

Evolution of management in the quality of OS&H up to ISO 45001

Paolo Bisio*

* Dipartimento certificazione –
ispettore SCR, ASL AL – Servizio
Prevenzione e Protezione

Accidents and fatalities at work have always had a huge social and economic impact. In recent years the phenomenon in Italy does not seem to regress, indeed, the official data of fatality at work report a significant increase; this notwithstanding the widespread legislative activity both at European and national level.

An element of potential improvement is the adoption of a health and safety management system, cited by European and national legislative provisions and regulated by international standards; the recent publication of the UNI ISO 45001: 2008 "Management systems for health and safety at work – requirements for use" allows this opportunity to be developed.

The purpose of an OS&H management system is to provide a framework and a model for the management of injury prevention and health problems; as for all management systems, a cyclic model is adopted (based on the so-called Deming or PDCA cycle – Plan, Do, Check, Act) aimed at the continuous improvement of health and safety conditions in workplaces.

Furthermore, the management of the safety inserted and integrated into the overall management of the companies can generate a new model of sustainable competitiveness that must be sustained and pursued.

Keywords: management system, health and safety, ISO 45001.

Evoluzione della gestione in qualità della OS&H sino a ISO 45001. Infortuni ed incidenti nei luoghi di lavoro hanno da sempre un impatto sociale ed economico di grandissima entità. Negli ultimi anni il fenomeno in Italia non pare regredire, anzi, i dati ufficiali delle morti sul lavoro riportano un incremento significativo; ciò non ostante la diffusa attività legislativa sia a livello europeo che nazionale.

Un elemento di potenziale miglioramento è l'adozione di un sistema di gestione della salute e della sicurezza, citato da provvedimenti legislativi nazionali e regolamentato da norme internazionali; la recente pubblicazione della norma UNI ISO 45001:2008 "Sistemi di gestione per la salute e sicurezza sul lavoro – requisiti per l'uso" consente di sviluppare tale opportunità.

Lo scopo di un sistema di gestione OS&H è quello di fornire un quadro ed un modello per la gestione della prevenzione delle lesioni e dei problemi di salute; come per tutti i sistemi di gestione, viene adottato un modello ciclico (basato sul cosiddetto ciclo di Deming o PDCA – Plan, Do, Check, Act) indirizzato al miglioramento continuo delle condizioni di salute e sicurezza nei luoghi lavoro.

La gestione della sicurezza inserita e integrata nella gestione complessiva delle aziende può inoltre generare un nuovo modello di competitività sostenibile che occorre sostenere e perseguire.

Parole chiave: sistema di gestione, salute e sicurezza, ISO 45001.

Évolution de la gestion en qualité de l'OS&H jusqu'à ISO 45001. Les accidents et les décès sur le lieu de travail ont toujours eu un impact social et économique énorme. Ces dernières années, le phénomène en Italie ne semble pas régresser, en effet, ceci en dépit de l'activité législative généralisée tant au niveau européen qu'au niveau national.

Un élément d'amélioration potentielle est l'adoption d'un système de gestion de la santé et de la sécurité, cité par la législation nationale et réglementé par les normes internationales; la publication récente d'UNI ISO 45001: 2008 « Systèmes de management de la santé et de la sécurité au travail – Exigences et lignes directrices pour leur utilisation » permet de développer cette opportunité.

Le but d'un système de gestion OS&H est de fournir un cadre et un modèle pour la gestion de la prévention des blessures et des problèmes de santé; comme pour tous les systèmes de gestion, un modèle cyclique est adopté (basé sur le Cycle du Deming ou PDCA – Plan, Do, Check, Act) visant à l'amélioration continue des conditions de santé et de sécurité sur les lieux de travail.

En outre, la gestion de la sécurité insérée et intégrée dans la gestion globale des entreprises peut générer un nouveau modèle de compétitivité durable qui doit être soutenu et poursuivi.

Mots clés: système de management, santé et sécurité, ISO 45001.

