

THE EUROPEAN LEGISLATION AND THE IMPLEMENTATION OF EMS AND ENMS

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SUMMARY

Environmental Management Systems (EMS) and Energy Management System (EnMS) are two of the tools which, **implicitly or explicitly**, are promoted by the EU in order to achieve the targeted goals and objectives identified in the cross frontier legislation for environmental protection. Both management systems have requirements set by international standards (such as ISO 14001 and ISO 50001), by which an organization (or other “organizational entity”) may establish and implement Policies and Objectives for environment or energy, with the assumption of compliance with legal requirements and other requirements to which the organization subscribes.

The European Directives were evolving over time, both in structure and in the form of expression. In the beginning of the last decade the key-concepts used were **Policies, Community objectives** and **Action Programmes** – all these being the principal elements of the Management systems, too.

Later on, the European Directives started to promote equivalent terms for **preventive actions, corrections** and **corrective actions** for the **noncompliance** with critical limits stated by the relevant legislation. Moreover, we can find wording like: **environmental aspects** and **impact analysis, emission monitoring** and **compliance with legal requirements**, specific actions of the **operational control, emergency plans** and **public communication**.

In some cases (e.g. waste management and energy efficiency), the European Directives have become very explicit in the recommendations they make regarding the utility of EMS and EnMS implementation, based on ISO 14001 and ISO 50001 international standards.

Although the implementation of EMS and EnMS is a voluntary decision, the fact they are subject of recent recommendations of the European Directives shows the conviction that these Management systems represent effective tools in achieving commitments regarding environmental protection and pollution prevention or energy performance (energy efficiency, energy usage and energy consumption).

1. THE CONTEXT

Faithful to the sustainable development concept, the EU implements, step by step, the strategy regarding prevention of pollution, for general environmental protection and for resources protection, including the resources, renewable or not, dedicated to power generation.

If we only take a look to the last decade, we can find a whole batch of EU Directives, Regulations and Decisions which address the spectrum of the mains

categories of environmental aspects: air quality, water quality, industrial pollution and prevention control, waste management, hazardous substances, climate changes, noise etc. And all these have one single declared purpose: the reducing of the environmental impact through a systematic and cross frontier approach on necessary actions. Regarding the concerns for the energy efficiency, the EU has defined specific targets until 2020: 20% energy saving of total primary energy, 20% reduction of greenhouse gases emission - below the 1990 level, 20% from the mixed energy must come from renewable resources. In this case, too, was issued a new Directive for the implementation of EU Policy on energy efficiency.

European Directives are strategies to be assumed by Member States and implemented at the national level, for a legislation harmonization. This legislation is dedicated to socio-economically actors who play a „third party” role in the filed approached by these Directives; the most relevant socio-economically actors are the companies and the authorities, all being considerate as „organizational entities”.

2. THE EMS AND EnMS

Environmental Management Systems (EMS) and Energy Management System (EnMS) are two of the tools which, *implicitly or explicitly*, are promoted by the EU in order to achieve the targeted goals and objectives. Both management systems have requirements set by international standards (such as ISO 14001 and ISO 50001), by which an organization (or other “organizational entity”) may establish and implement Policies and Objectives for environment or energy, with the assumption of compliance with legal requirements and other requirements to which the organization subscribes.

EMS and EnMS, implemented based on the standards ISO 14001 si ISO 50001, as all management systems, operate with the structure of *the Deming cycle - PDCA (Plan-Do-Check-Act.)* – see Figure 1.

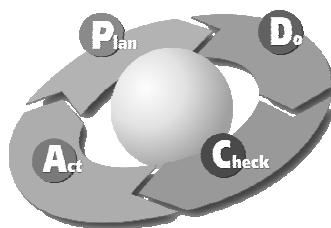


Figure 1 – The PDCA cycle

Plan means to define Policies that represent milestones for the management systems (EMS or EnMS) and a framework for setting concrete targets; the planning mission is the responsibility of the company management.

Do represents all efforts made by the company to train and to rise staff awareness, to communicate with all interested parties (internal and external), to document all procedures and actions that must be implemented for the objectives accomplishment, in the spirit of the Policies defined by the management.

