

EcoDesign

Awareness Raising Campaign
for Electrical & Electronics SMEs



Raising EcoDesign Awareness

- for Small and Medium Sized Enterprises
of the Electrical and Electronic Sector



"Ecodesign is essentially just 'good' design. And good design is simply good business", Frank O'Connor, DesignWales at the Cardiff workshop, May 11, 2005



INTRODUCTION – THE WORKSHOP CAMPAIGN

On behalf of the European Commission, DG Enterprise, Fraunhofer IZM, PlanMiljø and partners have carried out a project "Promoting Eco-design Activities in the Small and Medium Sized Enterprises (SMEs) of the Electrical/Electronics Sector". The partners have been universities, chambers of commerce, industry associations, consultants etc.

The aims of the project have been:

- **to increase awareness of SMEs about EU policy orientations and best practices in eco-design;**
- **to identify appropriate and targeted types of assistance for helping SMEs in implementing eco-design, in reaping financial and other business benefits from this process and in complying with current and forthcoming related EU legislation.**

Through 28 awareness raising workshops in 21 countries in Europe the project has informed electrical and electronics SMEs about EcoDesign. Approx. 1.200 participants have attended the workshops.

The development of European legislation on electronics and the environment as well as the resulting pressure that large enterprises put on their supply chains requires the awareness of SMEs about the possibilities and the benefits they earn by ecodesign.

The workshops have been a success with vivid discussions and interesting presentations. Industry associations and larger enterprises have played an important role in contributing to the announcements and presentations at the workshops. In some countries the workshops have been the first events on ecodesign for the electrical and electronics sector ever, for example in Turkey and Bulgaria.

Presentations given at the different SME workshops comprise the following topic clusters:

- **Basics in Eco-design; concepts, strategies and tools**
- **Innovative technology concepts**
- **Life Cycle Assessment concepts and implementation**
- **Status on EuP, RoHS, WEEE and IPP.**
- **Green Public Procurement**
- **SME and large companies eco-design case studies**
- **SME leadfree transition case studies**





The project has compiled a number of EcoDesign case studies with relevance for electrical and electronics SMEs, some of which can be found in this brochure. The brochure also provides an introduction to teaching material intended for self study, and links to relevant sources for more information on EcoDesign.

The EcoDesign webpage presents documentation from the workshops, the teaching material, EcoDesign contacts, case studies, projects, and EcoDesign tools.

www.EcoDesignARC.info

EuP is a directive that stands for EcoDesign of Energy-using Products. The Directive provides coherent EU rules for EcoDesign and ensures a free intra-EU trade within this area. The Directive defines conditions and criteria for establishing legal requirements on environmentally relevant product characteristics (such as energy consumption) and allows these criteria to be improved quickly and efficiently. The Directive aims at improving the environmental performance of products throughout their life-cycle by systematic integration of environmental aspects at the earliest stage of their design. Consequently, EuP will be a major driver for eco-design in the near future. Read more at www.ecodesignarc.info

IPP stands for Integrated Product Policy, the European Commission's long term environmental strategy for development of more sustainable products. The core issue in IPP is to stimulate life cycle oriented product development Read more at www.ecodesignarc.info



Claus Berner, Planmiljø – as part of the European Commission financed project "Promoting Eco-design Activities in the SMEs of the Electrical/Electronics Sector". Veksø, October 2005.





CASES

26 eco-design case studies from SMEs have been collected throughout the campaign, showing very different approaches towards eco-design. The cases can be found in the Teaching Material at www.ecodesignarc.info, a number of examples are included in this brochure.

In the collected cases each company followed a very individual approach, being also one major lesson of the campaign: There is not a one-fits-all approach. Ecodesign is much more about creativity. The approach taken by the companies ranges from very specific technological starting points ("upgradeable chassis with modular interface port design") to a very strong market driven approach (benchmarking with competitors and customers' need analysis) and in-depth Life Cycle Assessment of a product. In general, in many cases a very pragmatic approach has been followed, rarely a "multidimensional" life cycle thinking has been the basis (unless there was a funded project, that clearly put a stress on tool / methodology development and application). A cornerstone for most of the business cases is legal compliance – well in advance of the legal deadlines. Pro-active approaches to legislation resulted in many cases in a much broader eco-design project.

Connaught Electronics Ltd. - remote keyless entry systems

Connaught Electronics Ltd. (CEL) is an indigenous Irish electronics company. CEL specialises in remote keyless entry systems and general body electronic control units. Customers include BMW, Rover, Volvo and General Motors.

CEL manufactures the electronic component in cars that receives and manages the remote vehicle security keyless entry (RKE) signal from the key fob transmitter. The UHF receiver unit, fixed within the car, consists of a printed circuit board packed with a number of electronic sub components.

