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The new challenges of the Manufacturing Industry applying the norm ISO 45001:2018

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Abstract

The present work reflects the impact that the manufacturing industries must solve in the application of the ISO 45001: 2018 Standard on Occupational Health and Safety Management Systems. In such, a globalized market where human and material assets must be preserved for the survival of organizations, management systems based on continuous improvement play an important role in ensuring compliance with applicable legal requirements, risk management and the opportunities, as well as the achievement of the best working conditions. The manufacturing industry has not been alien to this evolution; the nature of the risks present in the different industries, the operations carried out, the machinery, the use of work teams and their processes make this sector a priority and strategic sector that should be at the forefront of new technologies and rules. The implementation of the ISO 45001: 2018 standard in the manufacturing industry is a challenge for the implementation of high-level management systems that guarantee a healthy and safe environment for workers and a strategic and operational decision from the business point of view based on improving the performance of health and safety at work and increasing competitiveness in an increasingly demanding market.

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Keywords: Occupational health, safety mangement systems, ISO 45001, OHSAS 18001, PDCA cycle, incident, nonconconformity.

1. Introduction

From the point of view of analysis of the occupational accidents in the sector, as a significant fact, it is worth noting that, as reflected in the latest report on the analysis of mortality due to work accidents in Spain carried out in 2015 and the National Institute for Safety and Hygiene at Work (INSHT), in the manufacturing industry a 20,6% of fatal work accidents and that 31.5% of such accidents are caused by deficiencies in the preventive management of

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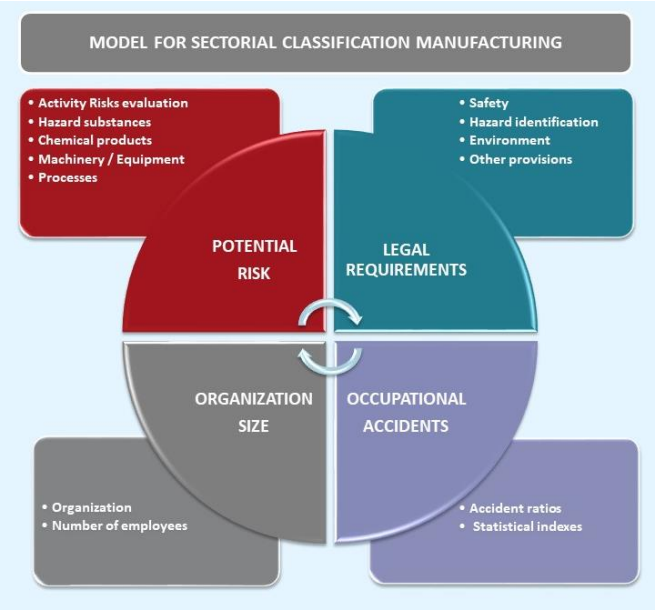

Fig. 1. Model for sectorial classification manufacturing

companies in the sector. In the case of metal, the latest national survey on working conditions shows that 26.1% of the workers surveyed affirm that their work is affecting their health [7,8].

The establishment of selection criteria that allow us to classify in terms of OSH of the manufacturing companies based on four significant parameters such as (Fig. 1.).

- Potential Risk
- Legal Requirements
- Organization Size
- Occupational Accidents

The design of an effective management system based on the study of the previous parameters will allow organizations to design procedures and methodologies for a correct identification of health and safety risks and opportunities, as well as a better planning of their activity preventive while allowing compliance with the applicable legal requirements [1].

In this paper, we present a guidance recommends that organizations for effective establishment, implementation and maintenance of the OH&S management system, or required by law based on ISO 45001:2008 as well as the relevant changes against its predecessor the OHSAS 18001: 2007 standard.

2. Understanding the organization and its context

One of the fundamental points of the new ISO 45001 standard is the determination of the context of the organization. In the manufacturing industry the context of the organization can be determined by its size (multinational company present in different sites, departments and activities), the country where the organization is located, social and political factors (religious and political beliefs), specific legislation, new technologies. Depends on the size and nature of the activities and to determine this context of the organization as context analysis techniques could be used, among others: - SWOT (Strengths, Weakness, Opportunities and Threats) - PESTLE (Political, Social, Technological, Legal Environmental) [3].

