

Analysis of OHSAS 18001: 2007 standard renewal towards ISO 45001: 2018 at PT. Power Plant Indonesia by using gap analysis method

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Abstract - The research aimed to understand the current condition of PT. Power Plant Indonesia by evaluating its OHSAS 18001:2007 certification and its preparedness for ISO 45001:2018 certification. Method used for data analysis was gap analysis. Calculation in gap analysis used a checklist compiled according to the requirements listed in OHSAS 18001:2007. Results of the checklist showed that the general requirements clause averaged at 93.88%, health & safety policy clause at 93.97%, planning clause at 92.91%, implementation & operation clause at 91.85%, checking clause at 92.32%, management review clause at 91.85%, and overall score measured against OHSAS 18001:2007 at 92.85%. With the similarities between the points of clauses in OHSAS 18001:2007 and in ISO 45001, the large overall score when measured against OHSAS 18001:2007 signified that the company was prepared for ISO 45001:2018 certification.

Keywords: OHSAS 18001:2007, ISO 45001:2018, gap analysis

1. Introduction

Free competition in industry due to globalization reminds industries both in manufacturing and in service to understand the importance of quality in products as well as quality system in their manufacture. Other than focusing on quality, recently lots of company tries to increase efficiency to face current global crisis. Occupational Health and Safety (OH&S) is one of the factors of consideration. Good practices in occupational health and safety will increase company productivity. To assure that OH&S practices are enacted, companies can administer occupational health and safety management system (OH&SMS) according to Governmental Regulation Number 50 Year 2012 or to the international standard of Occupational Health and Safety Assessment Series (OHSAS) 18001 [1].

International Labor Organization (ILO) (2013) stated that 2.34 million workers died due to their occupation. 2 million of those deaths were related to health and the rest of them were related to work accident. According to Institute of Occupational Safety and Health (IOSH) (2013), an estimated number of 660,000 workers died yearly from cancer arising from work [2].

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Faced with such a condition, ISO 45001 was developed so that organizations or industries could manage OH&S risk and improve OH&S performance. ISO 45001 is the new international standard for occupational health management, replacing OHSAS 18001 [3].

Organizations that observe OHSAS 18001 delegates the responsibility for occupational health and safety to OH&S manager instead of integrating OH&S to the organization operation system. On the other hand, ISO 45001 demands the integration of occupational health and safety into the overall organization management system, hence encouraging top management to play a strong role in the leadership of OH&S management system.

PT. Power Plant Indonesia is one of the companies that has complied with OHSAS 18001. But, according to The Auditor (2016), International Standardization Organization (ISO) will publish in March 2018 ISO 45001 about Occupational Health and Safety Management System (OH&SMS) to replace OHSAS 18001. With the upcoming publication in mind, PT. Indonesia Power, which has complied with OHSAS 18001 with a still valid certification, had a three-year period up to 2021 to complete its migration to ISO 45001.

Therefore, the research aimed to analyze the current condition of the company and compare it to the necessary condition according to the standard of ISO 45001 using gap analysis method. The research wished to obtain result in the form of comparison between the existing system and the necessary system so disparities between the two could be identified and improvements could be made to assist the company in the change towards the new standard of ISO 45001.

2. Literatur Review

2.1. OHSAS 18001 and ISO 45001

OHSAS 18001 standard has been developed since 1999. The framework was developed by a number of standardization and certification bodies as a response to the pressing need of industries for a standard in occupational health and safety management that is measurable and verifiable. The basic aim of OHSAS 18001 was to support and promote good practices in occupational health and safety through systematical and structured management system. Thus, certified organizations could stay in a secure position due to minimization of work accident risks in employees and other affected parties. OHSAS stated requirements for OH&S management system, so the organization could manage risks in OH&S and improve performance. OHSAS standard focused on managing occupational health and safety aspect, not on regulating other areas in health and safety such as employee health/welfare program, product safety, property damage, or environment impact.

OHSAS 18001 (2007) has the following elements, such as: (a) related to the general requirements, organization/industry should make, document, preserve, and sustainably improve OHSAS 18001; (b) devise OH&S policy; (c) devise plan, which consists of: (1) conducting hazard identification, risk assessment, and control determination, (2) reviewing legal and other requirements relevant to OHSAS 18001, and (3) determination of objectives and program of OHSAS 18001; (d) devise application and operation process, which consists of: (1) resources, roles, responsibility, accountability, and authority, (2) competence, training, and awareness, (3) communication, participation, and consultation, (4) documentation, (5) control of documents, (6) operational control, and (7) emergency preparedness; (e) examinations, such as: (1) monitoring and measurement of OHSAS 18001 performance, (2) evaluation of compliance with OHSAS 18001, (3) investigation of incidents, nonconformity, corrective actions, and preventive actions, (4) control of records, (5) internal audit; and (f) management review.