In order to improve the environmental performance of these RKE units, CEL has in relation to the Environmentally Superior Products Project developed a substitute to the unit's principal sub component (previously a Japanese import). The environmental benefits achieved include a 40% reduction in materials content (particularly hazardous materials) and a 60% reduction in energy demand. Furthermore, the new unit is easier and cheaper to produce and a key outcome has been the competitive advantage achieved by the cost savings. Increased skills and knowledge of the company's designers has enabled them to include environmental considerations into current and future designs.





MAIN CONCLUSIONS OF THE CAMPAIGN

Since the late 1990s the application of EcoDesign among SMEs has increased, but there is no breakthrough yet towards a large number of successful implementations.

The SME business cases are much less known than the activities of the large OEMs, which are actively promoted. The OEM cases are of limited transferability for SMEs due to limited expertise and resources. However, this campaign figures out several outstanding SME case studies. Presentations within the workshops and the case study promotion via the website (www.ecodesignarc.info) and the teaching material help to close this gap of missing visibility of SME cases.

Those SMEs undertaking eco-design activities often follow a pragmatic approach rather than a systematic one. Thus, they focus on one or several aspects, found to be important “by accident” – driven mostly by technical requirements – instead of applying a thorough hot spot analysis or an eco-design tool. Consequently, these eco-design activities result in e.g. increased energy-efficiency or use of renewable materials or use of solar cells etc. Sometimes this is supported by a general green product philosophy pushed by the management, guaranteeing a sustainable implementation of eco-design, but rarely with a consistent methodology.

On an organisational level, three key requirements have to be fulfilled to implement eco-design:

- 1) A clear commitment by the management for a pro-active environmental product strategy**
- 2) The knowledge, how to do eco-design on an engineering level (support through easy to use tools or checklist, or clear environmental specifications)**
- 3) Involvement of all relevant parties within an enterprise**

In general, eco-design in SMEs is mostly a regional issue. Some research, consultancy and academic institutions cooperate international, and recently there have been two EU international projects on this issue with SME focus, ecoSMEs and learn-ecodesign, but this awareness raising campaign is the first all Europe project on this topic for SMEs. Clearly, a continuation of co-operation on this level is needed to make use of synergy effects and spread information and success stories Europe wide.





FOLLOW-UPS ON ECODESIGN EUROPEAN SMEs

For a sustainable implementation of eco-design in European SMEs well targeted measures are needed. From the observations during the campaign and the discussions with SMEs and stakeholders the below recommendations for follow-up activities are listed. The activities are split-up into further awareness rising and education and into direct assistance for eco-design implementation:

(1) Further awareness raising and education

- **Eco-design topics as integrated or side-activity at technological conferences and at trade fairs**
- **Qualified publications in technical magazines, journals**
- **Integrating eco-design aspects in university curricula (mid-term strategy), combined with educational services for professionals**
- **Multi-lingual translation of the teaching material, up-date of the campaign's website**

(2) Eco-design implementation in SMEs

- **Mentoring programmes for tool application and strategy development**
- **Regional working groups / round tables on specific issues**
- **Information services: Legislation orientations, funding resources, matchmaking with experts**
- **Research: Guideline for eco-design - the designer's perspective**

The key success factor for such initiatives is a Europe wide effective coordination, a central information pooling and a network of experienced Local partners.

Eco-mouse – an EcoDesign role model

The Austrian Centre of Excellence for Electronic Scrap Recycling & Sustainable Product Design has developed an EcoDesign computer mouse – Eco-mouse.

The Eco-mouse demonstrate the benefits of a comprehensive, ecologically based approach with: Improved management of the power consumption; use of components with low levels of hazardous substances; a casing made of renewable materials; lead-free soldering; and recycling-oriented product design.

The objective of the design process was to create a role model for EcoDesign of electrical and electronic products and to show the innovative benefits of EcoDesign.

For more information:

www.kerp.at/index.php/_komaus/507/0/





Systematic optimisation of a cooker hood

Applying the tool TESPI the cooker hood Artica of the Italian company ELICA S.p.A. has been optimised (re-design) within the project EcoSMEs.

The main task was: "How can the competitiveness of the cooker hood be improved?" The investigation has been undertaken by an internal team from marketing, purchasing, quality, environment, design and production. Benchmarking with a competitor's product resulted in identification of improvement options.



The starting point is an analysis of the needs of the customer. The team identified the following needs regarding the cooker hood: look, noiselessness, aspiration flow, easy cleaning, illumination capacity, user friendliness, reliability, safety. Ranking of these needs is followed by correlating function and parts. In a second step, environmental aspects are assessed. Linking these environmental aspects with the quality criteria lead to measures for improvement.