1. The recent Italian situation

The official data of fatality at work for the year 2017 describe an increase of 1.1% compared to 2016, and 2018 began with a similar, dramatic trend.

The reasons, economic and social, are obviously complex:

- The workforce has increased as a result of the economic recovery, but the labor force has increased the level of provisionality and age, these aspects often translatable into poor and / or inadequate of training.
- Over 80% of accidents happen in small and medium-sized companies, where less investment is dedicated to prevention.
- Production is restarted using machines and plants that are not up-to-date, at least in smaller companies (the Industry 4.0 incentive plan for the replacement of obsolete machinery and the INAIL project for the replacement of machines and tractors, cause of many accidents in agriculture).
- Again, for small companies, safety investments are often seen as an unsustainable or even inappropriate cost.
- The monitoring actions (also due to fragmentation of skills and staff shortages) are not frequent, even if it is repeated that "2 companies out of 3 irregular consecutive inspection" (Ispettorato Nazionale del Lavoro, 2018).
- State and regional investments in prevention are increasingly reduced and there are few Regions that reach the prescribed 5% of expenditure legally requi-

red for prevention in the living and working environments.

2. The european union

The European Commission's strategic objective is "to grant a safe and healthy work environment for over 217 million workers in the EU": preventing risks and improving health and safety conditions in the workplace is essential not only to improve quality and working conditions, but also to promote competitiveness.

In this perspective, the EU has operated over the years both through its own laws (related the most critical professional risks and identifying common rules adopted by the Member States in relation to specific national situations) and through multi-annual action programs and European strategies. (to identify common priorities and objectives, provide a framework for coordinating national policies and promoting a holistic approach to the Culture of Prevention).

It is also important the contribution made by the technical standard, CEN and CENELEC, to support the European Product Directives (which identify in the harmonized standards the presumption of conformity to the essential safety, to reach health protection requirements) and support activities of the European social directives and the deriving national legislation, focusing on general and specific aspects of health and safety at work.

3. Organizational and management models in Italy

In 2001, the Legislative Decree n.231 regulated the "administrative liability of institutions"

(joint-stock companies, but also cooperative societies, associations with and without legal personality, public economic bodies, private bodies concessionaires of a public service, etc.).

The law provided heavy penalties, both pecuniary and interdiction from economic activity, for subjects (top or not) of the company committing crimes such as corruption, bribery and others.

They are listed in the law n. 123/2007 and the Legislative Decree 81/08 e s.m.i. to extend the scope of application of Legislative Decree 231/01 to the crimes of "culpable homicide and serious or very serious negligence, committed with violation of the rules on the protection of hygiene and safety on work" (Articles 689 and 690 of the Penal Code).

A necessary condition for the recognition of administrative responsibility is, among other prerequisites, that the offense has been committed in the interests of the institution or to its advantage.

In the case of crimes of negligent homicide and serious or very serious negligence, committed with violation of the rules for the protection of hygiene and safety at work, the opinion of the jurists identifies the "advantage or interest" in saving money avoiding to implement the Measures of prevention and protection.

In order to avoid injuries and resulting penalties envisaged in terms of administrative responsibility, the legislator suggests the adoption of an organizational, management and control model.

In the text of Legislative Decree 231/01 there are not indications about the elements constituting this model of organization and control (referring, rather, to future lines of direction issued by employers' associations and communicated to the Ministry of Justice).

More precise is the Legislative Decree 81/08 e s.m.i., which in art.

30 identifies some requirements of the models suitable for preventing crimes related to health and safety at work, explicitly mentioning the BS OHSAS 18001: 2007 standard and the UNI-INAIL guidelines (documents describing Occupational health and safety management systems – SGSL) as compliant, for the corresponding parties, in providing an organizational model that can claim "exemplary effectiveness", ie the non-application of sanctions of administrative responsibility to the entity in question.

