The EPIC-ICT Project:

Development of Environmental Performance Indicators for ICT Products on the example of Personal Computer

Short Executive Summary February 2006

Provided by the EPIC-ICT Consortium

www.epic-ict.org

Contact coordinators:
Anna Braune, Niels Warburg
IKP, University of Stuttgart
Hauptstr. 113
70771 Leinfelden-Echterdingen, Germany
Phone: +49 711 48 99 99 – 23 / - 28
e-mail: anna.braune@ikp2.uni-stuttgart.de / niels.warburg@ikp2.uni-stuttgart.de

EPIC-ICT: Development of Environmental Performance Indicators for ICT Products on the example of Personal Computer

Within the scope of the EuP Directive on energy using products, eco-design in product development plays a major role. Improving the environmental profile of a product is efficiently supported by applying product or product-group specific Environmental Performance Indicators.

Objectives

Goal of the EPIC-ICT project, initiated and partly funded by the European Commission, is to develop a method and the framework to define Environmental Performance Indicators for ICT products (Information and Communication Technologies) on the example of personal computer (PC). These indicators are based on a scientifically sound and detailed assessment of environmental impacts over the whole life cycle of the product. They relate to measurable technical aspects of the product's life cycle and are expressed in physical units. This allows using the indicators directly for eco-design purposes within industry: The indicators translate environmental goals into specific engineering objectives.

Funding and duration

The project is funded by the European Commission under the Sixth Framework programme. Its duration is 18 months, the project start was in November 2004.

Partners

In order to combine scientific soundness, practical applicability and public acceptance, the consortium consists of partners from industry, consultancy and research: IKP (University of Stuttgart, coordination), Motorola, Philips, Dell, Ambiente Italia and PE Europe.

Status and main achievements of the project

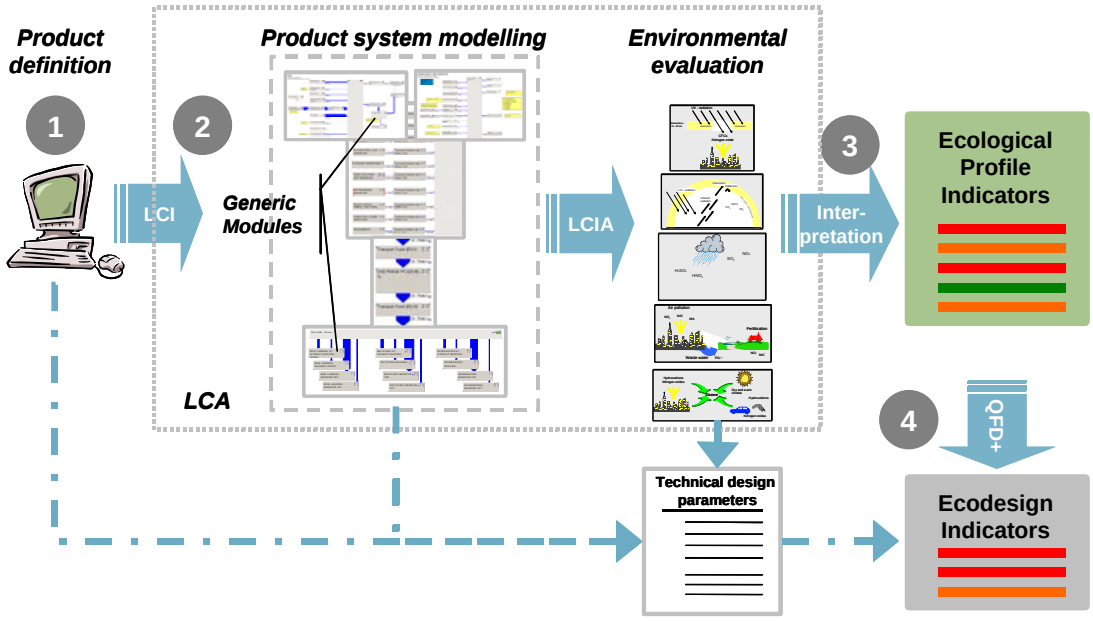
The consortium jointly developed a methodological framework for defining Environmental Performance Indicators. Industry needs, scientific base and consultant's expertise are respected accordingly. The method consists of the following main steps: Product definition, Life Cycle Assessment Study (LCA), environmental interpretation and eco-design parameters indication. To ensure both, applicability and a sound and reliable basis, the framework comprises requirements on the implementation of the method for the different possible users.

Current status of the project is the application of the method on the example of personal computers. Therefore, all main steps have been carried out. The product was defined, for which the indicators were to be identified, then, a detailed LCA study on a personal computer has been conducted. The interpretation of the study's results allowed to identify the first Environmental Performance Indicators for PCs based on the EPIC-ICT method (e.g. m^2 FR4 substrate of motherboard).

These indicators are now evaluated and discussed with product designers and other decision makers. Additionally, the derived indicators for PCs are examined regarding their stability and validity for broader applications. The method will further be tested on other ICT products to ensure appropriate application for the sector's products.

In order to adequately integrate stakeholders views, the cooperation between the industry, research and consultancy partners is very close. For external involvement, two public workshops were held in the run of the project.

EPIC-ICT - Short methodology description



Step 1: Product definition phase

- Clearly defines the product under consideration by taking the customer demands and respective required functions into account
- Defines the product from the product designer's perspective and in the designer's "language"
- Results in product definition: Main assemblies of product to fulfill required functions / customer demands

Step 2: Life Cycle Assessment study

- Only one comprehensive full LCA study per product (group) is carried out, which needs to be updated regularly, e.g. every 3 years, depending on product (group) and product development cycles, has to include sensitivity analyses (ensures representativity of study = validity of indicators)
- Main assemblies are broken down into sub-assemblies and components
- Sub-assemblies are modeled with "Generic Modules": Parameterized, flexible, reliable and consistent partial LCA models, which already include design options
- Enables flexible and adaptable environmental evaluation based on Life Cycle Impact Assessment categories (e.g. Global Warming Potential) and certain Life Cycle Inventory results (e.g. flows of heavy metals)
- Results in "Ecological product profile": Detailed full scale LCA result, which is needed for an adequate definition of environmental performance indicators of complex products

Step 3: Environmental interpretation

- Identifies stepwise environmentally relevant sub-assemblies and components of the product using contribution analyses
- Results in "Ecological profile indicators": Reliable, measurable, influenceable and scientific sound physical product specific environmental performance indicators

Step 4: Eco-design parameters indication

- Combines information from product design (technical specifications and improvement design parameters) and environmental evaluation results from step 3 with adapted QFD approach
- Results in "Eco-design indicators": Directly usable performance indicators for eco-design of products