

ECODESIGN AND NEW PRODUCT DEVELOPMENT

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ABSTRACT

In the past, product have been designed and developed without considering its adverse impacts on the environment. Typical factors considered in product design included function, quality, cost, ergonomics and safety. However, no consideration was given specifically to the environmental aspects of a products throughout its entire life cycle. Product design and development relating to improved environmental performance has many expressions including design for environment, ecological design, environmental design, green design and life cycle design. The concept of ecodesign has been quickly and easily accepted by industry and many waste minimization and cleaner production programs have been introduced over the last decade.

Keywords: environment, ecodesign, product

1. INTRODUCTION

The old known truth can be confirmed that the greatest influence to the product quality but also to its price and ecological effects has his creator – a designer. Considering the effect of a product on environment during its life cycle in the phase of project has got a great potential to enable environmental improvement by profitable method. For the process planning, with the focus on environmental aspects is known a term “ecodesign”. As a preventive approach created on optimalization purposes of environmental performance of products and at the same time keeping their functional features, ecodesign provides producers, customers and the companies with brand-new resources. It is important to take action in the phase of product planning, because it is evident, that pollution is determined during time of product life-cycle just in this phase, and at the same time herein develop the majority of related costs. [2]

2. ECODESIGN TOOLS

Ecodesign tools are a user-friendly eco-product development tool designed to be used by engineers as an integral part of the product launch activities. It follows both the ISO14062 and ISO 9001 processes for product development programs. The training segments of the tools are designed to train the user in eco-product development in easy stages, using the ACORN eco-management model. This allows the launch teams to learn to the depth that is appropriate for them. The tools analyses are modular so the companies can use just the parts relevant to them. [1]

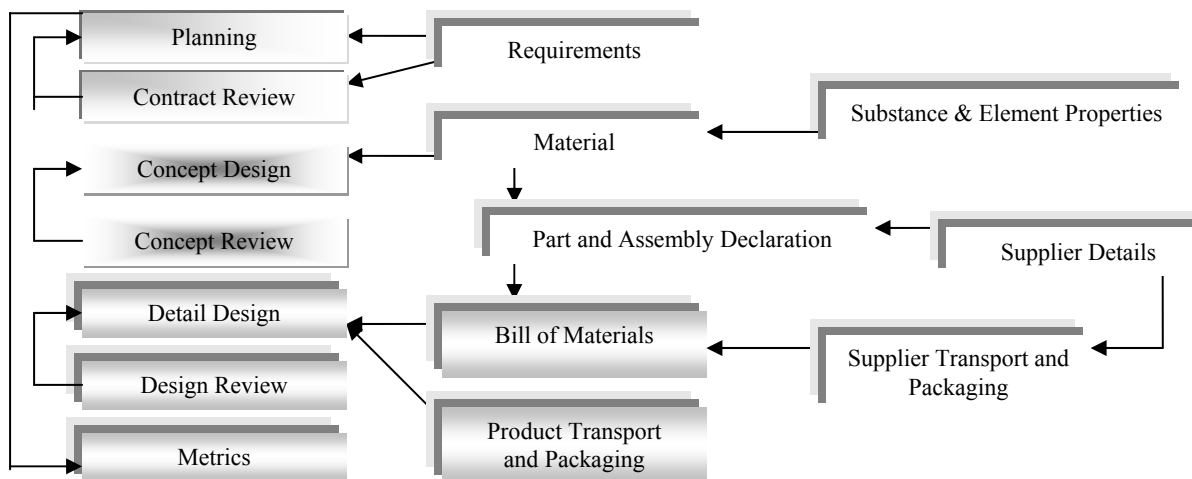


Figure 1.1 Ecodesign tools [5]

Planning: At the planning stage for a proposed new product the first stage is to know what environmental requirements from legislation, internal, customers etc need to be taken into account during the product launch. Once that has been established then decision has to be made on what extra eco-features should be offered for this product in order to drive continuous improvement?

Contract Review: Once it has been decided what eco-features should be included in the product design, a review should be held preferably with an environmental expert present. Team needs the address whether the product targets set are realistic, and are compatible with other requirements for the product.

Concept Design: At this stage of the product launch different design solutions should be investigated, in order to find the best compromise between ecodesign, costs, quality and other factors. It is often possible to reduce costs whilst improving environmental product performance.

Concept Review: The various concepts should review to decide on the best option. An environmental expert should be present if that is feasible. The team needs to ensure the chosen design will meet the committed ecodesign targets.