The approach obviously can not be aimed at limiting the responsibilities of the top management and it is not possible to forget that the safety management systems have as their purpose the prevention of occupational accidents and illnesses, while the organizational models D Lgs. 231/01 are functional to the prevention of crimes, but the experience shows this organizational approach in the workplace is effective even for the safety.

The recent publication in March 2018 "Accredia Observatory, workplace safety and certification" (report on the administration of a questionnaire to the safety managers and management of 311 companies certified according to the OHSAS 18001 standard) highlights a greater effectiveness of the preventive policies, attested by a reduction in injuries and their severity, in companies that adopt certified management systems under accreditation.

4. Evolution of the SSL management systems and ISO 45001: 2018

According to the Guidelines for a management system of health and safety at work – SGSL published by UNI in 2001 "a management system of health and safety at work

integrates health and safety objectives and policies in the design and management of work and production chains of goods and services. The SGSL defines how to identify, within the corporate organizational structure, the responsibilities, procedures, processes and resources for the implementation of the company's prevention policy, in compliance with current health and safety regulations “.

Management systems adopt a cyclic model (based on the so-called Deming or PDCA cycle – Plan, Do, Check, Act) aimed at the continuous improvement of in workplaces and structured with the following steps:

- definition of a policy that defines the SSL objectives;
- identification of a functional organization chart, with assignment of tasks and responsibilities to personnel with adequate skills and training;
- risk assessment and consequent planning of activities;
- identification of quantified objectives and preparation of a program for implementation;
- drafting of operating procedures for the implementation of activities involving risks;
- systematic and continuous involvement of staff and workers' representatives;
- periodic control of the organizational system;
- systematic review of the system itself.

The purpose of a health and safety management system is to provide a framework for the management of injury and health problem prevention; its implementation can represent a strategic decision.

The first proposal of an ISO standard on occupational health and safety management systems is from the 1980s.

In Italy we start talking about the SSL management systems between 1996 (date of publication of the British standard BS 8800) and 2001

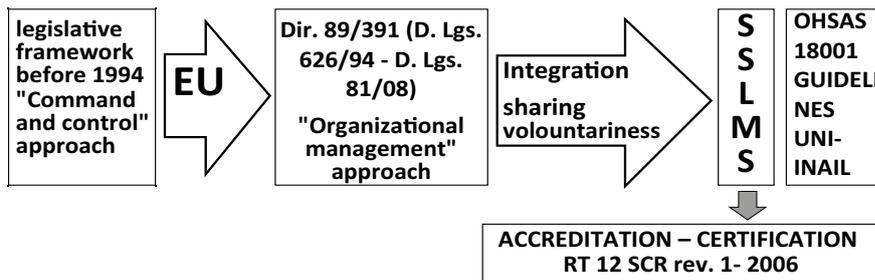


Fig. 1. Legislative evolution from the 50's to the OHSAS 18001.
Evoluzione legislativa dagli anni 50 alla OHSAS 18001.

(publication of the “Guidelines for a Health and Safety Management System at Work – SGSL”) (Fig. 1).

The related certification takes place under the aegis of Accredia, the only Italian accreditation body deriving from the merger of SIN-CERT, and according to the technical regulation RT 12.

The evolution of BS OHSAS 18001 into a new globally shared standard has represented a long path, started in 2013 in ISO with the establishment of the Project Committee (ISO / PC 238) with the aim of drafting a standard on SGSL and concluded in February 2018 with the publication of the new ISO 45001 standard “Occupational Health & Safety Management Systems – Requirements with guidance for use” (implemented in Italy in March 2018 as UNI EN ISO 45001) (Fig. 2).

According to ACCREDIA data, in Italy there are 27 Conformity Assessment Bodies – CAB accredited for OHS & MS, which manage over 15,000 OHSAS 18001 certifications under ACCREDIA control; there are also a large number of certificates released by other national Accred-

itation Bodies – AB, which do not apply the additional requirements of the technical regulation RT-12. In order to ensure the uniformity at European level of the application of the certification rules by the Bodies, EA-3/13 M: 2016 was elaborated in EA (European Accreditation), that will lead to withdrawal of the RT-12 regulation (Fig. 3).

