

Ms V.A. Lofthouse (Researcher) & Dr. T. A. Bhamra (Lecturer),
Eco Innovations Group, Cranfield University, SIMS, Building 53, Cranfield,
Bedfordshire, MK43 0AL Tel: +44 (0) 1234 754191 Fax: +44 (0) 1234 750852
v.a.lofthouse@cranfield.ac.uk

**Benchmarking to Understand Appropriate Communication of Ecodesign –
A Collaborative Project.**

Synopsis

This paper reports the initial results of a benchmarking study that was carried out as part of a collaborative research project between the Electrolux Industrial Design Centre and the Eco Innovations Group at Cranfield University. The study aimed to identify current best practice in the communication of environmental issues to stakeholders, and approaches being used by companies to encourage environmental thinking in their design teams. The main findings from the study are outlined in this paper and the importance of using appropriate methods for communicating the findings to the designers at Electrolux is recognised and discussed.

1 Introduction

It has recently been accepted that in order for ecodesign to be successful it needs to be integrated into the design process at the earliest possible stage in the product development process (PDP) during discussions with marketing and industrial design (Bhamra et al., 1999). These early stages are where the brief is most flexible and the most critical decisions are made with respect to; cost, appearance, materials selection, innovation, performance, environmental impact, and perceptions of quality (longevity, durability, reparability). As a result industrial design plays a key role in determining the nature of the product.

The most proactive companies are now beginning to recognise that industrial design skills are key to the realisation of successful eco-designed products (Philips Electronics N.V., 1997). In highly competitive markets “*innovation [in addition to price] is often the key to retaining some form of commercial edge*” it is now believed that “*...this edge can be expressed through environmental quality*” (EcoRedesign, 1998). Lofthouse and Bhamra (2000) argue that the technological approach to ecodesign taken by design engineers has constrained the potential of ecodesign. In contrast the wide

ranging proficiencies of industrial design (mechanical design to marketing, psychology and artistry) (Bates and Pedgley, 1998) have the potential to create a broader remit for ecodesign.

However, although industrial designers are creative team members who appear to have the potential for generating successful ecodesign, there is a lack of evidence to show that the industrial design profession is becoming involved in ecodesign (Dewberry, 1996; Lofthouse, Bhamra, and Evans, 1999). A number of reasons as to why this is the case have been identified, not least of which is the lack of tools that are available for the early stages of product development (Bhamra et al., 1999). In addition to this ecodesign tools developed for design engineers have often been given to industrial designers and had the effect of alienating them from ecodesign (Lofthouse and Bhamra, 2000).

This paper reports the initial findings from a three-year collaborative research project with the Electrolux Industrial Design Centre (EIDC), which aims to investigate how to actively involve industrial designers working in the consumer electrical and electronics, in ecodesign. The benchmarking study reported in this paper represents an incremental step towards these aims.

The benchmarking brief was instigated by EIDC to enable them to establish how their ecodesign initiatives compared with other environmentally proactive companies, and to provide ecodesign examples to act as a stimulus for their designers. The benchmarking study had two objectives:

- To identify interesting examples of ecodesign in order to build up a picture of ‘which’ companies were achieving ‘what’ and ‘how’.
- To communicate the findings in a way which was appropriate to EIDC.

2 Interpreting the results for Electrolux Industrial Design

In the past Electrolux designers have been disappointed with the results of research projects which have traditionally ended up as written reports. Potentially useful information has not been translated into a useful format for design and as a result the findings are not taken any further. An important element of this collaborative practice has been to recognise that the findings need to be presented in a format which is appropriate to designers.

Observations at Electrolux have shown that designers respond well to highly visual presentations where information is communicated clearly and simply. PowerPoint is the standard format for presentations given by EIDC. This usually involves a series of images and sound-bites of information to communicate even the most complex ideas. This approach has resulted in response to the limited time available for them to communicate complex ideas and scenarios relating to consumer groups and product concepts to top management.