There are a few fundamental differences between ISO 45001 and OHSAS 18001, such as: (a) organizations/industries need to state internal and external contexts which influence organizations/industries in OH&SMS, (b) ISO 45001 doesn't require companies to appoint a management representative, (c) when planning activities, ISO 45001 requires organizations/industries to determine OH&S risk and opportunity that influence said organizations/industries, (d) OH&S related risks are defined as risks related to hazards and to legal and other requirements as well as overall organizations/industries overall context and (e) organizations/industries shall plan actions to handle risks in terms of OH&S threats and opportunities and evaluate their effectiveness.

According to Jones (n.d.), the difference between OHSAS 18001 and ISO 45001 has implications for organizations/industries looking for certification and consultation as well as auditors auditing the new standard. This implication includes the requirement to show adequate leadership and deliberation in the context of organizations/industries. For example, auditor might need to gain new skills, be they interpersonal, in dealing with top management, and technical, in dealing with the proliferation of many information sources and in analyzing the context of the organization/industry. OH&S professionals might need to develop or improve their skills in helping managers to evaluate internal and external factors that influence context, assure an effective involvement alongside with relevant stakeholders and interests, and prepare CEO and other senior managers for audits using this new standard. Introduction of ISO 45001 also allows for a stronger work relation among OH&S professionals and also a more visible and more socially responsible leadership for Board/CEOs [4].

Table 1. Draft of ISO 45001: 2018

ISO 45001:2018			
0.	Introduction	7.	Support
1.	Scope	7.1	Resources
2.	Normative references	7.2	Competence
3.	Terms and definitions	7.3	Awareness
4.	Context of the organization	7.4	Communication
4.1	Understanding the organization and its context	7.4.1	General
4.2	Understanding the needs and expectations of interested parties	7.4.2	Internal communication
4.3	Determining the scope of OH&S management system	7.4.3	External communication
4.4	OH&S management system	7.5	Documented information
5.	Leadership and participation	7.5.1	General
5.1	Leadership and commitment	7.5.2	Creating and updating
5.2	OH&S Policy	7.5.3	Control of documented information
5.3	Organization roles, responsibilities and authorities	8.	Operation
5.4	Consultation and participation of works	8.1	Operational planning and control
6.	Planning	8.1.1	General
6.1	Actions to address risks and Opportunities	8.1.2	Eliminating hazards and reducing OH&S risks
6.1.1	General	8.1.3	Management of change
		8.1.4	Procurement
		8.1.4.1	General
		8.1.4.2	Contractors
		8.1.4.3	Outsourcing

6.1.2	Hazard identification and assessment of OH&S risks	8.2	Emergency preparedness and Response
6.1.2.1	Hazard identification	9.	Performance evaluation
6.1.2.2	Assessment of OH&S risks and other risks to the OH&S management system	9.1	Monitoring, measuring, analysis and Evaluation
6.1.2.3	Assessment of OH&S opportunities and other opportunities to the OH&S management system	9.1.1	General
6.1.3	Determination of legal requirements and other requirements	9.1.2	Evaluation of compliance
6.1.4	Planning action	9.2	Internal audit
6.2	OH&S objectives and plan to achieve them	9.2.1	General
6.2.1	OH&S objectives	9.2.2	Internal audit program
6.2.2	Plan to achieve OH&S objectives	9.3	Management review
		10.	Improvement
		10.1	General
		10.2	Nonconformity and corrective action
		10.3	Continual improvement

2.2. Gap analysis

Gap analysis as defined by IT Infrastructure Library (ITIL) is an activity that compares two types of data and identifies their difference. Usually, gap analysis is used to compare two sets of requirements. Gap analysis is often structured around one set of area, topic, or category, making gap analysis efficient in identifying which sector or aspect needs repairing. Gap analysis becomes effective because the checklist compiled is structured and matches the topic. Checklist covers all requirements and is made hierarchically in its review. The checklist will cover general questions and give portrayal of the evaluated topic or category. Questions in checklist are compiled comprehensively and in detail, evaluating the individual questions if necessary. Every question is related to another question to ensure traceability. Here are the steps for gap analysis [5]:

- Score Determination

Scoring system used throughout gap analysis is shown in the Table 2 below:

Table 2 Gap Analysis Score

<i>Score</i>	<i>Definition</i>
1	If the organization or company does not understand what is required and does not do so.
2	If the organization or company understands the importance of the activity but does not do so.
3	If the organization or company has documents but has not applied them or if the organization or company has applied them but did not recorded them.

