

'Introduction to Eco-design' is part of a series from the G.EN.ESI Education Centre. The other titles in this series cover Life Cycle Thinking, Life Cycle Assessment, Eco-design and Business, Eco-design Strategies, Legislation and Regulation and Eco-design Case Studies. To read or download any of these titles please visit www.genesi-fp7.eu/education-centre.

Introduction

Eco-design, or environmental product development, has been found to reduce costs, increase profits and improve a company's reputation in the market place [1]. Despite these benefits examples of commercial eco-design can be difficult to find. Companies often struggle to know where to start and can find the apparent complexity of environmental issues daunting. In this guide we offer a definition of eco-design and a step-by-step process for managing the integration of eco-design within your business.

What is Eco-design?

Eco-design is defined as "the integration of environmental aspects into product design and development, with the aim of reducing adverse environmental impacts throughout a product's life cycle" [2].

However 'environmental aspects' and 'product design and development' can be seen as company specific concepts. Understanding eco-design in the context of your business requires you to uncover how your company's actions impact the environment and determine the best way of addressing these impacts within your design development process. To help achieve this, the G.EN.ESI team have developed a six step continuous improvement process. These steps are purposefully general and should be viewed as guidelines that should be adapted to your company's situation.

So How Do I Integrate Environmental Aspects within my Business?

The six step process developed by G.EN.ESI is shown in Figure 1. The process defined here is a simplification of the wider management methodology developed as part of the G.EN.ESI project. To see a full and detailed description of the G.EN.ESI Eco-design Methodology, please see the project website at www.genesi-fp7.eu/methodology.

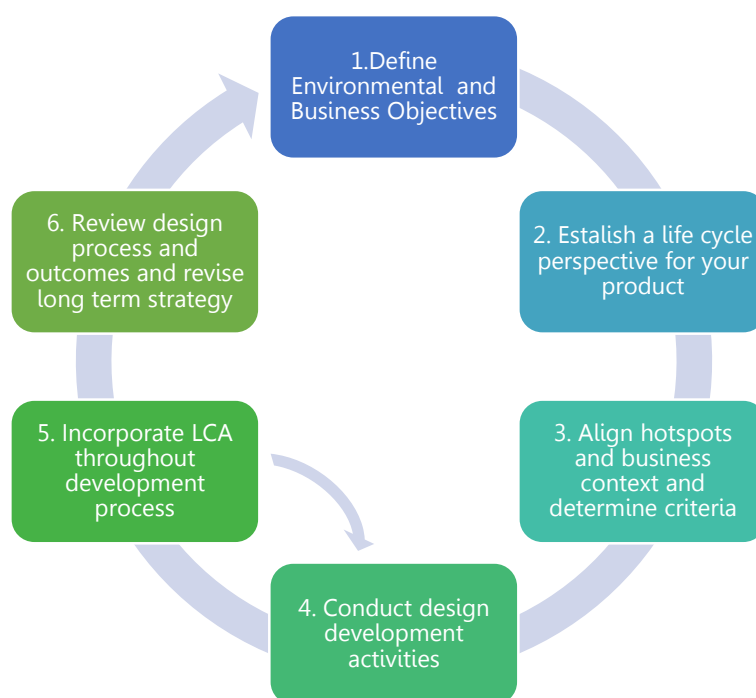


Figure 1: Step-by-step Process for Implementing Eco-design within your Business

1. Define your environmental drivers and business objectives

Eco-design is not just about the environment. Environmentally improved products need to make good business sense if they are to succeed. Make sure that you have a good understanding of the business case for environmentally improving your products, before you start; it is also the best way to secure internal and external support for your efforts. For help in understanding the business case for Eco-design please see Education Centre units 'Eco-Design and Business' and 'Legislation and Regulation'

2. Adopt a life cycle thinking approach to determine what your environmental impacts are

The most significant environmental impacts your products produce may come from unexpected places. Adopting a life cycle perspective (shown in Figure 2) and mapping the environmental impacts related to each lifecycle phase (also known as a life cycle assessment or LCA) will help you identify unexpected impacts. The relative contributions of each life cycle phase will also help you prioritise your efforts, and help you monitor the transfer of impacts from one life cycle phase to another.