The main challenge was to identify what the designers wanted to know to ensure that the type of information collected was relevant to their needs. Discussions with designers identified that they wanted visual stimulus material in the form of product case study examples, to show what can be achieved through ecodesign. They also wanted to know how these products came about, and what tools and information designers were given to be able to achieve ecodesign. They also wanted to know whether they should aim to design products that look like 'eco' products or not.

The findings from the project were presented as a series of three PowerPoint presentations (see figure 1). They were highly visual, containing many images as well as vast amounts of detailed information condensed into sound-bites of information. The presentations were well received by the designers, and proved to be a useful resource for the 'Feed the Seed' presentation, which is regularly sent around the design department by the Environmental Design Manager, to stimulate environmental thinking. In addition to this the presentations have since been well received in other companies where they have been used to raise awareness of ecodesign and how it can be successfully communicated to stakeholders.



Figure 1 Example of the presentation style used for EIDC

3 Research Methodology

Two key areas of interest for Electrolux were identified: ‘how companies communicate environmental issues within the company and to stakeholders’, and ‘how companies educate industrial designers to take part in ecodesign and what can be achieved when they do’. The relevance of the first focal area for this study lies in the fact that industrial design acts as a pivotal link between the consumer (stakeholder) and the product.

The Environmental Design Manager at Electrolux already had a good understanding of the work being carried out by their direct competitors so in order to add to this knowledge base the scope of the benchmarking study looked beyond the white goods sector. As ecodesign is still a new field within industrial practice the project scope also looked beyond the electrical and electronics sector, to broaden the potential for finding interesting examples. Examples were drawn from 20 companies from a range of different sectors including; product, furniture, cosmetics, clothing, food and non-governmental organisations.

Two selection criteria were established to ensure that the information collected was relevant; all the companies had a consumer focus, and operated within sectors where industrial designers are employed. These criteria still kept the scope suitably broad as the boundaries between types of design practice are becoming increasingly blurred with “...graphic designers designing exhibitions, architects designing furniture, fashion designers designing perfume bottles, and industrial designers designing web sites” (Association of Women Industrial designers, 1999).

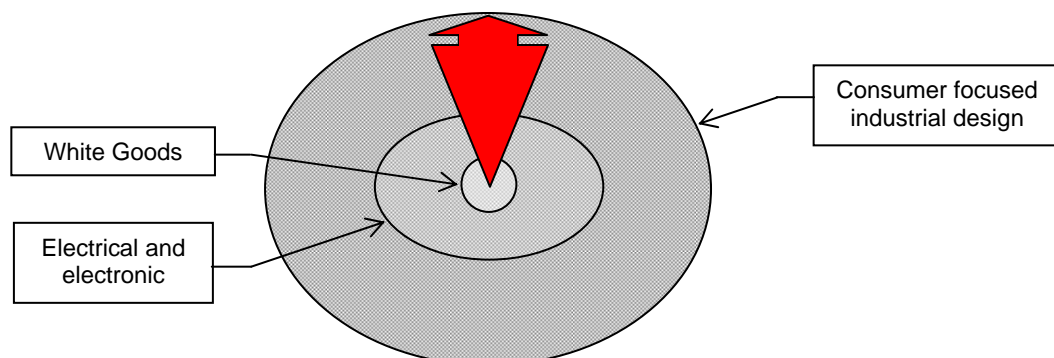


Figure 2 Focus for Benchmarking Project

The benchmarking project was tackled in two halves, 'Communication to Stakeholders' was considered first. This aimed to identify which companies were involved in communicating environmental initiatives, then went on to consider what information was distributed and how this was carried out. This information formed the basis of the second part of the project, which focused on 'Ecodesign and the designer'. Using the findings from the companies already identified, a number of different 'education programmes' which had been developed to support the need for environmental thinking in designers and other employees, were identified. These 'programmes' were looked at in more detail to try and identify the main elements of each process.

Information for the benchmarking project was collected from a variety of different sources; company literature, journals, books, conference presentations and advertisements. Once companies of interest had been identified, more detail was sought from company web sites and then through semi-structured interviews with the respective employees.

