducing repetitive tasks and cutting down on unnecessary bureaucracy. Instead of maintaining multiple certifications and audits for each system, IMS consolidates them, saving on both time and money. A unified approach to certifications makes it easier to manage and track compliance with multiple standards, reducing effort and speeding up the process. With one integrated system, audits become more streamlined and efficient, reducing redundancies and improving overall audit quality. The IMS demonstrates a commitment to quality, sustainability, and continuous improvement, improving trust and confidence among stakeholders.

In terms of challenges of IMS, different departments or units may resist adopting an integrated system due to fear of changes in workflow or concerns about additional work. Integrating multiple management systems can be complex, especially if the systems are fundamentally different in structure or approach. Employees may not have the cross-functional expertise to fully understand or manage an integrated system, leading to knowledge gaps or inefficiencies. Combining different management frameworks (like ISO 9001, ISO 14001, etc.) can be challenging because each framework may have different requirements or methodologies. The pandemic created challenges in physically conducting audits, especially in organizations that require in-person inspections, which could delay the certification or audit process. The benefits and challenges of the IMS are summarized in Table 2.

Table 2: Summary of the Benefits and Challenges of IMS

Benefits of IMS	Challenges of IMS
Reduce Duplication & Bureaucracy	Resistant to change(units/Department)
Reduce Management/Certification Cost	Complexity of processes
Streamline Certification Process	Staff background & specialties
Effective and Efficient Internal and External Audits	Method of frameworks integration

Journal of Information System and Technology Management
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Improved stakeholder perception	Difficulty of carrying out physical Internal Audits during COVID-19 Pandemic

Implementation Approach for IMS

The implementation approach for the Integrated Management System (IMS) begins with the development of a comprehensive framework that aligns with the organization's strategic goals and integrates various management systems, such as Quality, Environmental, Health, Safety, and Asset Management. A crucial step is the review of Level 1 and Level 2 documents, which include the organization's policies and procedures, ensuring that they meet the requirements of international standards and regulatory frameworks. Following this, a detailed review of Level 3 documents, which pertain to station/unit-level procedures and operational controls, is conducted to ensure consistency and practical applicability. Additionally, relevant policies such as Environmental Management System (EMS), Health, Safety, and Environmental (HSE), and Asset Management (AM) are thoroughly reviewed to ensure they are up to date and aligned with the IMS. To support the effective implementation of the system, awareness training and communication strategies are developed to engage employees at all levels, fostering understanding and commitment to the IMS, while also ensuring compliance with the policies and procedures. The implementation approach for IMS is illustrated in Figure 2.

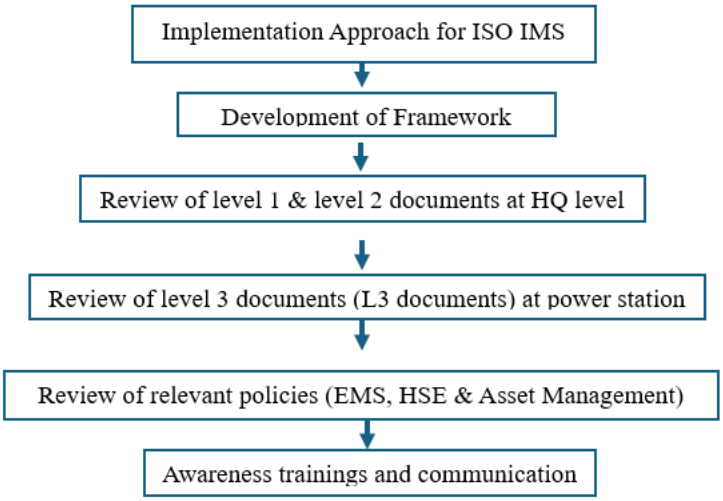

Figure 2: Implementation Approach for ISO IMS

The integration of three different Management Standards (MS) into one Integrated Manual (IM) is possible as the majority of the clauses are common for the three MS as illustrated in Table 3. Furthermore, the process of integration is simplified for the power generation organization which also already has existing procedures and manuals for three MS. Thus, the integration process requires reviewing and aligning the existing documents and processes such that the three MS may be combined under one IMS which is beneficial for the organization as previously discussed. This section further elaborates the intricate processes which are executed towards the IMS certification journey.

