



THE SOFTWARE AND THE NON-SOFTWARE TOOLS OF DESIGN FOR ENVIRONMENT

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Abstract:

Organizations that develop new products need to consider many factors related to the environmental impact of their products, including government regulations, consumer preferences, and corporate environmental objectives. Although this requires more effort than treating emissions and hazardous waste, it not only protects the environment but also reduces life-cycle costs by decreasing energy use, reducing raw material requirements, and avoiding pollution control. Eco-design tools and strategies have therefore become an important set of the activities for product development organizations.

Keywords:

Eco-design, software, non-software, tools

1 INTRODUCTION

The current situation may seem at first sight very difficult to comprehend, since the eco-design tools are a large number. Such a situation arose because the development and application of software and non-software tools was done spontaneously and uncoordinated. Any company, enterprise or other institution that has developed tools for eco-design their specific conditions. Remarkably, however, that the basic philosophy and methodological basis of these instruments tend to be not very different, since they were subject to the same goal - to improve their level of eco-products in the crucial stages and throughout their life cycle [4].

2 APPLICATION OF SOFTWARE TOOLS OF ECO-DESIGN

Based on the facts, the usual intermediate targets developers of software tools may be different, which earned their distinction. This is as follows:

- ❖ analysis of existing products and processes and use of recorded information as feedback to improve the environmental performance of the product - **LCA / LCI tools**
- ❖ analysis of existing products and processes and use of information found to improve certain aspects of the product - **DFX tools**
- ❖ comparison of certain materials and processes in order to detect different levels of their impact on the environment - **PP and WP tools**, meaning to prevent pollutants (PP) and waste (WP)
- ❖ application of improvement methodology throughout the design process to improve the entire design process - **I - tools**; while here include tools like EIME and EcoDesign Tool.



The designations of these instruments means:

- LCA** - Life Cycle Assessment,
- LCI** - Life Cycle Inventory,
- DFX** - Design For X, "X" means that area, department, etc.,
- PP** - Pollution Prevention,
- WP** - Waste Prevention,
- I** - Improvement,
- EIME** - Engineering Information Management Executive.

This approach (goals difference) leads to the differentiation of basic eco-design software tools. It should be noted that the amount of applied data and calculation procedures, the use of these tools required is considerable work with a high proportion of routine activities. For these reasons, the rational use of those tools and methodologies they developed in the form of software products. [2]

Answers to questions - where, how, when and in which stages of the design process will be advantageous to deploy these tools indicated in table 1.

Table 1: Application of eco-design software tools in various stages of the design process

	Stage	Marketing	Schedule of product	Conceptual design	Design group	Detail design	Production
TOOLS							
LCA/LCI		Past results					
DFX							
PP / WP				Targets	Targets	Targets	Targets
I - TOOLS							

Legends: - Field of application

3 APPLICATION OF NON-SOFTWARE TOOLS OF ECO-DESIGN


A feature of the eco-design tools non-software nature is that their application is possible and often without a rational means of computing. On the other hand, it should be emphasized that these tools and their combinations are usually based software tools based on design requirements. This was more - less forced practice and legislative measures States regarding the protection of environment and promotion of sustainable development at local, regional and global level. It is in the interests of manufacturers that their products throughout their life cycle in the least impair the environment and are compatible with this. Not every company, and also for economic or other reasons (eg, specific peculiarities of manufactured products) can be deployed in the process of designing an environmentally-oriented software tools. In such cases it is preferred and must use the non-software tools of eco-design. [2,3]



Answers to questions - where, how, when and in which stages of the design process will be advantageous to deploy these instruments provides us with table 2.

Table 2: Application of eco-design non-software tools in various stages of the design process

Stage	Marketing	Shedule of product	Conceptual design	Design group	Detail design	Production
Nástroj						
EDM metod						
EI- 99 metod						
Ecodesign PILOT						
Metod of DfE matrix						
Metod of MET matrix						
Metod of comparator analysis						

Legends:  - Field of application

4 CONCLUSION

Defining prevention as the primary goal in attempting to avoid the waste and toxic substances is the primary question in taking up is clean production. As a next step, this should be pursued to minimize environmental impact. Those efforts should be applied to the entire environmental life cycle of a product, from raw material extraction to final disposal (clean product). The intention is to optimize the socio-economic system of the product and its use in accordance with the criteria of sustainable development in the future. This meets all its meaning and concept of eco-design principles, which it brings, which is in accordance with progressive prosperity, meaning a reduction in "consumption" of the environment. [1]

The process begins by the ecodesign product modeling system, taking into account specific conditions in the company. It draws on environmental parameters and information that are specific to individual phases of the life cycle of a product as the newly designed products, as well as existing, to be on improving their environmental analysis. These are based on progressive analysis tools and methods, some of which are more or less considered in the EU as a standard.

Ecodesign brings a new dimension to the design and development of new engineering products and processes to improve existing products. The challenge is to provide the most relevant information as soon as possible to continue with the development of this knowledge. Providing external and internal incentives for environmentally responsible design - ecodesign should be part of defining the product and its creative cycle.

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