4 Communication to Stakeholders

During the study, it became clear that it was important to not only identify 'how' the different companies communicated environmental issues but to also identify 'what' issues they chose to communicate to their stakeholders. This is because the nature of the communication seemed to vary depending on the company's ethos. Two distinguishable types of company were identified which are referred to as 'green leaders' (Ottman, 1997b) and 'proactive companies' for the purposes of this paper. It should be understood that these are not discrete groups and there may be companies which sit in the grey area in-between.

4.1 'How' companies communicate

The companies looked at in the study used a combination of different approaches, including environmental reports, the Internet, advertising and figureheads, to communicate environmental issues to their stakeholders, though different companies favoured different combinations.

Environmental reports are a basic requirement for companies committed to environmental stewardship. Traditionally they were very technical documents which held little appeal to the reader but helped companies to justify their environmental commitment. They are now becoming more

visually stimulating, using simple graphs and diagrams to communicate complicated information and messages (Interface, 1997; Xerox Corporation, 1999). Companies have recognised that there is little reason in producing something that stakeholders will not look at, if its *raison d'être* is to be a communication tool.

Using the web to promote environmental initiatives (along with many other business issues, in most cases) is an obvious continuation for companies who produce environmental reports and hardly surprising at a time when the Internet revolution is in full swing. Company web pages are used to dematerialise environmental reports and simplify the content to make them easier to read (Xerox Corporation, 2000). As ever the most effective web sites are those which are dynamic, visual and clear (Body Shop, 1999; Patagonia, 1999; Philips Electronics, 1999). Philips Electronics (1999) and The Body Shop (1999) have used web-based surveys as a way of interacting with customers. This type of initiative promotes communication as a two-way act, enabling companies to develop a more detailed understanding of the views and opinions of their customers, whilst allowing consumers to make a personal connection with the company.

Advertising campaigns can be effective in raising the profile of companies and organisations but are generally approached with caution and often only undertaken by companies who are confident in their environmental profile. The Body Shop advertise their 'Once is not enough' recycling scheme on posters in their shop windows and use the sides of their lorries to promote any campaigns which they are supporting. However, for those who communicate environmental issues to stakeholders, there is always the possibility that someone will try and expose you as a fraud. In 1994 Jon Entine an American journalist, set out to *"reveal what sort of company The Body Shop really was."* Kearins and Kljñ (1999) also highlight that *"no major company can ever be benign, so the Body Shop will always be prone to this sort of criticism."* The Body Shop probably survived this onslaught because they had one of the best environmental reputations in the world.

Wilkhahn take a different slant on the advertising idea and use expert advisors with an ecological understanding to sell the environmental message and the product to the customer at the point of sale (Kramer and Ferstera, 1995). Atag (2000) take another approach, by sending people who buy their

products on a course to show them how to use the product correctly, to ensure that energy consumption during the use phase is kept to a minimum.

However, not all consumers want green products, they may even be sceptical of them believing them to be of poor quality. A National Consumer Council survey of UK Green Consumer attitudes and behaviour, described in an internal report for Electrolux (Sherwin, 1999), identifies five different consumer groups; Affluent Greens (19%), Recyclers (19%), Young Greens (17%), Careful Spenders (19%) and Sceptics (26%) with only the first group considered to be actively interested in buying green. This indicates that it is not always appropriate to sell products on their environmental credentials, which explains why Herman Miller sell their eco-designed chair as '*The most comfortable chair in the world*', rather on its environmental merit.

A number of companies nominate a person as a figurehead to promote environmental commitment. Interface use Ray Anderson's 'road to Damascus' vision to promote their environmental commitment (Anderson, 1995) and the success of Body Shop has been attributed to the fascination that the public has with Anita Roddick (Kearins and Klȳn, 1999). This approach is being popularised by a number of companies, such as Sony, Philips, Electrolux and Xerox who either work with respected academics or representatives from their environmental affairs department to promote the work which they are doing, through academic conferences and papers (Branzi et al., 1998; Brezet, 1997).