*(Reference: R. Buonamici,
EcoDesignARC workshop Rome,
July 27, 2005).*

Konftel AB - Environmental considerations – a natural part of the design process

Since 1988, Konftel AB is a leading company within loudspeaker communication and audio technology. The company develops and sells products and technology for telephone meetings based on cutting-edge expertise within acoustics and digital signal processing. Unique for their products is that all conference telephones contain the same audio technology – OmniSound™. Konftel strives to focus on human needs and to develop products based on such needs.

The main motivation for starting the environmental thinking was that Konftel's customers, the distributors, had received requirements from procurement departments at e.g. telecom companies. The situation motivated Konftel to participate in the EcoDesign-project initiated by Svensk Industridesign (eng. Swedish Industrial Design) promoting EcoDesign for sustainable development.

Konftel has gone from no environmentally concisions design to it being a natural part of the whole design process. It has made their products more cost efficient than before.





Jaga – A sustainable product is a better product

The Belgian company Jaga manufactures heat exchangers and radiators. The company has 400 employees and the company philosophy is: "100% satisfaction for specific target customers". Image building is very important to Jaga.

Jaga focuses on high quality products. At Jaga "high quality" also covers environmental aspects. In 2001 Jaga initiated an ecodesign project. The primary objective was to obtain knowledge on the environmental profile of their products. Benchmarking with competition was a key issue. The question raised at Jaga was: "How good are we in our sector?".

The project was undertaken in cooperation with the Belgian VITO, using the software Ecoscan based on eco-indicator 99. Jaga performed for one of their heat exchangers a calculation of the environmental performance according to the LCA methodology.



Ken van de Velde, Jaga:

" When you go through this process you learn to know your product very well... and you start thinking, why do we do things the way we do it?" Product and process complexity turned out to be a real challenge. It should be noticed, that the assessment methodology gives insights and assessments, but no solutions – that was still the task for the engineers. The analysis indicated that the use phase had the biggest environmental impacts of the overall life cycle. Meaning: optimisation of the energy-efficiency with 1% may justify an increase of raw material by 100%.

Van de Velde: "Environmental and economical considerations are quite compatible, especially in product development. A sustainable product is often a better product and offers more added value to the end-user."

Waste problem turned in to better road side hazard light!

Being a manufacturer of gas meters, Transco Plc would have to dispose of an estimated 800,000 batteries per year from the meters. The company linked this waste problem to the need for better road side hazard light, and an EcoDesign process was initiated. The result was a new and improved lamp, and a potential reduction in hazardous battery waste by 150 tonnes a year.





Romanian University develops SME EcoDesign model

The group of Titus Filipas at the University of Craiova develops devices, such as lock-in amplifiers, sweep generators, and different educational electronic kits. The potential environmental impact of all the products has been evaluated aiming at achieving a type III environmental label. The label should give a clear advantage in procurement procedures of public high schools in Romania, constituting a major group of customers for the educational electronics kits.

Reused parts are now incorporated in new products, e.g. integrated circuits for amplifiers, just as linear components (diodes, transistors etc.) are disassembled manually and reintegrated in new products. Selection of components that can be re-used requires proficient expertise.

By implementing the ISO standards for Life Cycle Analysis, EcoDesign, and Environmental Management, a well structured approach is undertaken. In parallel, this business case serves also as a methodological input to educational activities at the University.

(Reference: T. Filipas, D. Murtaza, EcoDesignARC workshop, Bucharest, Sept. 16, 2005).





TEACHING MATERIAL

One of the outcomes of the EcoDesign Awareness Raising Campaign for Electrical and Electronic SMEs is a teaching material, providing an introduction to all relevant aspects of EcoDesign: Integration of EcoDesign in the design process; The economic aspects of EcoDesign; The legal framework; and Development of an EcoDesign strategy. The teaching material is intended for SMEs in the electrical and electronic business, but may also be useful to larger companies.

The material consists of ten lectures based on self studies. Each lecture is expected to require between 15 and 45 minutes of reading and the complete teaching material is expected to require approximately one day's study. The lectures are:

- Introduction to EcoDesign - what is it all about?
- The economics of EcoDesign
- Integrated Product Policy – The Concept
- From RoHS and WEEE to EuP
- Consumer Orientation
- Innovation through EcoDesign
- Key issues in EcoDesign
- Developing an EcoDesign Strategy
- Linking Environmental Aspects with the Design Process
- Tools and Methodologies

EcoDesign
Awareness Raising Campaign
for Electrical & Electronics SMEs

8: DEVELOPING AN ECODSIGN STRATEGY

The very first step in EcoDesign only needs a perceptive and inquiring mind. If you think about the basics of your product and have a rough, basic understanding of environmental problems related to electronics, you will be able to give an approximate guess about your product's most environmentally significant aspects on which you should focus your eco-design strategy.