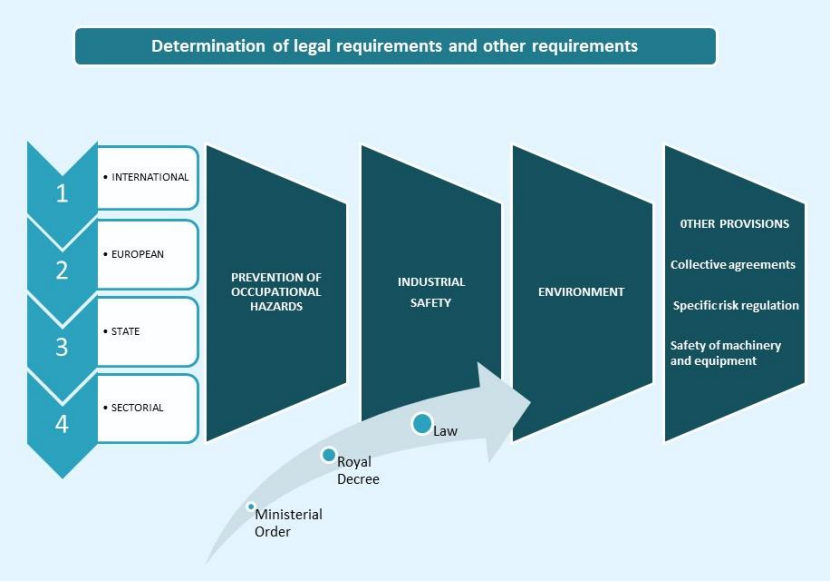

Fig. 2. Determination of legal requirements and other requirements.

3. Understanding the needs and expectations of workers and other interested parties

The ISO 45001 standard, like other ISO management system standards, establishes that organizations must identify all those "relevant" people or activities that could be affected in the OH & S management system. This point assumes a wide spectrum of possibilities in manufacturing [4]:

- Workers
- Health and safety committees
- External providers
- Contractors and subcontractors
- Owners, shareholders
- Insurers
- Legal and regulatory authorities
- Customers

4. Determination of legal requirements and other requirements

In the Manufacturing Industry it will be necessary to analyze the applicable legal requirements related to the typology of the specific risks of the industrial environment where the works are executed; the regulation of machinery, tools and work equipment used, the general requirements that affect facilities and industrial processes related to Industrial Safety (Fire, Explosions, Low voltage, High voltage, Pressure Equipment, Storage of Products Chemicals, Lifting and transport equipment, Auxiliary elements, Ionizing radiation) as well as other legal provisions related to the activity: Permits and licenses for the opening of industrial establishments, Registration in Industry. The legal requirements linked to the working conditions of personnel exposed to certain risks regulated by specific regulations must not be forgotten: noise, high temperatures, vibrations, ionizing and non-ionizing radiation, biological risks, exposure to chemical agents (Fig. 2).

Fig. 3. Actions to address risks and opportunities

5. Actions to address risks and opportunities

In addition to the identification and evaluation of the risks for the organizations, they must implement and establish processes that allow the evaluation of opportunities to improve OH&S performance and OH&S management system (Fig. 3) [1].

The methodology of hazard identification and risk assessment used in most companies in the manufacturing industry is diverse, but the commonly accepted is the simplified INSHT method [6]. Here are some of the main methods of risk analysis:

- Some general methods of application in various technical systems:
  - ✓ Method What would happen if?
  - ✓ Analysis of failure modes, effects and consequences (AMFEC).
  - ✓ Functional analysis of operability (AFO): (HAZOP-HAZAN).
  - ✓ Fault tree.
  - ✓ Event diagram.

- Some specific methods with more restricted scope and more specific application:
  - ✓ Mond Index.
  - ✓ Dow Index.
  - ✓ Intrinsic fire risk.
  - ✓ Gustav Purt method.
  - ✓ Gretener method.
  - ✓ Probit method.
  - ✓ Human reliability analysis method.
  - ✓ Immunological-environmental methods.

