

Ecodesign Management Certifiable Standard: A proven instrument as a widespread driver of LCA in SMEs

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Abstract One of the main demands of any company considering their impact on the environment is to have a mechanism for external recognition of their work done. While the existence of product certification schemes by eco-labels, they do not cover all types of products on the market. Result of this reflection and after analyzing several options, in 2002, the Public Agency for Environmental IHOBE in collaboration with various public and private actors involved in the definition of a standard that would give a response to this demand, because if it is true that there are rules that gives guidance to organizations on how to perform a Life Cycle Assessment, or how to integrate environmental aspects into product development, there was no rule that provides organizations with the elements of an environmental management system process design and development of products or services. In addition, there were two requirements for the environmental management system design and development process: It can be integrated with other management requirements, particularly those established by the UNE-EN ISO 9001:2008 and UNE-EN ISO 14001:2004, and it can be certified by agents outside the organization.

This standard adopted in June 2003 and called "UNE 150.301. Environmental Management of the design and development - eco-design", allows organizations to incorporate a system to identify, monitor and improve the environmental aspects related to products designed for them and certifies that the entire design and development process have been taken into account possible environmental conditions of the product to reduce them. This standard will become the future standard ISO 14006 for the summer of 2011.

The implementation of Ecodesign standard follows an IPP focus, due to management of the environmental aspects of all products and / or services

designed by the company throughout its life cycle, thereby involving their suppliers and thereby controlling supply chain, consumers, distributors and managers of end of life, thereby systematizing extended producer responsibility. That is why for those sectors covered by the Directive 2009/125/EC on Energy-Related Products, certification of Eco-design management system ensures compliance with legal requirements for it. This provides an increase in certificates according to the standard of Ecodesign.

On the other hand, the use of methodologies for Life Cycle Assessment to identify the environmental aspects of products or services, facilitates the generation of public environmental information systems based on eco-labeling, such as the European ecolabel. Moreover, many of the companies choose to provide environmental information in their products as eco-labels or Type III Environmental Product Declarations (EPDs English). The ease of generation of environmental information is a factor to be accounted for by the government in public tenders, as they find it easier to understand and comply with the requirements of the tender.abstract abstract.

1. Introduction

The assimilation and implementation of different "end-of-pipe" environmental policies have proven to be efficient when controlling the environmental impact from the industrial production processes. However, the result has not been as successful regarding the control of environmental aspects of the products and services of an organisation, and therefore those environmental action policies have had to be re-focused. This re-orientation was down to the following factors:

- Today's lifestyle involves more products being purchased and used, with the ensuing greater use of raw materials, along with waste that is increasingly more complex to process.
- If we then add the fact that the useful life of products is increasingly shorter, due, mainly, to cheaper production costs and to technological innovation causing products to be improved increasingly more quickly, the problem is worsened.
- The greater the number of products, the greater the energy consumption in use phase. Despite a ongoing environmental improvement strategy to reduce the products energy consumption, the huge increase of units on the market has resulted in a constant and progressive increase in the total amount of energy consumed

- The globalisation that the market is currently undergoing means that the products are designed, manufactured and distributed on a global scale. This has led to a significant environmental impact associated to transporting all those products are the different stages of the life cycle of the product.
- All the products, at the end of their useful life, end up as waste, which, if not managed correctly, has a further environmental impact.

This all means that, despite the environmental improvements introduced in the products being marketed, they are not sufficient and the product overall is becoming an increasingly greater environmental problem and therefore their environmental improvement is an ongoing strategy and concern for companies.

This new approach involves taking into consideration environmental aspects that have been overlooked until now, and where the organisation has little direct influence, such as the stage when the products are used or utilised.

Since 1999, IHOBE, the Basque Government's publicly-owned environmental management company, has been encouraging companies to focus on this new approach to the product life cycle. The early work led to the Manual to implement Ecodesign methodology in 7 steps, which was warmly received among companies interested in the product environmental improvement. However, and despite the good results of that experience, the companies that work taking into consideration the product life cycle were demanding recognition over their competitors that would enable them to certify their Ecodesign work. And that resulted in the UNE standard 150301:2003 being established that defines the characteristics of an Ecodesign Management System and which will come into effect internationally at the end of 2011 as the ISO 14006.

2. Why should a company seek certification according to the UNE standard 150301:2003?

The first characteristics of the UNE standard 150301 is that it is a management system that seeks to control the environmental aspects of the whole product life cycle right from the design phase. Therefore, this standard could be used by all those companies that are able to influence the design of the product.

Once this requirement has been met, the company has to identify what are the factors that drive it to work in this field. The most external and internal factors of the companies are described below.