Key questions to ask are:

- What is the main purpose or application of your product?
- What are the most likely usage patterns?
- What is the intended lifetime, the usual lifetime?
- Who is the user? Business-to-business or business-to-consumer?
- What is the product size?

Such questions can be answered if you have a draft product idea in mind, but what do the answers tell you? Some examples:

- Has the product a lifetime of several years, is it switched on for several hours or even 24 hours a day? If so, energy consumption and efficiency during the use phase will surely be a major issue. Higher energy efficiency will easily

Your first eco-design strategy might look like this:

1. Check current status: What does the market request, what does the customer ask for, what have you done already?
2. Get to know current environmental issues: Where might your product have environmentally relevant aspects? Stay in touch with EcoDesign experts.
3. Set and develop your targets.
4. Involve relevant departments and the supply chain, check benchmarking opportunities.
5. Choose appropriate tools, checklists, guidelines; link ecological with cost arguments.
6. Analyse your product, you will easily find improvement potential; do not forget: eco-design is about better products!
7. Communicate improvements - show how "smart" you are!

An exemplary OEM strategy: Samsung Electronics
Samsung Electronics has developed an EcoDesign strategy. The strategy has resulted in improved resource efficiency and logistics cost savings due to new innovative design of monitors. The strategy Samsung follows is:

- 1: Define environmental criteria for your products
- E.g. Resource efficiency; harmful emissions & materials; energy
- 2: Select items with significant impact + maximum potential for improvement during the product life cycle
- E.g. Standby energy consumption
- 3: Improve items, identifying 'win win' benefits if possible
- E.g. Dual hinge = packaging, transport, ergonomics,
- 4: Communicate with customers, for example using Environmental labels
- e.g. Energy Star, TCO

66
Developed by **PlanMiljo** and **Healthcare Technology and Innovation**





The teaching material is directed towards the following target groups in SMEs:

- **Decision makers – who can achieve an overview of the subjects related to EcoDesign and the development in production of electronic products;**
- **Researchers, development engineers and product designers can achieve insight in the relevant topics and challenges for integration of EcoDesign in product development and design;**
- **Technicians can achieve an understanding of the legal premises and the need for communication and exchange of data among stakeholders and suppliers that is precondition for acting being pro-actively with EcoDesign.**

All subjects are dealt with in three components, specifically adapted to the needs of SMEs:

- A short basic text that explains the subject (in some cases supplemented with slides)
- cases and illustrations, and
- a frame with links and references to official sites, original documents, articles, reports etc. for deeper self studies.

It will often be relevant to present the EcoDesign topics for colleagues and other interested parties. The EcoDesign approach is to a high extend based on networking, information sharing and co-operation between different competences. Therefore, a number of slides are provided in a general context for presentation and suitable for initiating cooperation. Notes to the slide presentations can be drawn from the teaching material.

The project-website and the teaching material also contain checklists to be used by small and medium-sized enterprises. Completing the checklists will help companies to evaluate their products in terms of reuse, recycling, disassembly etc. Hereby, the checklists provide an opportunity to get hand-on experience with EcoDesign.

The teaching material is complemented by an EcoDesign test to check the basic understanding of terms and principles in environmentally benign product design.

The teaching material is available from the EcoDesign Awareness Raising Campaign Website:

www.EcoDesignARC.info



EcoDesign
 Awareness Raising Campaign
 for Electrical & Electronics SMEs



THE PROJECT NETWORK OF LOCAL WORKSHOP HOSTS AND ECODESIGN EXPERTS



www.abelia.no



www.ccir.ro



www.cfi.lu.lv



www.legambiente.com



www.agoria.be



www.sloveniapartner.com



www.ist.utl.pt



Teknikföretagen

www.teknikforetagen.se



www.bzlogi.hu



www.enseirb.fr



ENTERPRISE
IRELAND

www.enterprise-ireland.com



www.ixl.fr

PlanMiljø

www.planmiljoe.dk



www.bcci.bg



www.sbbe.gr



<http://cecyliia.itr.org.pl>



www.mam.gov.tr



www.feec.vutbr.cz



Fraunhofer

Institut
Zuverlässigkeit und
Mikrointegration
www.izm.fraunhofer.de

TU Delft

www.io.tudelft.nl



www.brass.cf.ac.uk



www.simple.com

KATHOLIEKE UNIVERSITEIT
LEUVEN

www.kuleuven.ac.be