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Table 3: Common Clauses for ISO 14001, ISO 45001 & ISO 55001

Clauses	ISO 14001	ISO 45001	ISO 55001	IMS
Scope		**GENERAL CLAUSES**		●
Normative References				●
Terms & Definition				●
4.0 Context of Organization				
4.1 Understanding Organization & Context	●	●		●
4.2 Understanding the needs & Expectation of interested parties	●	"…. of **workers** & interested parties"	"….. of **stakeholders**"	●
4.3 Determine the scope of Management system	●	●	●	●
4.4 Management System & Processes	●	●	●	●
5.0 Leadership				
5.1 Leadership & Commitment	●	●	●	●
5.2 Policy	●	●	●	●
5.3 Organizational Roles, Responsibility & Authorities	●	●	●	●
5.4 Consultation & Participation of Workers	×	●	×	●
6.0 Planning				
6.1 Action to address risk & opportunities	●	●	●	●
6.2 Management system objective & planning to achieve them	●	●	●	●
7.0 Support				
7.1 Resources	●	●	●	●
7.2 Competence	●	●	●	●
7.3 Awareness	●	●	●	●
7.4 Communication	●	●	●	●
7.5 Documented Information	●	●	●	●
7.6 Information Requirement	×	×	●	

Journal of Information System and Technology Management
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8.0 Operation				
8.1 Operational Planning & Control	●	●	●	●
8.2 Emergency Preparedness & Response (EPR)	●	●	8.2 Management of Change	●
8.3 Outsourcing	×	×	●	●
9.0 Performance Evaluation				
9.1 Monitoring, Measurement, Analysis & Evaluation	●	●	●	●
9.2 Internal Audit	●	●	●	●
9.3 Management Review	●	●	●	●
10.0 Improvement				
10.1 General	●	●	10.1 Non-Conformity & Corrective Action	●
10.2 Non-Conformity	●	10.2 Incident, Non-Conformity & Corrective Action	10.2 Preventive Action	●
10.3 Continual Improvement	●	●	●	●

Development of IMS Framework

To ensure the integration process is structured and smooth it is vital to have a robust framework with specific key roles clearly defined to establish and maintain the necessary documentation and procedures for the IMS as shown in Figure 3. The framework may be categorized into three parts: input, processes and output.

Firstly, the input refers to the common clauses of the three MS integrated into the IM and related procedures. Next, the processes refer to the Plan, Do, Check and Act (PDCA) cycle with elements of continues review and improvement with feedback from the relevant process owners, departments and units of the organization. There are two important pillars of the framework which are:

i. Quality Secretariat: The quality secretariat refers to the team which is responsible for implementing and maintaining the IMS which includes planning for document reviews, internal audits and continues improvement (where necessary). This team is crucial to ensure the success of the IMS journey

Journal of Information System and Technology Management
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ii. Generation ISO Management Representative (MR), Chief Internal Auditor (CIA) and Document Control Manager (DCM): The MR is responsible for the implementation of IMS throughout the organization by supporting the quality secretariat team and providing necessary feedback on any shortcomings in the system. The CIA is responsible for ensuring all the annual Internal Audits (IA) are planned by the quality secretariat and that there are no hindrances to the IA process. The DCM ensures all the IMS documents are maintained and updated at both HQ and station levels by the respective Persons-in-Charge (PICs) before the IA or official SIRIM audit.

The outcome of the framework is the IMS in while one IM covers all three MS while the certification issuance by SIRIM is still on an individual basis based on the MS thus there will be three separate policies to cater for the three MS.

