

## Design for Environment

# Integrating Environmental Aspects into Product Design and Development The New ISO TR 14062 – Part 1: Executive Summary

**Ferdinand Quella**

Dr. Ferdinand Quella, Siemens AG, Corporate Product Related Environmental Protection, Munich, Germany  
([Ferdinand.Quella@siemens.com](mailto:Ferdinand.Quella@siemens.com))

DOI: <http://dx.doi.org/10.1065/ehs2003.02.005>

DOI: <http://dx.doi.org/10.1065/ehs2003.03.006>

DOI: <http://dx.doi.org/10.1065/ehs2003.03.007>

**Preamble (by Wulf-Peter Schmidt).** An excellent start of the Gate to EHS section on Design for Environment (DfE) is a very knowledgeable insight in the new ISO TR 14062 written by Ferdinand Quella who has been directly involved in the whole, successful process of developing this ISO Technical Report.

It is our hope that this fundamental article initiates a series of several further papers that demonstrate how this new ISO Technical Report is applied in existing product development processes. We feel the need and necessity to follow-up this ISO Technical Report with real-world experiences. This Gate to EHS section on Design for Environment is your internet-platform for a constructive and open exchange of experiences in applying elements of the ISO Technical report. You all are invited to join this platform with your contributions.

**Abstract.** With the new ISO TR 14 062 a world wide accepted tool for the integration of environmental aspects into the product design and development process applicable for development engineers as well as for all interested stakeholders is available. The document covers strategies, organization, planning, tools and the design and development scheme always in addition to the already existing (management) systems.

**Keywords:** Environmental aspects; environmentally compatible products; ISO TR 14062; management; organisation; product design and development; product development scheme

### 1 Introduction

This new Technical Report is the first world wide for all kind of products accepted approach which describes how to design environmentally compatible products. With this document we achieved a breakthrough in common understanding. All societal groups like (Non-Governmental Organisations) NGOs, scientists, consultants, industrial and governmental organisations contributed and accepted this report.

### 2 The Philosophy behind: Objectives and methods to be applied

During many discussions, the following points of basic understanding have been developed:

- **Use well known product development schemes**

During all the discussions in the ISO working group it became soon evident that environmentally compatible product design is not the task for environmental specialists or a subject only applied to the design of some exotic products. In the contrary product design and development is a standard process existing since a long time in nearly every company. The only way to achieve an environmentally compatible product therefore was to recommend how and where to integrate all environmental necessities and aspects into this process. The recommendations of the Technical Report are applicable, if only a development scheme exists or the product development process is part of an management system like ISO 9001 or ISO 14001. If it will be applied to most new product developments in some years the effect must be that worldwide

environmental compatibility will be improved.

- **No subject only for specialists**

Between the two possibilities to address specialists or all persons involved in the process the latter was taken. There were so many different stakeholders interested that a reduction only to design engineers would have been a too small frame.

- **Include practical experience**

Industry was very active in this standardization process and many elements of existing company standards were chosen. Such a process cannot be transformed into practice without describing the way to company strategies, product (market) and design strategies, the role of the management and how the different tasks and functions are determined. The standard development process is described step by step adding all the necessary activities including tools and a product and design review. Good practice examples were also derived to explain the more general text.

- **Planning is decisive**

The design and development process seems to end with the market launch, but all following processes like 'take back' or 'recycling' must be integrated in the planning phases or are part of the strategic process.

- **Include benefits and cost aspects**

No company can afford to offer products which are environmentally better compatible but too expensive. Therefore, not everything has to be done, what seems to achieve a tiny bit more compatibility; compromises must be made. But because many environmental improvements are in addition cost saving, there is a big chance to improve the environmental properties without higher costs.

- **No certificates**

Nobody in the working group was willing to open a way to expensive product certificates. A Technical Report therefore seemed in the beginning and also at the end of the work to be the best chosen form for the document. Nevertheless the descriptions seem to be detailed enough to apply most of the information directly to existing processes in a company.

### 3 The Result

For a company already applying management systems the horizon has been widened by the document. Strategies and goals are essential requirements to handle such a complex situation. Product strategies including the whole system where the product is applied in can improve the competitive position of an organisation and open by means of looking at the whole life cycle the chance for more and higher improvements or can be the source for many innovations. The check of design strategies covers more alternatives than without environmental considerations.

Goods and services are both part of the Technical Report. More service applications are created instead of or in combination with hardware like take back activities.

Management plays an important role in the process. The management will create motivation and grant the resources which will like in other integration processes only have to be paid once at the beginning. If installed, the next development works in the same manner.

In the product development schemes some new tools can be applied like Life Cycle Assessment or eco labelling but also the well known quality tools like QFD or FMEA are applicable without changes but including now in addition the environmental aspects.

Besides customer satisfaction an evaluation of the environmental compatibility of the product is required which might simply be achieved by comparison with former products or competitive products.

**Time schedule.** The voting of the national bodies was very positive and occurred in March 2002. The final version was published in November 2002. A German translation has been published as a 'DIN Fachbericht' in January 2003-02-07

#### References

DIN ISO Fachbericht TR 14062 (Jan 2003): Beuth Vertrieb, Berlin, Germany  
ISO TR 14062 (Nov. 2002): Environmental management – Integrating environmental aspects into product design and development