Check defines the sum of activities regarding the monitoring of performance, the evaluation of them in relation with the objectives set; the internal audit of the management systems with a declared scope: the evaluation of the compliance with the standards ISO 14001 or ISO 50001 and with the legal requirements or other requirements assumed by the company; in case of nonconformities, corrective actions are applicable, for the potential nonconformities – preventive actions being the solution to stop their apparition.

Act signifies the analysis made by the management to establish an effectiveness level of the management system and to decide the necessary actions for the improvement of EMS or EnMS.

Suggestive representations for EMS (based on ISO 14001) and EnMS (in accordance with ISO 50001) are available in Figure 2 and Figure 3.

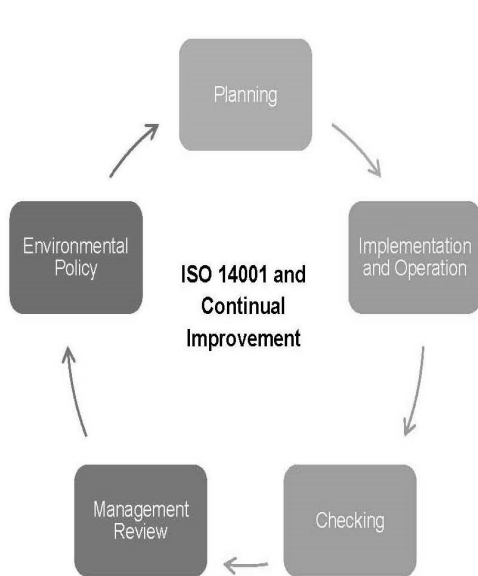


Figure 2 -EMS

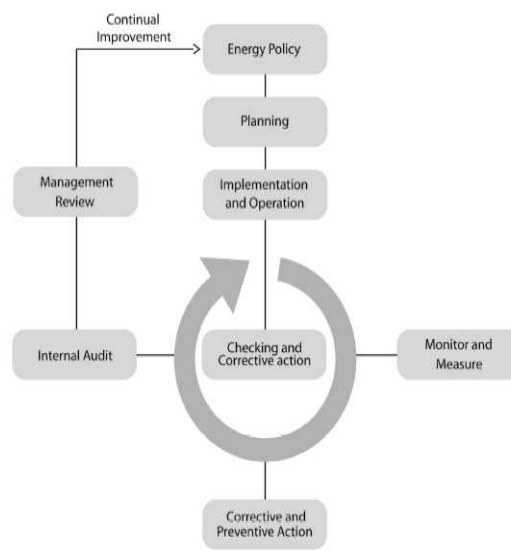


Figure 3 – EnMS

Therefore, we conclude that a management system is nothing more than an operational framework that, once being established policies and objectives, permits the planning of the envisaged actions and their implementation, creates the conditions for verification of the effectiveness of actions taken, for the continuous improvement, in relation to the policies and objectives initially set out (which, depending on the organizational context and wishes of stakeholders, can support changes).

3. EUROPEAN DIRECTIVES ABOUT THE ENVIRONMENT

The European Directives were evolving over time, both in structure and in the form of expression. In the beginning of the last decade the key-concepts used were **Policies**, **Community Objectives** and **Action Programmes** – all these being the principal elements of the Management systems, too. So, the European Directives have proposed elements equivalents with „Plan” from the Deming cycle – PDCA (Plan-Do-Check-Act). It’s about the Directive 2000/60/CE establishing a framework for Community action in the field of water policy and

about the Directive 2008/50/CE on ambient air quality and cleaner air for Europe, too.

The Directive 2000/60/CE, amended later by the Directive 2008/32/CE, the Directive 2008/105/CE and the Directive 2009/31/CE, refers to **Community Policies, environmental objectives, action plans, reducing pollution** generated by hazardous substances, **public communication**.

Similarly, the Directive 2008/50/C stipulates the need to establish common **objectives**, the implementation of a **measurement** system (with methods and equipments for the quality of technical parameters) and **action plans** when the critical limits are over passed (similarly to **correction** and **corrective actions**). This Directive refers to the necessity to **inform the public** about all elements implemented and about the results.

