



ECOSIGN

Basic Concepts on Ecodesign

UNIT 7: Implementing Ecodesign.



Objectives of the Unit

- Know how to apply Ecodesign in the design process
 - Identify responsibilities and activities for the development of an ecological product.

7.1 Introduction to the Methodology for the development of a Ecodesign project.

- The environmental factor must be integrated if the companies want to follow:
 - The evolution of the market.
 - The legislation.
 - Customer demand.
- The integration of Ecodesign must be present in all stages of a life cycle of a product.
- The manufacturer must be aware that not only has control over the stage of production, but also over all others.
- The “Methodology” for the development of a Ecodesign project consists of 7 stages.

Methodology for the development of Ecodesign Project

7 STAGES:

Project preparation

Environmental aspects

Ideas for improvement

Concepts developments

Product in detail

Action Plan

Evaluation

7.2 Stage 1: Preparation of Ecodesign Project

For the Preparation of Ecodesign Project are selected: “**Work team**”, “**Selecting a product**”, and also external and internal “**Motivating factors**” emerged in the context analysis of the organization.

Selection of work team

- Not too many people for greater operational agility. There must be a coordinator.
- The management must give freedom of choice to the work team.
- Multidisciplinary and interdepartmental: Management, Director of Design and product development, and other Departments. (Purchase, Environment, etc.).
- To have external collaboration of experts in Environment and Design or Engineering.

Selecting a product

- Should be modified.
- Clearly affected by motivating factor.
- Make it relatively simple (at least in the first projects).

7.2 Ecodesign Project. Preparation

For the Preparation of Ecodesign Project are selected: “**Work team**”, “**Selecting a product**”, and also external and internal “**Motivating factors**” emerged in the context analysis of the organization.

Motivating factors

- **Internal motivating factors**

Administration: legislation and regulation.

Market: more customer awareness. Eco-labels.

Competitiveness: the environmental component positively affects to the quality of a product. Furthermore, that means differentiation and leadership.

Social environment: Ecodesign clearly improves the corporate image.

Others: sectoral organizations, suppliers, technological innovations, etc.

- **External motivating factors**

Product quality: to improve the environmental product quality.

Image: both the product itself and the company itself

Costs: Ecodesign facilitates cost reduction

Other: innovation, corporate social responsibility, motivation, etc.

7.3 Stage 2: Environmental aspects

The objective of this stage is the “Analysis of environmental aspects” of the product throughout the life cycle. For this, it is necessary the cooperation of the management, design and product development department and the external experts in environment.

- Both “**Product System Limits**” and external elements should be studied to determine how affect to the changes in its design.
- You should know the aspects of the products that cause greater environmental impact.
 - **Environmental aspect** "organization’s activities, products, and services affect the environment" (ISO 14001).
 - **Environmental impact:** "Any change in the environment, resulting in whole or in part of the activities, products and services of an organization".

Methods of Analysis

MET Matrix: Qualitative method of inputs and outputs in each stage of the product life cycle.

Eco-indicators: simple quantitative tool. More accurate than MET method. The prioritization is based on numerical calculations.

Life-cycle assessment software: There are many, the most prominent: Eco-it; EcoScan; Simapro, Idemat and GaBi Software.

7.4 Stage 3: Ideas for improvement

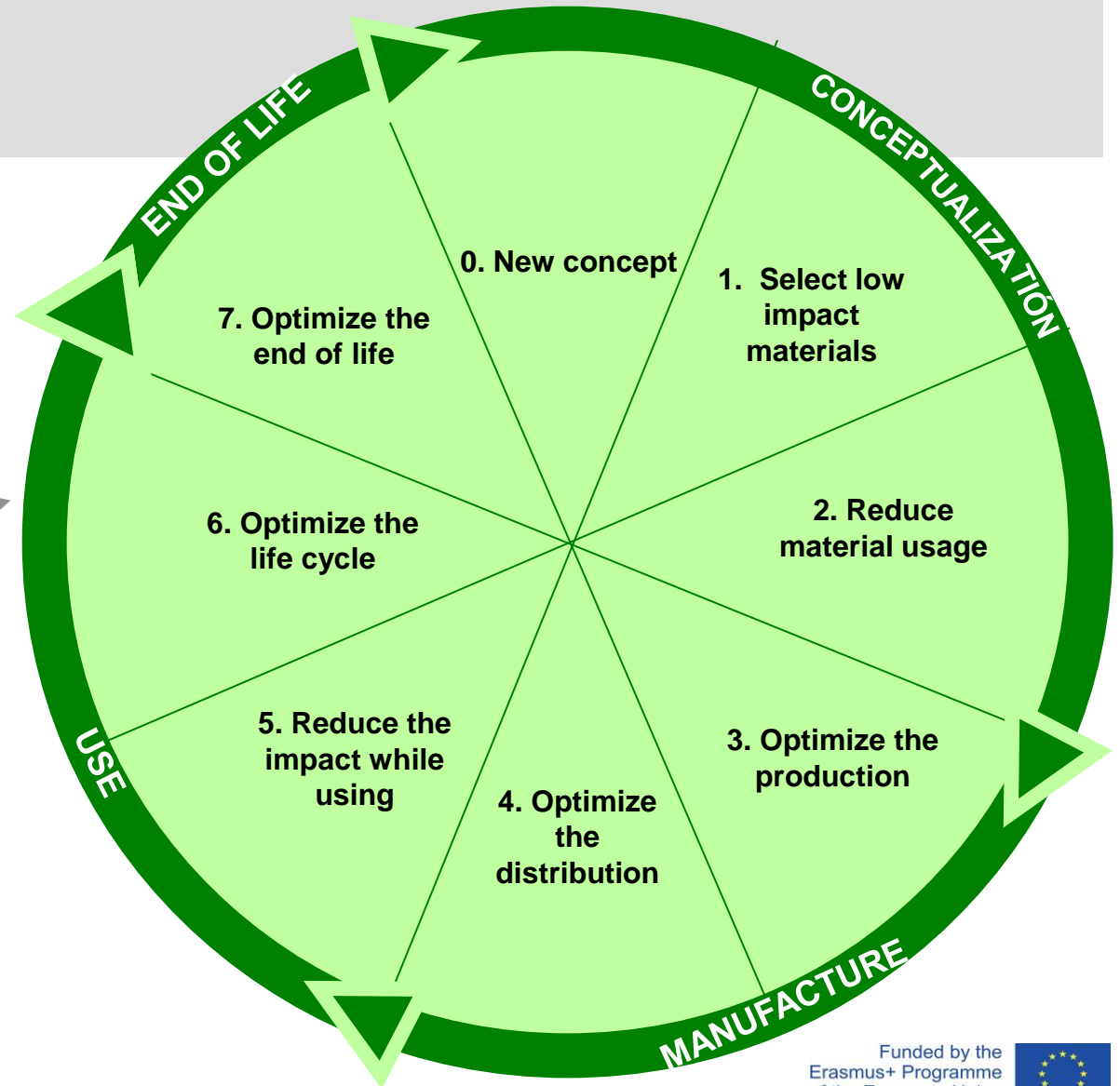
- Once you know the main environmental aspects, the improvements ideas should be created.
- Throughout the process will come different ideas, which should be prioritized (Management, Design and Development, Environmental Experts.)