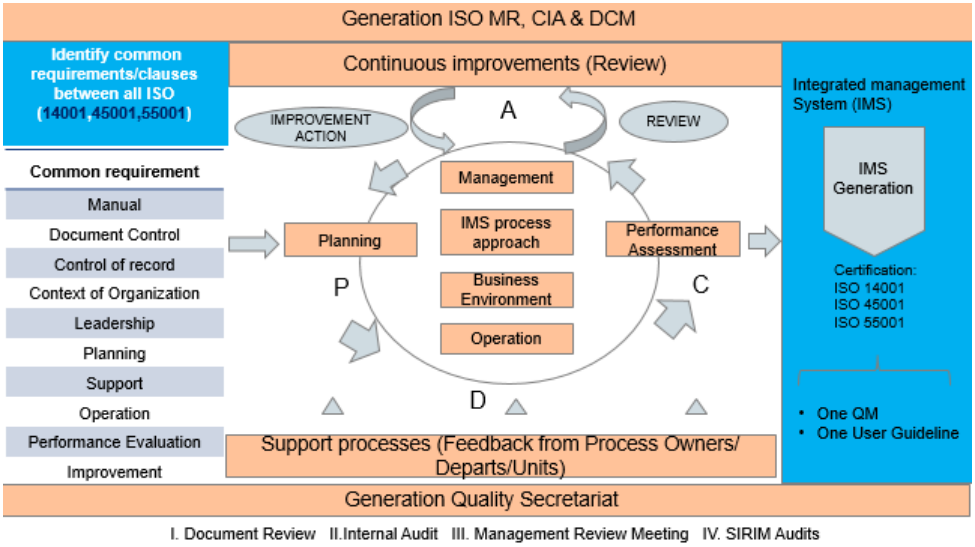

Figure 3: The IMS Framework

Review Of Level 1 And Level 2 Documents

One of the benefits of implementing the IMS is that there is no need to maintain three separate sets of documents to cater for the three MS. The process of having one integrated IM is vital to ensure the success of the IMS. For the power generation organization which already has existing processes and procedures for the three MS, it is therefore simpler to integrate the three manuals into one IM. The focal point for carrying out the integration process is by referring to table 1 in order to integrate the relevant clauses.

The process of integrating the three different MS requires the active involvement and participation of the respective process owners from the different business units and stations of the Generation organization while it is the responsibility of the quality secretariat to organize and facilitate several workshops to finalize the IM. The quality secretariat also must keep track of the discussions and if there any changes made to the content of the IM. In context of IMS, L1 document refers to the IM while L2 refers to supporting procedures enlisted in the IM. For the case of the Generation organization, the L1 and L2 documents are to be centralized at the HQ to reduce the burden on the operations and maintenance teams at site.

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DOI: 10.35631/JISTM.1038021

The entire journey of IMS implementation needs the full support of the top management. Thus, the Managing Director of the generation organization must appoint three key members which are the MR, DIA and DCM as discussed previously. The MD and three important representatives are known as the "Steering Committee (SteeringCo)" with the main responsibility of ensuring the smoothness of ISO implementation throughout the power generation organization as illustrated in Figure 4.