4	If the organization or company is engaged in an activity but inconsistently.
5	If the organization or company is doing well (activity is done consistently).

- **Checklist Assessment**

Checklist assessment is conducted by respondents according to the current condition of the organization. Respondents selected had the adequate competence. The assessment was done with scoring system according to Table 2.

- **Gap Assessment**

Gap assessment aimed to recognize how large a gap there was in the company. Percentage value was obtained by summing the scores of each variable and dividing it by the maximum value in the variable. The smaller the gap, the better. To measure preparedness, the obtained value of percentage corresponds to the preparedness of company in implementation as shown in the Table 3 below:

Table 3. Gap Analysis Range

Percentage	Description
75% - 100%	The organization is ready to complete QMS ISO 45001: 2016 and certify.
50% - 74%	The organization still has to improve QMS for the preparation of ISO 45001: 2016
1% - 49%	The organization's QMS is in urgent need of improvement as it differs far from the prerequisites for ISO 45001: 2016.

3. Research Methodology

3.1. Research Methodology

Method used in the research was gap analysis method. Gap analysis was done by performing a comparison between the current condition and the necessary condition to obtain ISO 45001:2016. Used in the comparison were the documents of OS&H management system made by the company. Documents was obtained via interview with a number of managers using OHSAS 18001:2007 internal audit checklist, ISO 45001:2016 internal audit checklist preview, and direct observation at PT. Power Plant Indonesia. Results obtained were assigned scores in the range of 1—5 according to their respective percentage values and the range for of prepared the company was in implementation was made. The range was obtained through discussions with experts. Obtained data would be used to evaluate what gaps there were in the implementation of OHSAS 18001:2007 and ISO 45001:2016. The gaps would be sorted by their priorities for improvement, exhibited by whichever gap had the most percentage value [6].

3.2. Research Variables Identification

Research variables were derived from the clauses of OHSAS 18001:2007, as shown as in Table 4 below:

Table 4. Research Variables

No	Clause
1	General Requirements
2	Health & Safety Policy
3	Planning
4	Implementation & Operation
5	Checking
6	Management Review

4. Data Processing

4.1. Data Processing

Data processing in this step was to evaluate the score obtained in Table 4.1. The result of the evaluation was used to measure the preparedness of PT. Power Plant Indonesia in terms of each clauses in OHSAS 18001:2007. Total scores for each variable from the checklist result is shown in the Table 5 below:

Table 5. Score Results from Checklist Data Hasil Skor Data Checklist

Clause	(%)
General Requirements	93.88 %
Health & Safety Policy	93.97 %
Planning	92.91 %
Implementation & Operation	91.85 %
Checking	92.32 %
Management Review	92.16 %
Total Mean	92.85 %

4.2. Analysis of gap analysis results in OHSAS 18001:2007 and comparison with ISO 45001:2018

a. Analysis of Result from General Requirements Clause Checklist

After gap analysis was conducted for General Requirements clause, the value obtained was 93.88%. Table 6 below shows the result of gap analysis performed on the organization context clause.

Table 6. General Requirements Clause Recapitulations

No	ISO 45001	OHSAS 18001	(%)
1	4.4 OH&S management system	4.1 General requirements	93.88%
		Preparedness level	93.88%

b. Analysis of Result from Health & Safety Policy Clause Checklist

For analysis of Health & Safety Policy clause, the value obtained was 93.97%. This value was the gap in the company for the Health & Safety Policy clause in OHSAS 18001, which

also appeared in ISO 45001. The table below shows the result of gap analysis performed on Health & Safety Policy clause.

Table 7. Health & Safety Policy Clause Recapitulations

No	ISO 45001	OHSAS 18001	(%)
1	5.2 OHS Policy	4.2 OH&S Policy	93.97%
		Preparedness level	93.97%

c. Analysis of Results from Planning Clause Checklist

Furthermore, for the planning clause, a number of values were obtained from the three clauses with an overall average preparedness value of 92.91%. The value signified that the company was ready for migration. This was supported by the corresponding clauses in ISO 45001. The table below is the result of the gap analysis performed on the Planning context clause.