The greenest companies use their company names or their brand as their figurehead. Through a combination of trust, action and communication companies such as Ben and Jerry's have managed to build up a brand with which consumers automatically associate a certain level of social and environmental behaviour. Wilkhahn are also confident that consumers associate their brand with environmental expertise and as a result do not mention environmental issues in their advertising, but save the comprehensive ecological descriptions for their brochures.

4.2 '*What*' companies communicate

There was quite a difference between the types of issues conveyed by 'green leaders' and 'proactive companies'. The main findings will be discussed here.

'Green leaders' tend to convey a more holistic or sustainable approach to their stakeholders by actively considering social, ethical and environmental issues as part of their everyday business. Body Shop use advertising, shop front displays and their on-line magazine to identify and discuss important issues such as human rights, animal welfare and campaigns against beauty stereotypes, as well as to inform stakeholders about Community Trade (Fair Trade) and market their products (Body Shop, 1999). Kearins and Klj̃n (1999) comment that "*Body Shop has always been successful because Anita Roddick has communicated values with which people can identify*".

The mission of Ben and Jerry's (1999) is to "*make the world a better place by empowering [their]... employees to use available resources to support and encourage organisations that are working towards eliminating the underlying causes of environmental and social problems*". Amongst a number of other initiatives 7.5% of the company's pre-tax earnings are given away to charities. Patagonia (1999) use the web as a notice board for publicising beliefs, for advertising their Environmental Grants Programme, for highlighting charitable donations and eco awards, as well as for selling products. At Tom's of Maine "employees can donate 5 per cent of their paid work time to participation in community service activities" (Ottman, 1997b).

'Green leaders' tend to have a more radical way of communicating their thinking within the company and to Stakeholders. In 1993, Patagonia limited their product line to 280 styles to encourage customers to only buy products that they really needed (Patagonia, 1999). They pride themselves on manufacturing "*high quality, durable products [which] don't have to be replaced often, and when outgrown can be passed along for further use*" (Patagonia, 1999).

'Proactive companies' tend to be large multinationals with a history of environmental stewardship. They recognise the importance of considering the environment and have oriented their business so as to reduce its environmental impact. Philips Electronics N.V. (1997) recognise that "*the ability to incorporate soft values and society's environmental concerns in company policy is, along with the financial parameters, an important distinguishing feature by which share holders can judge the health and growth potential of a company.*"

'Proactive companies' tend to focus on the environmental message rather than social issues, and treat it as one of a number of important business issues to be considered by the company, whereas for

‘green leaders’ it has a much more predominant focus. Although ‘proactive companies’ use the web and environmental reports to promote eco awards and charitable donations, they also communicate how they are reducing environmental problems. For example Philips Electronics (1999) try to promote their environmental statistics in terms that stakeholders will understand. They explain how in 1998, 47 Philips products were selected as ‘Green Flagships’, using five criteria; weight, hazardous substances, recycling and disposal, energy consumption and packaging. They provide images of the products as well as environmental statistics to demonstrate the benefits of the products.

All the companies involved in the benchmarking project pride themselves in providing quality as standard, over and above any environmental considerations. In 1998 Patagonia launched the Q=E International Design competition to promote the idea that quality equals environment (Patagonia, 1999). The leaders within the field are certainly making a concerted effort to remove the stigma which became attached to environmentally friendly products, as a result of the poor quality products which were produced in the 1980s when the idea of ‘green’ products for ‘green consumers’ first took off. Examples where improved environmental performance can be linked to improved quality are especially beneficial to companies. Sony achieved just that when they experimented with materials in the casing of their speakers and found that using recycled Tetrapak actually enhanced the sound quality achievable from the speaker (Gunther, 1997).

5 Ecodesign and industrial designer

The second part of the benchmarking study focused on developing an understanding of the ways in which companies are encouraging their design teams to think about the environment. Three areas which particularly interested Electrolux were; the use of flagship products, approaches to ecodesign and ‘eco’ aesthetics. The main findings will be briefly discussed in this section.