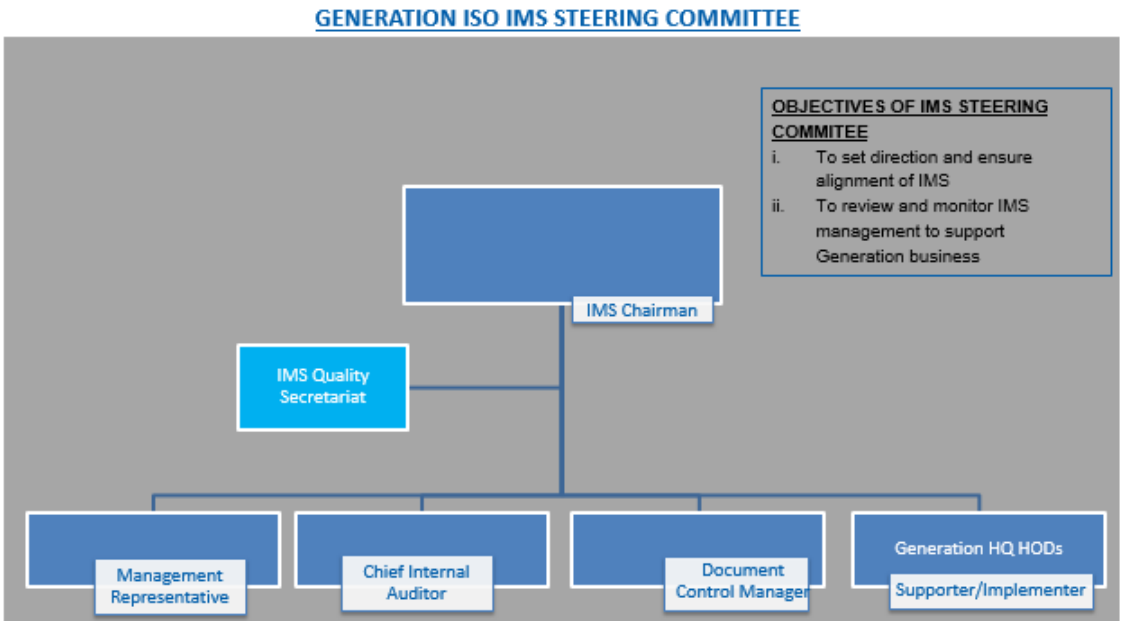

Figure 4: Power Generation ISO IMS Steering Committee

Furthermore, personnel at power plants also need to play an active role as they are the actual implementers of the Integrated Manual (IM) and related processes. Thus, the quality secretariat is also responsible to issuing nomination letters to plant managers to appoint several Person-in-charge (PICs) who will be responsible to oversee the implementation of the IMS at their plants. The group of PICs are referred to as the "Working Committee (WorkingCo)" and will directly report to the plant manager as well as their counterparts in the SteeringCo (i.e station DCM (SDCM) will report to DCM) to monitor the progress of IMS implementation as illustrated in Figure 5.

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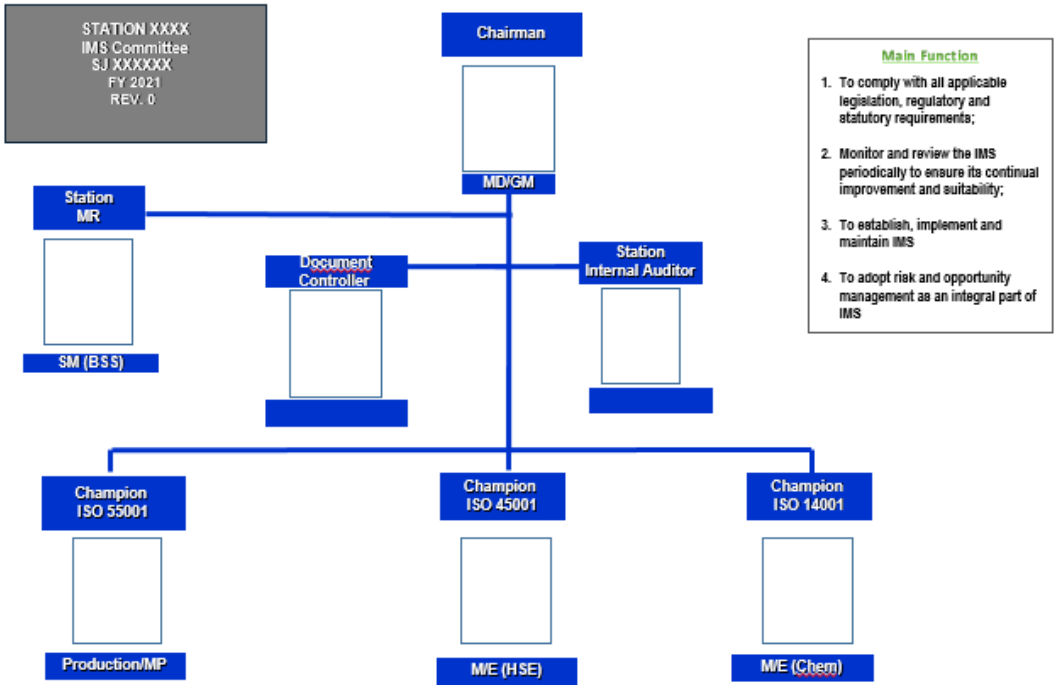

Figure 5: Station Level IMS Working Committee

All the departments at HQ are also required to have PICs in the HQ level "Working Committee" who will report to the head of department as well as to their counterparts in the SteeringCo as illustrated in Figure 6.