Table 1. - Motivating factors of Ecodesign being applied in a company

Motivating factor	Description
Government, legislation and market	The EU is developing environmental directives whose centre of attention is shifting to "extended producer responsibility" or to the "collection obligation". On the other hand, the promotion of more ecological products is also one of the policies of different countries of the EU. Therefore, the ecolabel is being granted to an increasing number of products and Ecodesign is being stimulated by means of subsidies.
Demands of end and industrial customers.	In general, industrial customers are more influential in a company than end customers. Emphasis is placed on the demands to suppliers and controlling the environmental impact throughout the supply chain .
Actions of the competitors in Ecodesign	Environmental aspects are part of the quality of the products. Many leading companies on the market are aware of this and are acting accordingly. Another of the possibilities is to stand out from the competition by means of differentiating aspects and Ecodesign can provide that exclusive point of sale .
Environmentally aware social environment.	Ecodesign can be a way of improving the image of the company in that social environment.
Sector organisations.	Many sector organisations drive or occasionally require companies to take the environment into account in their processes and products.
Technological innovations of the supplier	New technologies and products appear every day that improve their relationship with the Environment. When they enable the environmental characteristics of a product to be improved, it will be positively

	affected by the Ecodesign, as the probability of obtaining good results from the project will be very high.
Increasing the quality in the product	Ecodesign will enable the environmental quality of the product to be increased by means of factors such as functionality, operational reliability, durability or the possibility of redress.
Improving the image of the product and the company	Once the product has been improved, this should be duly notified to the user. With Ecodesign, the environmental quality of the product will be disseminated with the help of ecological labels or green marketing, for example, which will improve the image of the product and the company.
Cost cutting	Applying Ecodesign will enable costs to be immediately cut by means of direct improvements in the product and in the long term, by means of implementing operating environmental criteria in the company.
Power of innovation	Ecodesign can enrich the design process by contributing new approaches that foster the innovation of the product and its production.
Environmental responsibility of the manager	Awareness of the importance of sustainable development among the directors and the product development managers often drives companies to undertake an Ecodesign pilot project.
Motivating employees	Ecodesign can help to improve occupational health and safety, aspects that directly affect the employees of the company, as well as increasing the pride of belonging to a company "that operates taking the environment into account".

The results obtained from implementing the Ecodesign Management System must be aligned with achieving the aforementioned corporate factors.

3. Features of the Ecodesign standard

3.1 General features of the standard

UNE standard 150301:2003 specifies the requirements of an Environmental Management System of the design and development process of the products and services of an organisation, that allows the organisation to establish a systematic process of continuous identification, control and environmental improvement of the products and services designed by the organisation. It provides the organisations with the elements of a EMS of the design and development process of products and/or services, and even though the standard alone does not cover all the elements required to work as a stand-alone Management System, its structure enables it to be easily integrated with other more traditional management systems, such as the ISO 9001:2008 and ISO 14001:2004.

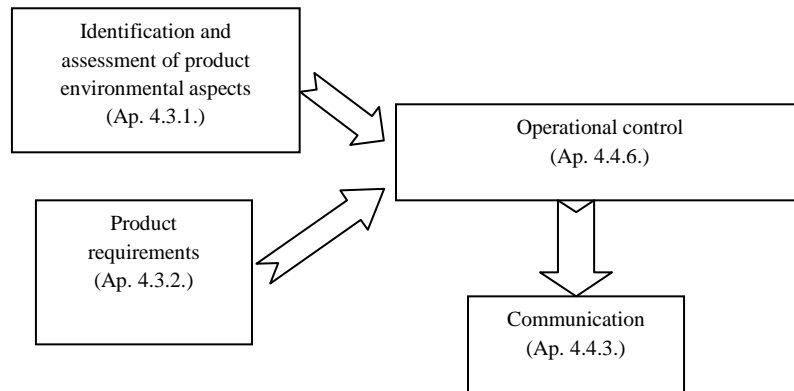
The most important features of the Ecodesign Management System are as follows:

- Promoting the minimising of the environmental impacts generated by products or services from the design stage (preventive approach). It involves analysing all the environmental aspects associated to the service and/or product system throughout their life cycle, and enhancing the environmental aspects considered to be significant.
- Raising awareness on the market about the importance of the environmental impact generated by products or services, by urging active information from the producers.
- Fostering the change of perspective, moving from the production centre to life cycle focus, this involves controlling the impact of changes to the product/service design in the production stage and preventing the transfer of environmental loadings.
- Avoiding sporadic work on environmental projects. The standard contains a systematic process of continuous identification, control and environmental improvements all the products and/or services of the company progressively.
- Facilitating a differentiating factor to the company that guarantees the minimums established in the standard by means of certification, which provides a competitive advantage on the market.