In January 2018, the IAF (International Accreditation Forum) also published two important documents:

- IAF MD 21: 2018, containing the indications for the migration to ISO 45001: 2018 from OHSAS 18001: 2007
- IAF MD 22: 2018, for the consistent application of ISO / IEC 17021-1 for the accreditation of Certification Bodies that provide certification of management systems for health and safety at work

ISO 45001 has the so-called “High-Level Structure” for reasons of standardization, ie it has the same structure as the other management systems (quality and environment), the same use of texts and terminology, more

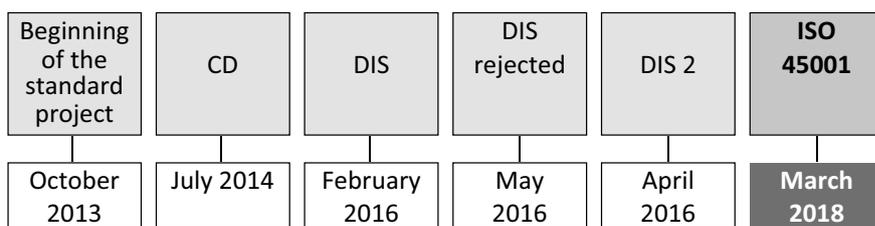


Fig. 2. Chronology of the drafting work of the standard ISO 45001.
Cronologia dei lavori di redazione della norma ISO 45001.

June 20 th , 2016	December 20 th , 2016	From December 15 th , 2016 to June 20 th , 2019	June 21 st , 2019
Posted the document EA 3/13 M:2016	Posted the circular ACCREDIA N. 34	<p>The certifications issued according to both RT 12 and EA 3/13 are valid</p> <p>certificates issued by CABs, also on the date following the circular the reference to the Technical Regulation RT 12 can still be reported</p> <p>The certificates issued according to the rules of EA 3/13 must not bear the reference to the RT-12. The reference to the certificate at EA 3/13 M: 2016 is optional</p>	<p>Certificates with a later deadline as of 20 June 2019, must be reissued by deleting the reference at RT-12, or they will have to report a statement clarifying that, from 21 June 2019, RT12 is no longer applied</p> <p>Certifications accredited in accordance with Technical Regulation RT 12 will no longer be valid, and the RT-12 Regulation will be withdrawn</p>

Fig. 3. Certification status according to ISO 45001 within Accredia.
Stato delle certificazioni secondo ISO 45001 in ambito ACCREDIA.

efficient application of integrated management systems; is structured according to the points:

1. Scope of application
2. Normative references
3. Terms and definitions
4. Context of the organization
5. Leadership

6. Planning
7. Support
8. Operations
9. Performance evaluation
10. Improvement

It is based on the “Plan-Do-Check-Act” model and, starting from the new ISO rules for the development

of international standards for management systems, assigns a significant importance to the so-called context of the organization.

Health and safety at work become central aspects of the entire management system and this requires a substantial commitment on the part of top management.

A news compared to the previous OHSAS 18001 is that the organization must clearly identify and describe the opportunities for improvement of health and safety at work in an autonomous process.

The management system complying with the ISO 45001 specifications must therefore be able to:

- establish, implement and maintain an occupational health and safety management system to improve health and safety at work, eliminate or minimize OH&S risks and address non-compliance of the H&S management system associated with his activities;
- continuously improve the performance of the H&S and the fulfillment of its OH&S objectives (Fig. 4).