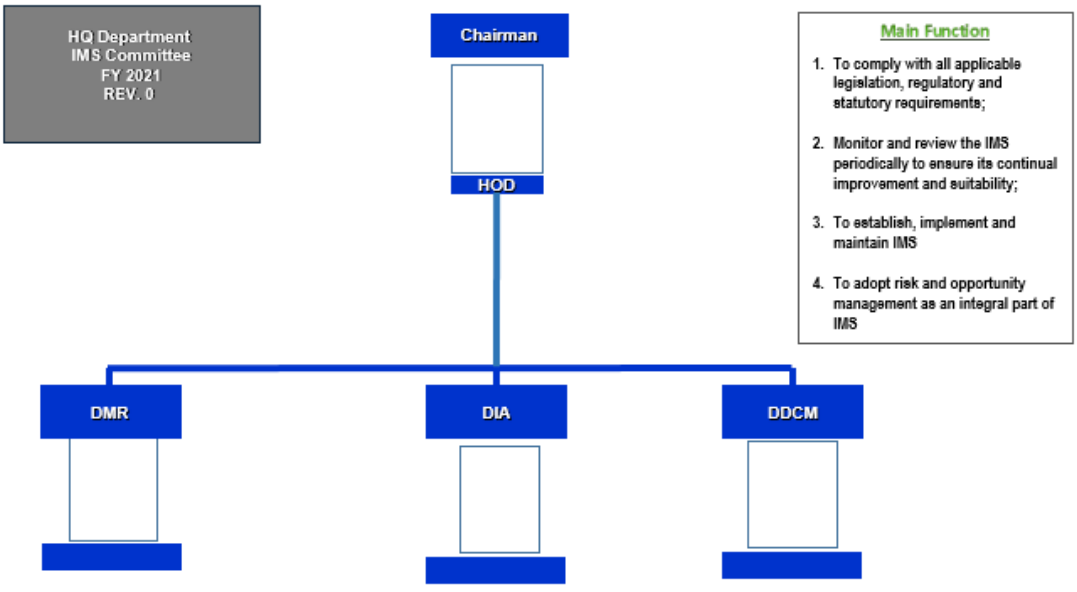

Figure 6: HQ Department Level IMS Working Committee

The IM is given a "rev0" as this is the first version of the document prepared. The IM has a new numbering system as per ISO clause 7.5 (documented information) which needs to be

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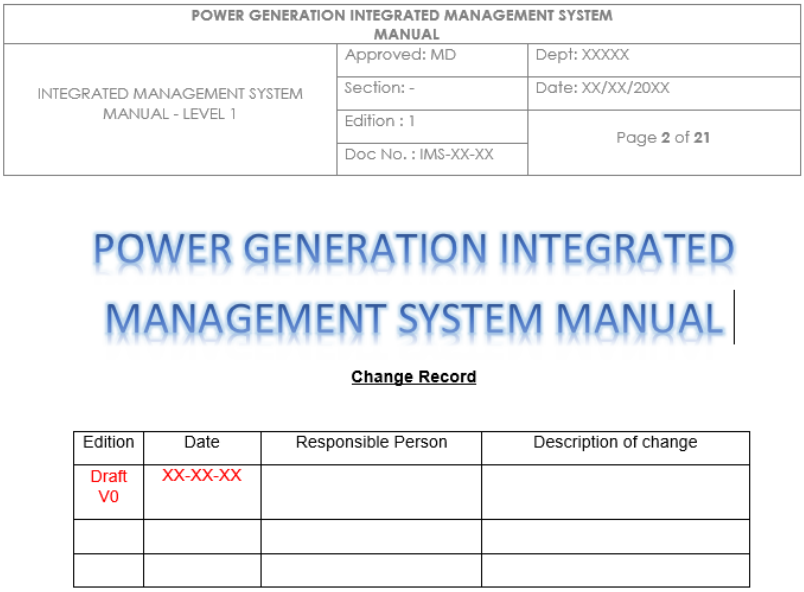
recorded and maintained by the DCM. Furthermore, the IM and L2 documents has to go through a "challenge" process between the quality secretariat and relevant PICs before the IM and L2 documents are submitted for approval by the MR. An example of the IM is shown in Figure 7.