Table 8. Planning Clause Recapitulations

No	ISO 45001	OHSAS 18001	(%)
1	6.1.2 Hazard identification and assessment of OH&S risks	4.3.1 Hazard identification, risk assessment and control determination	92.94%
2	6.1.3 Determination of legal requirements and other requirements	4.3.2 Legal & Other requirements	92.35%
3	6.2.1 OH&S objectives	4.3.3 Objectives and Programs	93.44%
		Preparedness level	92.91%

d. Analysis of Results from Implementation & Operation Clause Checklist

In the result of the OSHAS 18001 checklist, the Implementation & Operation clause consisted of 7 clauses for which equivalent clauses existed in ISO 45001. The table below details the scores for each clause in Implementation & Operation clause.

Table 9. Implementation & Operation Clause Recapitulations

No	ISO 45001	OHSAS 18001	(%)
1	7.1 Resources	4.4.1 Resources, roles, responsibility, accountability and authority	93.52 %
2	7.2 Competence	4.4.2 Competence, training and awareness	89.91 %
3	7.3 Awareness	4.4.3 Communication, participation and consultation	92.64 %
4	7.5.1 General	4.4.4 Documentation	90 %
5	7.5.2 Creating and updating	4.4.5 Control of documents	91.17 %
6	8.1 Operational planning and control	4.4.6 Operational control	92.94 %
7	8.6 Emergency preparedness and response	4.4.7 Emergency preparedness and response	92.80 %
		Preparedness level	91.85 %

e. Analysis of Results from Checking Clause Checklist

In the results, for the checking clause of OHSAS 18001, there existed 5 clauses, many of which corresponded to the clauses in ISO 45001. The result is detailed in Table 10 below.

Table 10. Checking Clause Recapitulations

No	ISO 45001	OHSAS 18001	(%)
1	9.1 Monitoring, measurement, analysis and evaluation	4.5.1 Performance measurement and monitoring	92.35 %
2	9.1.2 Evaluation of compliance with legal requirements	4.5.2 Evaluation of compliance	91.17 %
3	10.1 Incident, nonconformity and corrective action	4.5.3 Incident investigation, non-conformity, corrective action and preventive action	94.58 %
4	7.5.3 Control of document information	4.5.4 Control of records	91.37 %
5	9.2 Internal Audit	4.5.5 Internal Audit	92.15 %
Preparedness level			92.32 %

f. Analysis of Results for Management Review Clause

Lastly, the OHSAS 18001 checklist for management review clause resulted in preparedness value of 92.16%.

Table 11. Management Review Clause

Recapitulations No	OHSAS 18001 (%)
4.6 Management review	92.16 %
Preparedness level	92.16 %

4.3. Document Draft on Occupational Health and Safety Management System (OH&SMS) Suggested for Migration to ISO 45001:2018

The document on Occupational Health and Safety Management System which is suggested to the company is one of the mandatory document forms in ISO 45001:2018 and is according to the requirements contained in the ISO 45001:2018 clauses. The document draft is expected to assist PT. Power Plant Indonesian in preparing to migrate from OHSAS 18001:2007 certification to ISO 45001:2018. The most common document details used on the implementation of Occupational Health and Safety Management System (OH&SMS) is provided below in Table 12.

Table 12. Mandatory Documents Required by ISO 45001: 2018

No	Mandatory documents	Clause
1	Scope of the OH&S management system	4.3
2	OH&S Policy	5.2
3	Scope of the OH&S management system	5.3
4	OH&S process for addressing risks and opportunities	6.1.1
5	Processes needed to address risks and	6.1.1

	opportunities	
6	Methodology and criteria for assessment of OH&S risks	6.1.2.2
7	OH&S objectives and plans for achieving them	6.2.2
8	Communication	7.4
9	Operational controls	8.1.1
10	Emergency preparedness and response process	8.2

5. Conclusions

According to the research, conclusion can be drawn from the results of gap analysis, using standard checklist of OHSAS 18001 which contains a few similarities to the newest standard of ISO 45001. Overall, PT. Power Plant Indonesia preparedness for the certification scored at 92.85%. Then, reviewed from the preparedness in the individual clauses, the clauses of general requirements, health & safety policy, planning, implementation & operation, checking, and management review, all had a high average score of preparedness. In each of the points in the standard clauses of OHSAS 18001, there existed numerous similarities to the points in ISO 45001. This signified that PT. Power Plant Indonesia was prepared to migrate to the certification according to ISO 45001 standard.

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