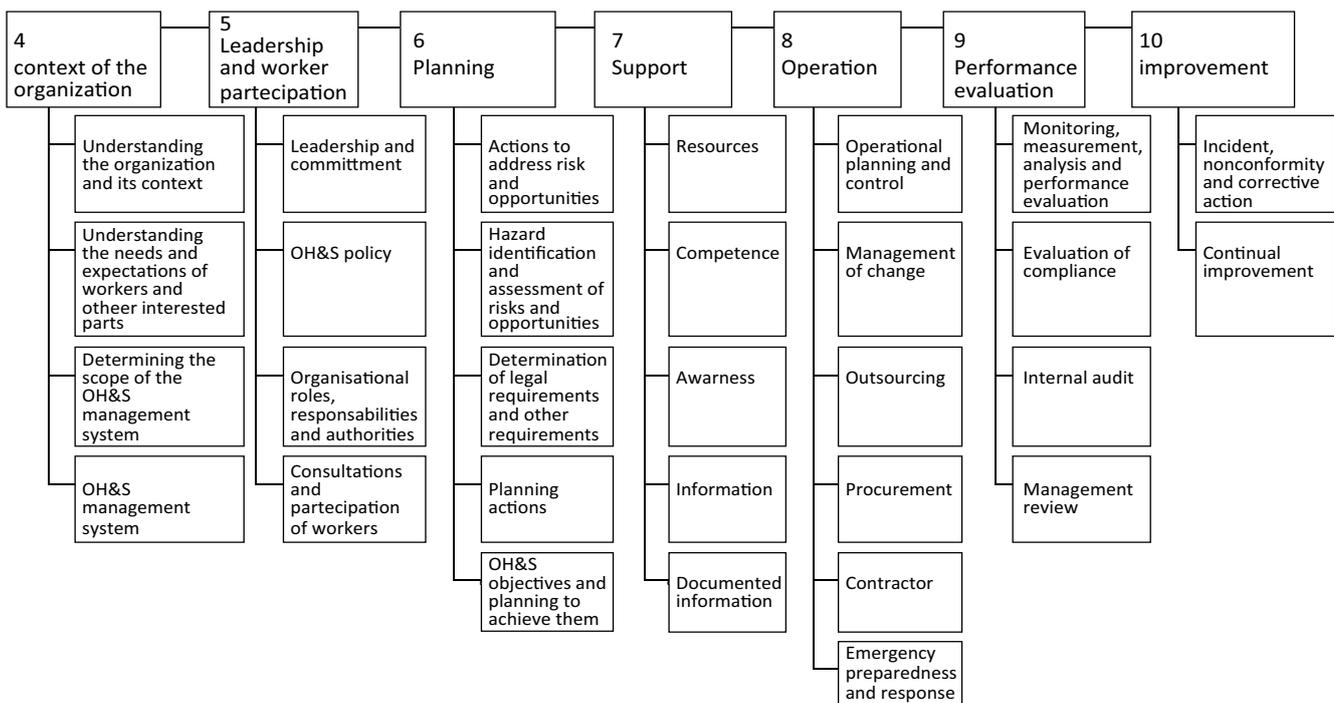


Fig. 4. Structure of ISO 45001 according to the PDCA model.
Struttura della ISO 45001 secondo il modello PDCA.