POWER GENERATION INTEGRATED MANAGEMENT SYSTEM MANUAL		
INTEGRATED MANAGEMENT SYSTEM MANUAL - LEVEL 1	Approved: MD	Dept: XXXXX
	Section: -	Date: XX/XX/20XX
	Edition : 1	Page 2 of 21
	Doc No. : IMS-XX-XX	

POWER GENERATION INTEGRATED MANAGEMENT SYSTEM MANUAL

Change Record

Edition	Date	Responsible Person	Description of change
Draft V0	XX-XX-XX		

Figure 7: IMS Integrated Manual (IM)

Review Of Level 3 Documents (Station/Unit Level)

As previously discussed, it is simpler to carry out the ISO integration process as there are existing L3 documents available at the Headquarters (HQ) department and the power (stations). The L3 documents, which are known as the "Working Instructions" contain detailed procedure on how work is carried out at the station, for instance the refurbishment works of electric motors or the alignment of pumps. The L3 documents are important to demonstrate the organization's capability to carry out work as per detailed procedures enlisted in the document.

It is vital to note that since L3 documents are mapped to the L2 common procedures, which are maintained at the HQ level, there is no need to for major review of the L3 documents as the work process at plant levels remain the same. However, the numbering of the L3 documents needs to be updated as per ISO clause 7.5 (documented information) to reflect the changes made to L1 & L2 documents. Again, the plant DCM has the responsibility to keep track of the changes made to the numberings and inform the DCM at HQ level on the changes made. It is essential that a workshop is conducted with the plant level representatives and quality secretariat to effectively communicate on the new document numbering scheme under IMS.

Review Of Relevant Policies (EMS, HSE & Asset Management)

The ISO policies are a crucial aspect of the MS as they serve to portray the top management's commitment and responsibility to ensure the smooth implementation of the relevant MS at their unit/department or plant. It is required that the ISO policies are displayed at important areas of the business unit to ensure all the staff and visitors are aware of the generation organization's MS standards and the commitment of the organization towards the particular MS.

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For the case of the power generation organization, there are three existing policies for the three ISO MS. It is important to realize that under the IMS, it is possible to integrate the three separate polices into "one" unified IMS policy. However, due to local regulatory requirements, the generation organization has decided to maintain three separate policies to fulfill the legal requirements. The policies will be reviewed separately and updated to reflect any changes. Furthermore, even though the ISO IMS focuses on one IM, three separate ISO MS certificates will be issued.

Awareness Training And Communication

It is vital to provide the necessary awareness training to personnel responsible for implementing the ISO MS at business units and plants. The purpose of such training is to provide exposure to the ISO MS and the process of ensuring the organization complies to the standards. Usually, SIRIM STS is engaged to provide awareness training to personnel on a yearly basis. Internal Auditors are also required to attend the internal auditors training in order to certify as internal auditors who are able to write NCRs and OFIs that are recognized by SIRIM.

Previously, personnel had to undergo three different sessions of awareness training for the three ISO MS. Now, under the ISO IMS, only one session of annual awareness training is sufficient to provide the exposure on ISO IMS which will cover all three ISO MS one go. This will provide significant cost savings in terms of the trainer's fee and staff travel costs to attend the training.

Certification Process

ISO certification is a structured process that ensures an organization's compliance with international standards for quality, safety, and efficiency. It involves several key steps, including internal audits, where the organization conducts self-assessments to identify gaps and areas for improvement. Following this, a Management Review Meeting is held to evaluate audit findings, review performance metrics, and make strategic decisions to enhance the system. The process also includes the SIRIM audit, where an external certification body assesses compliance with ISO standards to grant certification. However, achieving certification is not the final goal; continuous improvement remains essential, ensuring the organization consistently enhances processes, maintains compliance, and adapts to industry best practices. The ISO IMS certification process is illustrated in Figure 8.