5.1 Flagship products

Flagship products are often the first ecodesign product created by the company, and can serve as a benchmark for subsequent design work. Developing flagship products can have a number of additional benefits and are developed for a number of different reasons. They can provide an opportunity for the whole company to learn about ecodesign whilst minimising the risk to the

company and they can act as stimuli to motivate designers or provide an opportunity to educate designers and involve them in ecodesign (Sherwin and Bhamra, 1999). They can also be used to demonstrate to stakeholders that the company is environmentally motivated. Alternatively flagship products can be developed as a solution to financial problems. 'Rohner Textil' developed the Climatex Lifestyle fabric in response to impending environmental restrictions which would have had a disastrous impact on their business. The new product opened up new business opportunities by offering superior quality to competitors products and meeting the textile Eco-Label standard, "Eco-Tex 2000" (Hockerts, 1999).

5.2 Ecodesign programmes

The benchmarking study identified a wide variety of techniques being used by companies to try and encourage ecodesign thinking. A number of these will be outlined in this section.

Interface UK have used the Biothinker consultancy to try and ensure that the environmental message filters through the company. Biothinker takes an ecological approach to business and encourages employees to think in terms of 4 environmental principles during the design process: cyclic, solar, safe and efficient. The approach involves a combination of weekly emails and practice-based workshops (Datschefski, 1999).

The Philips EcoDesign program aims to motivate and educate designers to help them generate new products, or ideas for adapting existing products and encourage them to stimulate "*...product development on the basis of design for disassembly, design for recycling and the economic use of materials*" (Philips Electronics N.V., 1997). They use consultancy support and workshops to help them identify areas for improvement then employ a number of initiatives to support the design and development work, including; 'Green Pages' (containing environmental design tools and materials information), the Eco-Indicator (an LCA tool) and cross divisional brain-storming sessions on subjects such as "human-powered" products (Philips Electronics N.V., 1997).

In the US, Xerox employed the external consultancy Terma to implement the Natural Systems training programme which was to spearhead their environmental programme - The Lakes programme (Xerox Corporation, 1997). This involved "*hundreds of managers, engineers, technicians [being] taken*

off site, into the woods, for a week of ecology training" as a result *"new processes were developed to support 'product take-back' and complete end-of-life recycling"* (deLong and others, 199?).

Wilkhahn aim to *"...to create products which are neither a whim, an affection nor a thoughtless fad, but products whose shape and function have a long term appeal and which are a contribution to our contemporary culture"* (Kramer and Ferstera, 1995). They have a product development checklist for all their products and aim to design for appropriateness, believing that "Less is More". Their philosophy is to provide employees with information so that they can make informed decisions. They do this through; an "eco tip" of the month, an 'eco' telephone line, the staff magazine, an ecology section in the company library, and by giving all *"trainee industrial clerks... a minimum training of one month in ecological management as part of vocational training"* (Kramer and Ferstera, 1995).

The 'Promising Approach' methodology developed for Small and Medium-sized Enterprises in The Netherlands provides a good example of a well-developed approach to ecodesign. An outline of the programme can be seen in Figure 3. Throughout the programme companies such as; Smart, Wilkhahn, B & O and Pritt Stick (Brezet and Hemel, 1997) produced good examples of innovative products with improved environmental performance.

Step 1 Organising the Project	Get management's commitment Set up project team Draw up plans and prepare budget
Step 2 Selecting a product	Draw up the selection criteria Making the selection Define the design brief
Step 3 Establishing the ecodesign strategy	Analyses the environmental product profile Analyse internal and external drivers Generate improvement options Study feasibility of the improvement options Define the ecodesign strategy
Step 4 Generating and selecting ideas	Generate product ideas Organise a workshop on ecodesign Select promising ideas
Step 5 Detailing the concept	Operationalize the ecodesign strategies Study feasibility of the concepts Select the most promising concept
Step 6 Communicating and launching the product	Promote the new design in-house Develop promotion plan Prepare for production
Step 7 Establishing follow-up activities	Evaluate the product results Evaluate the project results Develop an ecodesign programme

Figure 3 The process used in the Promise manual (adapted from Brezet and Hemel, 1997)

5.3 Aesthetics

EIDC were also interested in investigating the issue of aesthetics in ecodesign, because this is an area which they have a great deal of influence. The study indicated that in much the same way as 'regular' industrial design there is not one strict aesthetic for ecodesign. Some companies, such as Body Shop and Baygen produce products with a clear 'eco' appeal as they have found that this is what their customers want. Herman Miller, Wilkhahn and Xerox on the other hand, promote their products on other merits such as quality and value, with environmental criteria being an added extra. In much the same way that some people want recycled paper to look like recycled paper and others want it to look like virgin paper, aesthetics have to be appropriate to the customer.