Later on, the European Directives began to promote equivalent terms for **preventive actions, corrections** and **corrective actions** for the **noncompliance** with critical limits stated by the relevant legislation. Moreover, we can find wording like: **environmental aspects** and **impact analysis, emission monitoring** and **evaluation of compliance with legal requirements**, specific actions of the **operational control, emergency plans** and **public communication**. What are all these?! Other tools for the implementation and maintenance of EMS and EnMS... Examples like this we can find in:

- Directive 2008/1/CE concerning integrated pollution prevention and control (IPPC), amended through the Directive 2009/31/CE, has as scope the promotion of **objectives** and **principles** of the **environmental policy**, based on **preventing, reducing** and, as far as possible, **eliminating pollution** by giving priority to intervention at source and considering also sustainable development principles in terms of use of natural resources, in compliance with the „polluter pays” principle and the principle of pollution prevention.
- Directive 2010/75/UE on industrial take into consideration concrete measure of operational control - in Art.33 we find “the operator should not operate a combustion plant for more than 24 hours after malfunctioning or breakdown of abatement equipment” or “unabated operation should not exceed 120 hours on 12 months”. Also, draws the need that, in case of **noncompliance with the permits or the authorization**, to have **measures for restoring of compliance conditions** is a must. The Directive explains what means potential **incidents** or **accidents** (in fact, **emergency situations**) and uses the notions as **environmental aspects**, some of these being the hazardous substances. The Directive promotes again the idea of the **emission monitoring** as base for **the evaluation of compliance** with the authorization demands.
- Directive 2012/18/UE on the control of major-accident hazards involving dangerous substances promotes **the evaluation of the major-accidents hazards and the obligation of the companies to prevent the major-accidents using internal and external emergency plans** (if is the case, with a cross frontier approach). The Directive imposes an amendment that can be found in the EMS, too: to **modify the security management system** when an installation / an emplacement / a storage surface / the quantity of hazardous substances / etc. are modified, all being equivalents with a

change of context in the EMS. Anyway, it is a must that the emergency plans contain measures taken after the accident to minimize the effects and **actions in order to avoid their recurrence (corrective actions).** The Directive is focused on the **public communication**, too.

In some cases (e.g. waste management and energy efficiency), the European Directives have become very explicit in the recommendations they make regarding the utility of EMS and EnMS implementation, based on ISO 14001 and ISO 50001 international standards:

- Directive 2008/98/CE on waste presents **the EMS certified conforming ISO 14001 as a measure for the prevention of waste generation** (see the Annex IV).
- Directive 2009/125/CE establishing a framework for the setting of eco-design requirements for energy-related products promotes the eco-design for all products and makes a link with the standard family ISO14000 – in fact, with ISO 14040, which explain what means the approach of **the product life cycle management.** The eco-design is another element proposed by the Directive 2008/98/CE **for the prevention of waste generation.** Moreover, the Directive 2009/125/CE explains in the Annex V what the management system for assessing conformity is and we can observe that it contains requirements from the EMS.
- Directive 2012/27/UE on energy efficiency (that modifies the Directive 2009/125/CE and repeals the Directive 2006/32/CE) reiterates the context of the UE objectives “20-20-20”, presented in the Communication “Energy 2020”. The **energy audits** – the base for the analysis made to establish **objectives** for the improvement of the energy efficiency - are correlated **with the requirements from the standards ISO 14001 and ISO 50001** and the companies that have implemented and certified EMS or EnMS can be exempted of the obligation to make periodic energy audits, with the rhythmicity asked now by the law.

4. THE APPROACH OF THE RELEVANT LINKS

Beyond that the implementation of an environmental management system (EMS) or energy management system (EnMS) creates the premise to assuming the compliance with the legal requirements in the respective fields, the key-concepts outlined above represent points of contact between harmonized European legislation and management systems, being the evidence that the recommendations from these Directives are not...accidentals.

Policy, objectives, environmental aspects, impact analysis or energy audit, responsibilities establishment, communication with interested parties, operational control, emergency preparedness, monitoring, evaluation of compliance with legal requirements, treatment of nonconformities through corrections and corrective actions, preventive action taken... they are all clauses of the standards ISO 14001 and ISO 50001!