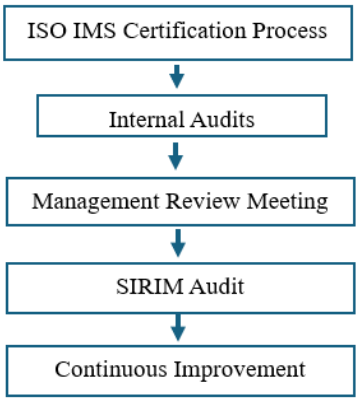

Figure 8: ISO IMS Certification Process

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JISTM
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Volume 10 Issue 38 (March 2025) PP. 306-324
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Internal Audits (IA)

Internal Audits are a critical element of maintaining the ISO MS and a precursor to annual SIRIM Surveillance or Re-certification audits. Thus, IA are usually held annually for each and every business unit and plant although the SIRIM audit only focuses on three or four particular sites. The IA is the management's prerogative to prove that the organization monitors all business units on compliance with the ISO MS.

For the power generation organization, the organization has been previously conducting annual IA for all business units separately for the three ISO MS. However, under the IMS, part of the cost saving is obtained by carrying out an "integrated" IMS IA which covers all three MS systems in one Internal Audit (IA) session instead of three separate IA which will incur travelling cost for the auditors since the auditors are selected from distant plants or units to maintain the integrity of the IA. The integrated IMS IA involves allocating one auditor for reviewing the common clauses/elements of the three integrated MS while having three other auditors to review the individual MS.

Previously, the IA audit process took three weeks to be completed as three separate teams of auditors were needed and three separate IA reports were issued. Now, under the IMS IA, only one team of auditors is required, and the process can be completed in one week thus saving the time of the business units and the cost of travelling for the auditors. The IA process is very thorough as the auditors selected have vast experience in the power generation sector with good and in-depth knowledge of the power generation organization's working culture.

The quality secretariat is responsible for scheduling the IMS IA as shown in Figure 9. The auditors selected must have at least three years' working experience with relevant experience in the type of plant being audited. The lead auditor assigned is responsible for creating an audit plan which is to be submitted to the power station PIC one week before the scheduled audit to ensure plant personnel have enough time to prepare for the audit including site visits and so forth. During the actual audit, an opening and closing meeting is done with the presence of the plant general manager to share the findings of the audit. Post audit, the lead auditor must prepare a comprehensive audit report which has to be submitted to the quality secretariat containing the number of Non-Compliant Records (NCRS) and Opportunity for Improvement (OFI). After all the IAs for the plants and business units are done, a consolidation meeting is to be conducted to discuss the findings.

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JISTM
EISSN: 0128-1666
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1. IMS INTERNAL AUDIT SCHEDULE FY20XX

STATION	ISO SYSTEM	AUDIT DATE	AUDITORS
XXXXX	ISO 14001, ISO 45001 & ISO 55001	XX-XX-XX to XX-XX-XX	1. *Mr./Ms. XXXX (Lead)* 2. Mr/Ms. 3. Mr/Ms. 4. Mr/Ms.
XXXXX	ISO 14001, ISO 45001 & ISO 55001	XX-XX-XX to XX-XX-XX	1. *Mr./Ms. XXXX (Lead)* 2. Mr/Ms. 3. Mr/Ms. 4. Mr/Ms.
XXXXX	ISO 14001, ISO 45001 & ISO 55001	XX-XX-XX to XX-XX-XX	1. *Mr./Ms. XXXX (Lead)* 2. Mr/Ms. 3. Mr/Ms. 4. Mr/Ms.
XXXXX	ISO 14001, ISO 45001 & ISO 55001	XX-XX-XX to XX-XX-XX	1. *Mr./Ms. XXXX (Lead)* 2. Mr/Ms. 3. Mr/Ms. 4. Mr/Ms.

Figure 9: IMS Internal Audit Schedule Template

Management Review Meeting

The Management Review meeting is an important aspect of the ISO MS as this shows the full commitment and dedication of the top management towards ISO implementation in the generation organization. The management review meeting is compulsory to be chaired by the power generation organization's Managing Director alongside his Head of Departments and the quality secretariat. The main purpose of the meeting is to discuss and deliberate the findings of the IAs and take the necessary action to address the issues highlighted by the IA team findings.