5. Main differences between BS OHSAS 18001:2007 and ISO 45001:2018

ISO 45001:2017		BS OHSAS 18001:2007	
1	Scope	1	Scope
2	Normative reference	2	Reference publications
3	Terms and definitions	3	Terms and definitions
4	Context of the organization		
4.1	Understanding the organization and its context		
4.2	Understanding the needs and expectations of workers and other interested parts		
4.3	Determining the scope of the OH&S management system		
4.4	OH&S management system		
5	Leadership and worker participation		
5.1	Leadership and commitment		
5.2	OH&S policy	4.2	Policy
5.3	Organizational roles, responsibilities and authorities	4.4.1	Resources, roles, responsibility, accountability and authority
5.4	Consultations and participation of workers	4.4.3	Communication, participation and consultation
6	Planning	4.3	Planning
6.1	Actions to address risk and opportunities <ul style="list-style-type: none"> - General - Hazard identification and assessment of risks and opportunities - Determination of legal requirements and other requirements - Planning actions 	4.3.1	Hazard identifications, risk assessment and determining controls
		4.3.2	Legal and other requirements
		4.3.3	Objectives and program
6.2	OH&S objectives and planning to achieve them <ul style="list-style-type: none"> 6.2.1 OH&S objectives 6.2.2 Planning to achieve OH&S objectives 		
7	Support		
7.1	Resources	4.4.1	Resources, roles responsibility
7.2	Competence	4.4.2	Competence, training and awareness
7.3	Awareness		
7.4	Communication	4.4.3	Communication, participation and consultation
7.5	Documented information <ul style="list-style-type: none"> - General - Creating and updating - Control of documented information 	4.4.4	Documentation
		4.4.5	Control of documents
		4.5.4	Control of records
8	Operation		
8.1	Operational planning and control <ul style="list-style-type: none"> - General - Eliminating hazards and reducing OH&S risks - Management of change - Outsourcing - Procurement - Contractors 	4.4.6	Operational control
		4.3.1	Hazard identifications, risk assessment and determining controls
8.2	Emergency preparedness and response	4.4.7	Emergency preparedness and response
9	Performance evaluation		
9.1	Monitoring, measurement, analysis and performance evaluation <ul style="list-style-type: none"> - General - Evaluation of compliance 	4.5.1	Performance measurement and monitoring
		4.5.2	Evaluation of compliance
9.2	Internal audit <ul style="list-style-type: none"> - General - Internal audit program 	4.5.5	Internal audit
9.3	Management review	4.6	Management review
10	Improvement		
10.1	General	4.3.3	Objectives and program
10.2	Incident, nonconformity and corrective action	4.5.3	Incident investigations, nonconformity, corrective action and preventive action
10.3	Continual improvement		

6. Industry 4.0

The Italian government, through the National Industry 4.0 plan, aimed to boost technological innovation to drive investments and productivity: "Industry 4.0" is an opportunity to develop enabling technologies and aimed at obtaining, as expected benefits, improvement in production flexibility, control on speed from prototype to mass production, reduction of set-up times, better quality and therefore expected waste, more competitiveness.

With Industry 4.0, a sort of "fourth industrial revolution", a process that is still going on and should lead to a fully automated and interconnected industrial production; the integration of information technology and communication with production processes and their advanced automation will have economic repercussions and consequences on a social level, but the effects of the protection of health and safety in the workplace will also be important.

The adoption of new technologies and their integration, also favored by tax benefits, will have to lead to an improvement in work not only in its various economic implications, but also in terms of health and safety.

In this sense, point 5 of ISO 45001 is aimed at implementing the objective of strengthening the relationship between health and safety management and the organization's core business.

The integration of the business strategies and priorities of the organization can not be achieved except through greater involvement and commitment of Top Management and the exercise of a strong leadership to support the rooting of the organization's health and safety commitments.

7. Conclusions

The expected innovations in terms of advantages for management systems following ISO 45001: 2018 are (Patrucco et al., 2018) therefore:

- Integration: the standard is structured to develop a true integrated management system among the company processes. This means slenderness, speed, integration of objectives, logic and decision-making and monitoring flows (effectiveness and efficiency merged together).
- Strategy: the analysis of the context of a company is unique (integrated with the 9001 and 14001) and reports all the scenarios in which the organization operates. It can be a strategic instrument of governance that allows to obtain the third characteristic element of management systems: sustainability.
- Risk management orientation: the standard is aligned with the structure of ISO 31000 for the 360-degree management.

For those already applying the current editions of the standards 9001 and 14001, the innovations introduced (context, leadership, risk analysis) are already known and in many cases already analyzed and managed; the analysis of the context made for the quality or the environment can not avoid considering the security elements linked to the context.

Author's hope is to use the models as a tool to improve the company's performance and not as simple compliance required or suggested by customers or marketing needs.

The economy rewards companies that are competitive in ideas and in process management: effectiveness, efficiency and sustainability. The rules help to put these principles into practice.

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