Figure 2: The Environmental Product Lifecycle

There are many tools available to help you incorporate environmental life cycle thinking within your organisation. These range from in-depth quantitative life cycle assessment (LCA) software programmes which map all the environmental inputs and outputs of your product life cycle; through to quick and easy qualitative tools that support concept development activities. Remember that in the early stages, low detail assessments can provide the insights needed. You can always move on to more detailed assessment methods as your company's environmental knowledge matures. For more information on understanding your life cycle impacts please see Education Centre units, 'Life Cycle Thinking' and 'Life Cycle Assessment'.

3. Aligning environmental 'hotspots' with the wider business context and defining your design criteria

The environmental hotspots identified by life cycle activities, must then be aligned with the wider business context. Aligning environmental issues with the business context, will further prioritise your efforts and ensure that your design focus makes good business sense. Knowledge gathering exercises such as literature reviews, competitive benchmarking, and legislative surveys will help you understand the business issues related to your environmental hotspots. These can then be translated into the design criteria that will drive environmentally improved product development.

4. Conduct design development activities to meet design criteria

The practical activities involved in environmental design are much like any other design development process. In the early days your design activities are likely to involve high levels of research and development. Make sure that your project plan accounts for this and that your project goals reflect the resource available in your organisation. It doesn't matter if achievements are very limited at first, what is important is that you carefully manage and communicate knowledge development, allowing you to build your understanding over time. Developing and sharing a tailored environmental strategy and specific product guidelines, can be very useful during these early stage efforts. For more information on the eco-design strategies your company may want to consider please see Education Centre unit 'Eco-design Strategies'.

5. Integrate lifecycle checks throughout design development

Design efforts must be checked throughout the process to ensure environmental improvements are being made. These checks will require a lifecycle focus to ensure that reductions in one lifecycle phase do not generate disproportionate increases elsewhere. To ensure that these checks do not disrupt design efforts, it is important that the lifecycle assessment methodology is quick to do and easily understood.

The results of these lifecycle checks may also require you to conduct further research and development activities, in essence returning to stage four. Stages four and five may in fact be repeated multiple times before a design is completed.

6. Review design development process and achievements and review long term strategy

Once the design has been completed you will need to review the development process to understand the environmental achievement that occurred and the outcomes they produced. The review can then be used to identify the company's



current environmental position and adjust the long term strategic goals accordingly. Stage 6 will then naturally feed into Stage 1 for the next generational product development.

Conclusion

For companies new to eco-design it can seem like a daunting task, but for those who have successfully taken on the challenge the business rewards can be great. As shown in the methodology presented, a continuous improvement approach can help reduce the burden across development cycles. Continuous development will also enable learning and knowledge development at a pace that suits your business.

To help with the practical application of this methodology the G.EN.ESI project is developing a supporting software platform with a range of life cycle tools. For more information on this platform visit www.genesi-fp7.eu/software-platform.

Further Reading

There is a great deal of available information on eco-design and its implementation into industry. Rather than reproducing it, we would recommend that you follow the links here, for further information:

- The Secret Life of Things – www.thesecretlifeofthings.com
E-learning eco-design centre, full of downloadable resources that will help you understand how products impact the environment, and the practical implementation of eco-design. Resources include videos, downloadable presentations and design playing cards.
- Information/Inspiration – www.informationinspiration.org.uk
Online tool designed to support the environmental improvement of product in real time. This tool can be used throughout the design process to provide inspiration and information at relevant points.

Alternatively if you wish to speak to someone directly about implementing eco-design in your business please email info@genesi-fp7.eu.

References

1. Anderson, R., *The Business Logic of Sustainability*, in *TED Conference*, T.C. LLC, Editor 2009.
2. ISO, *ISO 14006:2011 Environmental Management Systems - Guidelines for incorporating ecodesign*, 2011, British Standards Institute.