In short, the implementation of UNE standard 150301:2003 guarantees on the one hand that the design and development of the products and services is managed within the company which means that each and everyone will be continuously improved over time, and that the organisation complies with the applicable environmental legislation to its products and services and will do so in the future.

3.2 Operational aspects of the standard

As has been previously discussed, UNE standard 150301:2003 can be easily integrated with other typical Management Systems in companies. However, its approach of the environmental improvement of products and services throughout their life cycle means that some process, listed below, will need to be adjusted:



Example 1. - Operational diagram representing UNE standard 150301:2003

3.2.1 Identifying and assessing product environmental aspects

Ecodesign UNE standard 150301:2003 indicates that the Management System implemented in the company must establish a systematic process to identify and assess product environmental aspects.

When implementing the Ecodesign Management System, the different design possibilities within the company need to be defined, in other words, whether it is a new design or a redesign.

Once the design process is defined, the Life Cycle Inventory (LCV) of the product is conducted. This involves collecting information from within and outside the company referring to supplier and provider activities, sales outlets, use, final management, etc.

The Environmental Assessment of the Life Cycle Inventory (ELCI) of the product is then performed. There are different assessment methodologies to carry out this

task, which are generally implemented in the LCA software that the company must use.

Finally, an objective system is required to choose from among the environmental impacts associated to the life cycle of the product those considered as significant and that will be used as a starting point to set environmental improvement targets for the new product development. This systematic process must be included within the procedure and must be based on the results produced using the LCA software.

Even if the company still has to define the systematic process, at least one significant environmental aspect should be identified for each stage of the life cycle.

3.2.2 Product requirements

UNE standard 150301:2003 indicates that the Ecodesign Management System of the company must set out a system in the procedure to identify all the environmental legal requirements applicable to the product, along with the others that the organisation undertake voluntarily.

All this information must be taken into account when establishing the requirements to be met by the new product development, which shall be taken into account as additional entry elements to the design.

On the other hand, this systematic process must set out the steps to be taken in those cases when new environmental legislation and/or regulations or other requirements applicable to the product design are applicable.

3.2.3 Operational control

The Ecodesign Management System must always control the design and development process of products and services within the company, and although the structure described by the standard to perform this process is similar to the provision of ISO Quality standard 9001, the environmental variable must be taken into account within this systematic process.

First of all, a programme or schedule must be established that sets out the steps that enable the environmental variables to be controlled throughout the product design and development process, by defining the design phases, reviews,

verifications, validations and allocating the necessary human, economic and technical resources to each phase. Furthermore, a review period of the initial programming must be established, in order to adapt it to the real development of the projects and enables the pending tasks to be rescheduled.

A Life Cycle Analysis must subsequently be performed of the product to be designed or redesigned in order to establish the significant environmental aspects to be improved. The organisation then uses the results of the analysis to establish environmental minimisation targets.

The design entry elements are then defined, taking into account the production means of the company, technological innovations existing in the sector, possible legal and environmental requirements and others applicable to the design, other successful products within the organisation, etc., in addition to the above.

This is used to obtain the results of the design and development, which must comply with the requirements of the entry elements for the design and development, provide the appropriate information for the purchase, production and rendering of the service, contain or refer to the acceptance criteria of the product and specify the characteristics that are essential for the correct environmental performance of the product using the transport, use and final elimination stages.

When working on the concepts to be established in detail, all the progress in defining the product must be documented to trace its evolution, and contain all justifications and reasoning of compliance of the defined rejection and acceptance criteria. One general review at least must be performed of the state of the product development regarding the compliance of the established targets.

Once the product reaches its final development, a check is performed, comparing the characteristics of the resulting design with its initial specifications in order to analyse the degree of compliance achieved. Within this phase, another Life Cycle Analysis is performed of the product to establish the degree of reduction of the significant environmental aspects and obtain potential information that can be published externally through the communication procedure. On the other hand, the validation process of the design is performed, by checking the correct functioning of the developed product for its envisaged use or purpose. The validation can be performed in or outside the company. The successful environmental product specifications can be used within the communication procedure, while those that

have not been able to developed become part of the future product improvement plan.

In those cases where modifications occur to the final product due to adjustments inherent to the manufacturing process, customer requests, fine tuning the design, etc. that result in relevant modification to the significant environmental aspects of the product, the changes must be documented.