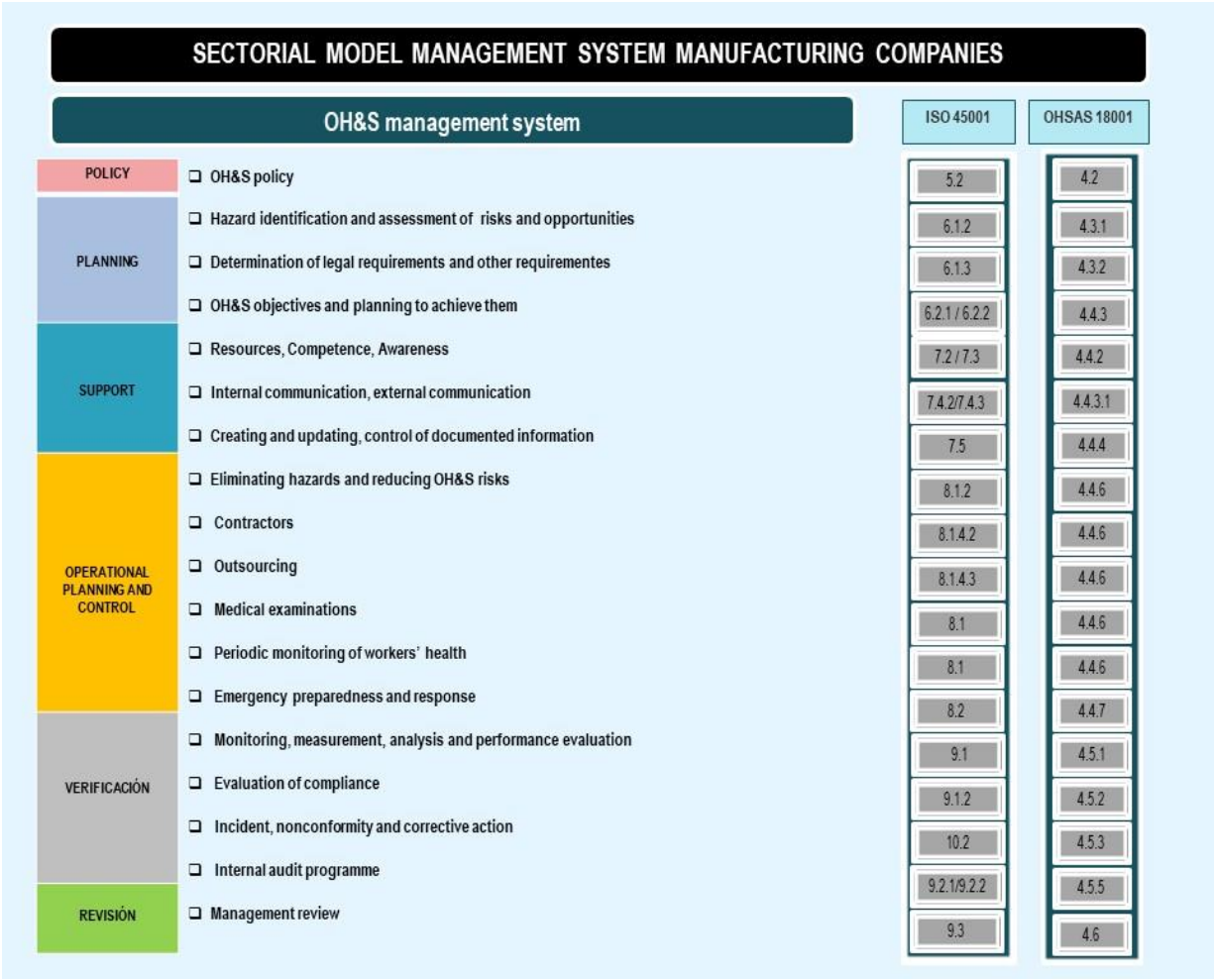

Fig. 4. Correspondence between ISO 45001 and OHSAS 18001.

6. Correspondence between ISO 45001 and OHSAS 18001

A modern occupational safety management system such as ISO 45001 is designed to identify hazards in the company, protect employees and reduce tracking costs. At the same time, occupational safety measures must comply with the specific requirements of each industry [2].

The ISO 45001 standard incorporates new requirements derived from the alignment with the high-level ISO structure, including improvements and modifications with respect to the OHSAS 18001 standard. It enhances the role of Top Management as a driver and responsible of the integration of prevention in the set of activities that take place in the company, through the commitment and the OH&S Policy. Emphasizes the need to demonstrate the competence of workers in their jobs, as well as their skills and knowledge that could affect their performance in terms of safety, without forgetting the continuous improvement approach of the management system based on the Edwards Deming cycle **PDCA** (plan-do-check-act)[5].

A table of Fig. 4 shows the correspondence between the ISO 45001 standard and its predecessor the OHSAS 18001 standard establishing a correlation between the sections and chapters of the standards [1,5].

7. Conclusions

Planning and organization is the basis of success, since it allows to create positive habits that increase the competitiveness of the organization, differentiate itself from the competition and add more value to its market and the employees themselves

ISO 45001: 2018 has been developed from the High Level Structure (HLS), thanks to this unified structure, ISO 45001: 2018 has a common core, coherent and consistent with respect to other revised standards such as ISO 9001: 2015 and ISO 14001: 2015.

Currently, most organizations that have a management system have adopted the OHSAS 18001: 2018 standard. With the recent publication of ISO 45001, they have a period of three years from its publication in March 2018 to adapt their OHSAS 18001 management system to the new standard, in this case, the term expires in March 2021.

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