Detail Design: At this stage of the product launch the supply chain often becomes a major factor in the eco-performance. It impacts the material content, transportation and packaging. It can also sometimes effects recyclables and other ecodesign performance metrics.

Design Review: Once the final design has been completed, design review(s) should be held to determine whether all the programme objects have been met. Corrective actions should be put in place to address any issue.

Metrics: Most companies require metrics, so that they can have visibility on how the company is performing and for reporting externally to customers etc.

Requirements: This database holds environmental requirements of the users, companies and legislation for the different industry sectors. User companies can decide either to make their requirement visible to others, or hide them. The requirements are split to individual statements so each requires a single action to satisfy it.

Material Properties: This database holds not only environmental data, but also general data on composition, mechanical, thermal and electrical properties, application, abbreviations, specifications and trade names. It will therefore be a useful source of information for both engineers and materials scientists.

Part and Assembly Declaration: This database holds the materials composition data for components; materials such as adhesives, solders etc; sub assemblies; and products. Each part are entered under the manufactures part number. It follows the emerging materials declaration industry format standards now being developed. Parts are accessible as read only to those users the part manufacturer has agreed can have visibility. It is hope that most off the shelf parts will be given full visibility to all users.

Bill of Materials: This database holds the list of parts on a user's product. It can either be entered using supplier part numbers, or the company's own part number system. The latter is recommended if

parts are multi-sourced. When the Bill of Materials is entered, any parts not in the database are flagged. Data is only visible for read and/or write to those specified by the manager of the product.

Product Transport and Packaging: This database holds transportation and packaging data by part number for the user's product. It includes modes of transport, kilometers per part, packaging materials and their weight/volume ratio per part, plus reusable packaging with their associated transportation requirements. Data is only visible for read and/or write to those specified by the manager of the product.

Substance & Element Properties: this database holds not only environmental data, but also general data on composition, physical properties, applications; abbreviations and specifications. It will therefore be a useful source of information for material scientists.

Supplier Details: This database holds the contact details for suppliers that have parts listed in this tool. The data includes address, contact name, email, telephone number, web address, region covered and types of product manufactured. This data is available as read only to all users.

Supplier Transport and Packaging: This database holds transportation and packaging data by part number of supplier. It includes modes of transport, kilometers per part, packaging materials and their weight/volume ratio per part, plus reusable packaging with their associated transportation requirements. Data is only visible for read and/or write to those specified by the manager of the product.[1]

3. PRINCIPLES OF ECODSIGN

The new product development process has various stages as summarized below. The ecodesign team core led by the ecodesign champion, will overview and drive the project at all stages. Other functional participants may be involved at each stage depending on the company and product. Until now, the emphasis in business has been on minimizing the effects of own manufacturing processes or operations; the pressures for ecodesign require additional „life cycle“ thinking. The main life cycle stages are described in figure 2.1. [4]

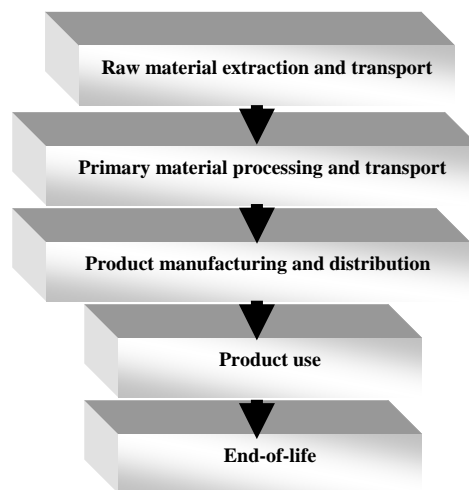


Figure 2.1 The main life cycle stages

Ecodesign is likely to be most effective if considered and carried out, not as a separate exercise, or as technical activity alone, but as part of an environmental management approach integrated with other business processes and covering the company as a whole. The starting point should be an environmental review, which should identify and evaluate ecodesign and supply chain issues alongside other aspects of environmental performance, and the scope for improvement. [1]

4. CONCLUSION

Adaptation of existing products may provide relatively little scope for the application of ecodesign. New product development offers opportunities for innovation, environmental improvement and contribution to business success. It is recognized that while both environmental product legislation and the environmental requirements of many multi-national companies on their suppliers is increasing dramatically, many companies just do not have the required in-house skills and experience to meet those requirements. Even many large companies suffer from their ecodesign skills existing only at corporate level, with Businesses launching products often not incorporating ecodesign into their products. Companies not willing to change to meet these new market requirements will soon find themselves in the position of losing a substantial share of the market.

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