Policies and objectives relating to environmental management or energy management can be set only as far as that we know what all issues of activities that interact with the environment (environmental aspects) are or what the results of energy analysis, meaning “energy profile” of companies are. Among environmental aspects are: waste, consumption of resources (water, energy,

natural gas, fuels...), emission on the air/water/ground/underground, noise etc., all of which are defined by specific technical parameters (quantities or concentration, most often). The results of the energy analysis give us information about: area with significant using of energy, the conventional sources or “green” sources of energy used by the company, the consumption of energy, but also the possibility to calculate the energy efficiency and to identify opportunities for improvement. Knowing the elements of activities with impact on environment or on energy performance, the companies can define policies and targets for controlling their activities impact on the environment, namely to improve energy performance.

Other common aspects for the two management systems (EMS and EnMS), underlying the setting of policies and objectives, are the legal requirements applicable for the significant environmental aspects or applicable for the impact of energy, generated by the company in question.

No policies and goals can be fulfilled without action plans with clear responsibilities and deadlines. But, we talk about management systems, so, responsibilities for implementing, maintaining and improving of performance must be defined at all relevant levels. For example, all employees generate environmental impacts: waste and consumption of resources. In case of energy performance, the most important functions are involved in purchasing of energy and energy services, equipments; or, we can speak about functions that operate equipments and assure the maintenance of the infrastructure.

Policies, objectives, action plans, documented procedures that make more easy their accomplishment must be the subject of training and communication with all interested parties, from the company, but external, too (authorities, local communities, clients, suppliers...).

The operational control is represented by all actions decided by the company to not deviate from the line assumed by the policy, in order to fulfil the objectives for EMS and EnMS. In EMS, the operational control means an effective waste management (including a second effect from the eco-design of product), a maintenance that don't generate uncontrolled emission, over the acceptable limits and the control of the relation with the suppliers for equipments and substances potential dangerous for the environment. In EnMS, the operational control is similarly with: to define operation criteria for the equipments to not generate exceeding nominal operating parameters, with effects over the energy consumption, a preventive and predictive maintenance of equipments, concrete action in the stage of product design, when are developed all processing flows, with elements about infrastructure and energy sources; and, not the last, criteria for the relation with suppliers for energy services, energy and equipments.

Potential emergency situations must be identified by the company and plans with measures for elimination of effects and causes must be done. The emergency plans are simulated for the improvement of their effectiveness.

The monitoring is a common requirement of EMS and EnMS and supposes the follow-up of the environmental impact status or values of indicators for energy efficiency.

The evaluation of compliance with legal requirements represents all internal methods that assure the verification of the correspondence between the

results and the permits / authorization / limits from the law. Of course, other way of evaluation of compliance is the control made by the authorities.

When nonconformities appear, EMS and EnMS ask the identification of root-cause and the implementation of corrective actions in order to avoid their recurrence. An effective tool for the nonconformities identification is the internal audit.

Finally, all output data from functioning of EMS or EnMS are analyzed in the management review, to decide if the level of performance complies the own expectation or other actions are necessary for the improvement.

All these requirements being implemented, the company has evidence that the environmental management system or energy management system is functional and effective, so, capable to sustain the environmental protection & prevention of pollution or the amelioration of the energy performance (energy efficiency, using and energy consumption).

Although the implementation of EMS and EnMS is a voluntary decision, the fact they are subject of recent recommendations of the European Directives shows the conviction that these Management systems represent effective tools in achieving commitments regarding environmental protection and pollution prevention or energy performance (energy efficiency, energy usage and energy consumption).

Symbolically speaking, EMS and EnMS represent for any organizational entities, trough the structure PDCA (Plan-Do-Check-Act), an opened and vertically spiral for the improvement of own environmental impact, conforming with the sustainable development concept, with the concern for the resources that should benefit the future generation, too.

Bibliografy:

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- ISO 50001:2011 – Energy management systems - Requirements and guidance for use
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- Directive 2008/1/EC of the European Parliament and of the Council concerning integrated pollution prevention and control
- Directive 2010/75/UE of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control)
- Directive 2012/18/UE of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances
- Directive 2008/98/CE of the European Parliament and of the Council on waste
- Directive 2009/125/CE of the European Parliament and of the Council establishing a framework for the setting of eco-design requirements for energy-related product
- Directive 2012/27/UE of the European Parliament and of the Council on energy efficiency.