3.2.4 Communication

UNE standard 150301:2003 indicates that systematic communication channels must be established for the environmental aspects inside and outside the company. First of all, those life cycle agents will be identified that remain within the organisation from the external ones, in order to define internal and external communication procedures respectively and trace the relevant communication channels within the different levels of the organisation.

Internally, the managers must be notified of the environmental aspects associated to the processes for which they are responsible, their importance and possible actions for their minimisation.

On the other hand, the agents involved in the life cycle must be informed of the main environmental aspects that affect them. For example:

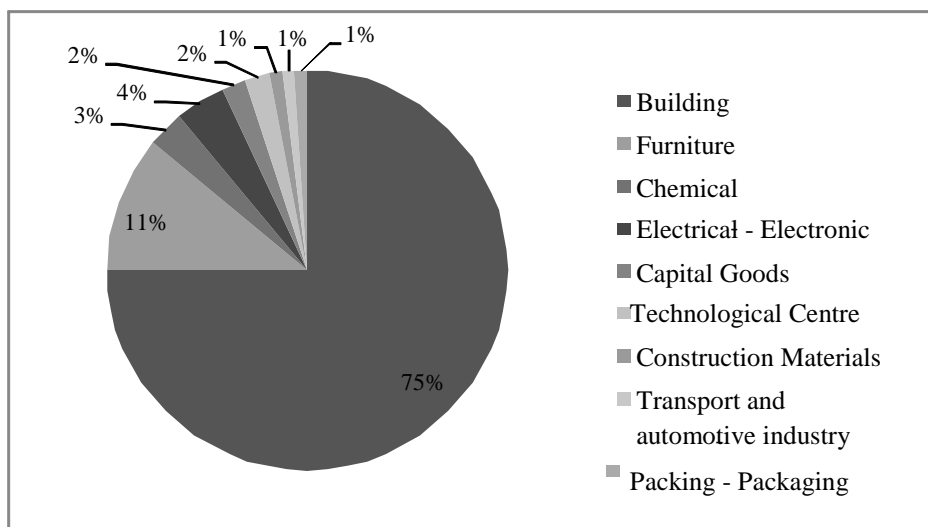
- The suppliers must be asked to report on any possible environmental improvements that enables the minimisation of the aspects that are of their competence, or
- The external designers must be notified of the environmental aspects of the product in order to propose improvements. The environmental variable is taken into account at the same level as the other design parameters that the organisation has set for the new product.
- Environmental information must be delivered to the users with the product. The information must contain all the environmental improvements of the product, its correct operating during the use phase and its correct set-up.

Finally, processing communication request must be included within the external communication systematic process. A person will therefore be appointed to manage those communications, check the rigorousness of the request and use the

internal communication channels of the company to the relevant manager for their answer.

4. Response of Spanish industry to UNE standard 150301:2003

There are currently over 115 companies in Spain with UNE Ecodesign standard 150301:2003 certification, 75% of which are companies related to the construction sector, such as architect and engineering firms:



Example 2. - Sector distribution of company certifications according to UNE 150301:2003

The benefits for the company of implementing and certifying the Ecodesign standard can be summarised in the following points:

- IPP approach: UNE standard 150.301 manages the environmental aspects of all products and/or services designed by the company throughout their life cycle, involving the suppliers, consumers, distributors and end of life managers, by systematically expanding the responsibility of the manufacturer.
- ErP Directive: For those sectors affected by Directive 2009/125/EC relating to the Energy-related Products, certification of an Ecodesign management system

assures compliance of the legal requirements, as it involves the control of the environmental aspects associated to this type of products. This means that an increase of Ecodesign certification is envisaged.

- Environmental communication: The use of Life Cycle Analysis methodologies to identify the environmental aspects of products and/or services facilitates the generation of environmental information can be published based on the ecolabelling system, such as the European ecolabel. Furthermore, the majority of the companies opt to facilitate environmental information of their products according to type III ecolabels or Product Environmental Declarations.
- Supply chain: The environmental targets defined as the result of applying the Ecodesign Management System enable product specifications and acquisition policies to be developed that are applicable to suppliers of the company and through the supply chain.
- CPV support: The fact that the environmental component is a further factor to be taken into account by the administrations with public tendering processes is a competitive advantage for companies certified using the Ecodesign standard, as it is easier for them to understand and comply with the bidding requirements.
- Construction sector: The certification of a management system of these characteristics in companies that design and develop building projects, guarantee the minimisation of environmental impact in one of the sectors that cause the greatest environmental impact in Europe according to the EIPRO study. It is also an important differentiating element from the competition in public tendering processes that are beginning to require this type of certifications.

5. References

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