→ Choose the best one, the best strategy:

8 Strategies. (UNIT 5 of the course).

- Brainstorming. Staff from different departments expose ideas about:
 - Technical feasibility.
 - Economic viability.
 - Expected benefits for the environment.
 - Positive response to the main motivating factors.

Wheel of 8 strategies



7.5 Stage 4: Development concepts

- Once the ideas of environmental improvement are generated and the most important ones selected, the development stage begins, which will lead to the new product.
 - The objective is to develop product concepts. This phase is to achieve a preliminary design by defining provisionally: composition, shape, materials, etc.
 - Several developments of conceptual solutions must be drawn in parallel in order to find the solution that fulfills the requirements of the specifications in a better way.
- The goal is to get solutions for the product that meet the solicitation documents.
 - It is established based on the results of the previous stages. It will have take into account all the specifications of the product: environmental, technical, ergonomic, commercial and economic.

Development of conditions to get and possible alternatives
Cooperation of Management, Design, Development and other departments as Quality,
Purchase, Marketing, etc.

7.6 Stage 5: Product in detail

- This stage aims the detailed definition of the selected concept for a final design.
- The process will be iterative, evolving from a definition stage to the level of detail.
- The result is a final design of almost ready for its manufacturing product.
- Initially, the characteristics of the selected concept in stage four will be defined in depth.
- The main decisions about shape and manufacturing will be taken. Then, the factors are determined: environmental, functionality, reliability, possibility of manufacture and costs. Layout diagrams will be obtained.
- Subsequently it takes place defining the number of parts: shape, dimensions, tolerances, properties, materials, etc.

In this stage the product is defined in detail with characteristics as selected concept, shape and manufacture, functionality, costs, plans, etc.

Cooperation of Management, Design, Development and other departments as Quality, Purchase, Marketing, etc.

7.7 Stage 6: Action Plan

In this stage is developed: The “**Product Action Plan**” and the “**Business Action Plan**”.

Product Action Plan

- After generating the environmental improvement measures in the previous stages, it will establish a plan of action
- In this Plan is included:
 - All the improvement measures selected and not yet implemented,
 - Its term of implementation
 - Actions to be carried out
 - Personal responsible
 - Etc.

Business Action Plan

After using the methodology and Ecodesign tools within the product development department, it will decide which of them is interesting for the company and how can be integrated into the process of designing new products:

- **Integration with ISO 9001:** ISO 9001 standard offers the opportunity to hold the product-oriented environmental management in several processes involved with design and subsequent management for manufacturing or distribution.
- **Integration with ISO 14001:** ISO 14001 assumes that companies know the environmental impact of their products. That is, the system extends to the control and improvement of the environmental impact of the whole life cycle, not only taking into account the production processes, but everything else.

Participation of Management, Design, Development and other departments as Human Resources, Marketing, etc.

7.8 Stage 7: Evaluation

- Evaluate the project to know in what way it has been fulfilled and improved.
- The results of the evaluation will be very important to train, inform and motivate the rest of the staff, and to include green marketing in the marketing campaigns or strategies of the company, exercising a position of differentiation and leadership.
- To evaluate the project there are some recommended criteria to follow:
 - Assess the improvement of the main environmental aspects comparing the new product with the product at the beginning of the stages.
 - Check compliance with the requirements of the solicitation documents.
 - Analyze how the improvements affect to fulfillment of the motivating factors.
 - Combine environmental improvements and compliance motivating factors, correctly informing the relevant target audience.

Participation of Management, Design, Development and other departments as Human Resources, Marketing, etc.

Thank you

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