

ECODESIGN OF A RICE COOKER WITH THE TWELVE STEP PROCEDURE

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Abstract: This paper describes a systematic procedure of implementing ecodesign and presents a case study with a rice cooker to demonstrate its application. The ecodesign procedure consists of twelve distinctive steps in implementing ecodesign and was proposed by Wimmer et al for integrating the significant environmental aspects of a product and the stakeholder requirements into product design and development. The twelve step ecodesign procedure considered environmental aspects and stakeholder requirements in the early stages of the product development process (planning and concept development). The application of the twelve step procedure to a rice cooker resulted in target specifications of the rice cooker which are deemed practical. This indicates that the twelve step procedure can be a practical method for the improvement of the environmental performance of a product by integrating the procedure into the conventional product and design process.

1. INTRODUCTION

The improvement of the environmental performance of a product during its entire life cycle is envisaged as one of the most important strategic goals or environmental strategies in many company policies. Increasing awareness of the environmental impacts as well as international regulations (and/or standards) e.g. global warming, the EUs' product related environmental directives, and IEC standard on ecodesign (under development) are forcing companies not only consider the environmental stakeholder requirements but also significant environmental aspects of their products.

Concerns over the environmental issues should be addressed at the earliest possible stage of a product development, when the degree of freedom for design is high. Approximately 80% of a product's design is fixed during the initial development stages, considerably limiting any subsequent modifications that can be made [1]. As product designers have great influence over every aspect of a design during the flexible early stages of the product design and development, they have an ample opportunity to ensure that ecodesign concerns are addressed.

Ecodesign is a process of integrating environmental aspects into product design and development. Ecodesign has a great potential to improve the environmental performance of a product while increasing stakeholders' benefit. Improving the environmental performance of a product is not only a necessity but also a key to the success of a company.

2. OBJECTIVES

The objectives of this paper are two folds. Firstly, describing a systematic procedure of implementing ecodesign and secondly presenting a case study to demonstrate the applicability of the systematic procedure.

The presented ecodesign procedure was proposed by Wimmer et al [2] and consists of twelve steps for integrating the significant environmental aspects of a product in its entire life cycle and the environmental issues resulting from the stakeholder requirements into the product design and development.

3. METHODOLOGY

A product development process is a sequence of steps or activities which an enterprise adopts to conceive, design, and commercialize a product. Many of these steps and activities are intellectual and organizational rather than physical. Some organizations define and follow a precise and detailed development process, while others may not even be able to describe their process. Ulrich and Eppinger [3] defined six stages of the generic development process as shown in Table 1.

In order to consider the environmental aspects of a product, it is necessary to identify significant environmental aspects of a product and integrate them into the existing product development process. In ISO/TR 14062, introduction of environmental