The quality secretariat is responsible to minute the meeting to ensure there are records available for the SIRIM auditor to review during the Surveillance and Re-certification audits. Previously, there were three separate management review sessions required annually for the three different ISO MS. Now, under the ISO IMS only one integrated management review session is required for three ISO MS standards which saves the time of the top management. During this integrated management review, the management shall review all three ISO MS although the session may take an additional day to cover three ISO MS compared to covering just one ISO MS previously.

SIRIM Audit

The most crucial step is obtaining the ISO certification for the ISO 14001, 45001 and 55001 from SIRIM. The most important process before the SIRIM audit is the MRM where the top management must deliberate on the findings from the internal audits and close the findings where possible. For complex issues a corrective action plan needs to be prepared on how to address the issue. This corrective action plan is important as the SIRIM auditors will review this during the first certification audit of the IMS. Once the organization is ready for certification, SIRIM must be informed at least two months before the proposed audit dates to ensure SIRIM and the organization is able to make necessary preparations before the certification audit. Once the organization is certified, it is necessary to continuously monitor and review the ISO IMS system to ensure smooth surveillance and recertification audits in the future while maintaining the good image of the organization.

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Continuous Improvement

It is of utmost importance that the generation organization is willing to take the initiative to continuously improve the ISO IMS implementation. Generally, there are various aspects on how the organization is able to find ways to improve the processes in order to fix any issues. Firstly, the organization has to address current outstanding issues such as NCRs and work on improving processes based on the OFIs issued to demonstrate full commitment to the ISO IMS. There needs to be evidence of the organization investigating root causes of issues and providing solutions which are followed by necessary Corrective Actions (CA). Furthermore, the organization needs to verify that the CAs are effective in ensuring the issue does not re-occur.

The organization is also responsible for carrying out surveys among customers to gauge their satisfaction with the services provided by the organization. Should there be any area which needs improvement, the organization needs to address them in a proper and timely manner. Furthermore, the IA process also needs to be continuously improved whereby the internal auditors need to focus on more important aspects which have higher risk to the organization. The auditors also need to pay more attention to past issues at the site to ensure the issue has been effectively addressed.

Conclusion

The process of implementing ISO IMS for integrating various MS is beneficial for an organization seeking to streamline ISO related documents and processes to improve the efficiency of the organization. The process of implementing IMS of this power generation organization is simpler and relatively straightforward as there are existing documentations and review processes for the three ISOs, namely the ISO 14001, ISO 45001 and ISO 55001 thus a comprehensive review of the Level 1 and Level 2 documents is the main starting point of the IMS implementation process. It is also vital to have a robust framework in place which incorporates the PDCA cycle to ensure the implementation process is smooth and that there is continuity to the IMS for the follow cycles of audits.

One must recognize the importance of having a quality secretariat which is responsible to ensure the IMS process is able to be executed in a well-planned and timely manner. The top management is responsible for extending their fullest support towards IMS implementation to minimize the risk of building resistance among staff. With the full support of the top management, it is possible to achieve the milestones of IMS implementation plan and to resolve any teething issues along the way. The Internal Audits showcase the readiness of the organization in terms of documentation and processes while any findings should be addressed in the shortest possible time. The next crucial step before the SIRIM audit is the MRM where the top management must deliberate on the findings from the internal audits and close the findings where possible. For complex issues a corrective action plan needs to be prepared on how to address the issue. This corrective action plan is important as the SIRIM auditors will review this during the first certification audit of the IMS. Once the organization is certified, it is necessary to continuously monitor and review the ISO IMS system to ensure smooth surveillance and recertification audits in the future while maintaining the good image of the organization.

The robust IMS framework described in this paper serves as the backbone of the PDCA cycle to ensure the IMS system is continuously monitored and related processes are improved where required to maintain the ISO certifications of the power generation organization. The

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framework may serve as guidance or as a reference for other power generation organizations throughout the world to implement the IMS in their organization.

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