

INNOVATION AND ECODESIGN IN THE CERAMIC SECTOR. ECODESIGN MANUAL FOR CERAMIC PRODUCTS

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1. INTRODUCTION

Over 80% of the environmental impacts associated with the product depend on design, which therefore makes **Ecodesign** a very promising approach for sustainable production and consumption, currently emerging as a key instrument in various EU and international policies, such as the Sustainable Development Strategy, the United Nations Programme for sustainable consumption and production, the EU's Integrated Product Policy and the revised Lisbon Strategy.

Despite the development of these initiatives aimed primarily at encouraging the implementation of Ecodesign within the fabric of European industry, this is a concept that has been found to be well established among environmental specialists in Europe. There is a lack of technical expertise, however, for systematically integrating environmental considerations into product design, and more specifically so in the case of ceramic products since, according to a study conducted in Portugal in 2002 under the coordination of the Portuguese Association of Ceramic Industry (APIC), companies lack the design and innovation skills they need in their commercial policies. In addition, Ecodesign is a concept that is adopted in the ceramic industry without any real knowledge or practical tools for developing it.

The idea of developing the project for *Innovation and Ecodesign in the ceramic industry (InEDIC)* arose as a response to this lack, with the aim being to develop innovative and high quality **theoretical and practical documentation** based on information technology and knowledge (ITK) in the area of Ecodesign for the ceramic industry.

This material consists of a manual and databases of eco-efficient materials and technologies specifically designed for the ceramic sector, aimed at designers, trainers and other professionals, in order to implement strategies and sustainable practices and disseminate this knowledge by integrating it into the academic curriculum of training courses in ceramic design.

In Europe the ceramic industry is an important traditional industry heavily dominated by small and medium-sized companies which manufacture high quality products but are exposed to major competitive challenges, and the InEDIC project aims to provide these companies with a tool that allows them to develop or design new products that are competitive enough for them to survive in the market, taking the environment variable into account from the beginning of their design.

With participation of three countries with a great ceramic tradition (Spain, Greece and Portugal), InEDIC is therefore being developed for all the reasons discussed and with the clear goal of promoting the competitiveness of the ceramic industry in Europe.

2. INEDIC. METHODOLOGY AND RESULTS

To ensure the appropriateness, high quality, relevance and suitability of the training material available to the ceramic sector, an analysis of the current situation in the participating countries was carried out, aimed at identifying the needs experienced by companies and training centres. The tasks performed included surveys and interviews with various interested parties (companies, business associations, training centres, etc.), plus bibliographical reviews of Ecodesign material and its application in ceramics. Among other things, the conclusions obtained show that the onset of the so-called "**ecodesign culture**" establishes the importance of this concept as a determining factor in improving the competitiveness of ceramic products in general.

This analysis of the situation defined much of the content required in the manual, which contains:

- An 8-step approach, backed up by 13 theoretical chapters, 14 tools and 2 databases of eco-efficient materials and technologies.
- Inspiring examples - more than 40 ecodesign strategies applicable to ceramic products, practical cases and techniques for encouraging creativity.
- Examples of various types of analysis and assessment designed to ensure the proper selection and performance of the strategies and viability of the company.
- Mechanisms for communicating eco-designed products, such as eco-friendly labels, sustainable building certificates, etc.

This material has been tested by firms associated with the project from all levels of the ceramic industry and its value chain, who have trained using the manual and have gone on to put 10 Ecodesign projects into practice. The manual and all the supporting documents produced will be published for free on the project website in the project's official languages: English, Portuguese, Greek, and Spanish.

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REFERENCES

- [1] BREZET, J.C.; VAN HEMEL, C. Ecodesign: a Promising Approach to Sustainable Production and Consumption. Universidad Técnica de Delft/UNEP, 1997.
- [2] ISO 14006:2011 Environmental management systems. Guidelines for incorporating ecodesign.
- [3] SPANGENBERG, J.H.; FUAD-LUKE, A.; BLINCOE, K. Design for Sustainability (DfS): the interface of sustainable production and consumption. *J. Clean. Prod.*, 18 , 1485 – 1493. 2010.