6 Conclusions

In conclusion it can be seen that the most successful companies use a combination of the communication methods and initiatives discussed in this paper. Communication is always honest, often cautious and usually ensures that consumers understand that the company recognise that they have a long way to go. After all *"there is no 100% guarantee that what is decided today will not cause any future problems"* (Philips Electronics N.V., 1997).

The companies reported on in this paper have clearly established a strong link between quality and the environment, as they all have a good reputation for producing quality products over and above environmental concerns. 'Eco' is always promoted as a positive thing and never threatens the customers desire to be upwardly mobile (Ottman, 1997a). This is clearly evident when looking at the web sites of the most environmentally conscious companies who *"use highly illustrative visuals to strengthen the upbeat emotional appeal of environmental"* issues (Ottman, 1997a).

The main difference between the ways that 'green leaders' and 'proactive companies' communicate to stakeholders lies with the types of issues that they discuss. Where as 'green leaders' openly push the sustainability message focusing on social, moral and environmental issues, 'proactive companies' focus more on selling quality and experience.

In the most successful companies 'eco' is not restricted to one particular brand but is promoted as a company wide association which has to be built up through long-term trust. Ultimately the message

that comes across the loudest is that ‘people may doubt what you say, but they can’t help but believe what you do’.

The most proactive companies recognise that *"it is hard, if not impossible to accomplish anything without training and motivation"* (Philips Electronics N.V., 1997) so are experimenting with methods of developing ecodesign thinking and understanding within the company. By developing flagship products designers are able to learn through hands-on experience and companies are given the chance to see exactly what can be achieved through ecodesign with minimal risk.

As with regular industrial design practice it is critical to have a detailed understanding of the intended market for the product. Having ecodesign as a driver for design has been seen to radically improve the performance and efficiency of products as well the overall environmental performance. However, whether the product should be sold as an environmental product depends greatly on the consumer group which it is being aimed at, often it is more appropriate to sell the product on its other merits despite its environmentally superior nature.

Ecodesign should ultimately be an extension of good (innovative, creative) design rather than a subject in its own right. It does however require new ways of approaching problems to achieve higher levels of innovation and more effective product solutions, which have less environmental impact and higher quality. There appears to be a need for a combination of top management support for ecodesign with the initiatives being driven within design, as this is where the majority of product influence lies.

6 The Next Stages

The benchmarking project has provided a useful outline of the type of information companies are communicating to their stakeholders and looked at how they go about doing this. This will be developed by building up a picture of the differences between ‘green leaders’ and ‘proactive companies’ and further investigation to see what lessons ‘proactive companies’ might learn from ‘green leaders’.

This project has also identified a diverse range of approaches being used by companies to try and develop ecodesign thinking in design teams. The next stage of the project will involve developing a

more detailed understanding of these approaches to see whether elements may be appropriate to the needs of industrial designers. Elements that are identified will be adapted and used with industrial designers wanting to incorporate ecodesign with their design process.

Acknowledgements

A special thanks is extended to Phil Thompson of Electrolux for his support and enthusiasm during this project and over the last eighteen months.

Bibliographical References

- Anderson, Ray. *The Journey from There to Here - The Eco-Odyssey of a CEO*. Atlanta: The Peregrinzilla Press, 1995.
- Association of Women Industrial designers. <http://www.core77.com/AWID/faq.html>. New York: Darleen Lee, 1999.
- Atag Group N.V. www.ataggroup.com, 2000.
- Bates, D.J., and O.F. Pedgley. "An Industrial design team's approach to engineering design." A paper delivered at the IMC-15: Proceedings of the Fifteenth Conference of the Irish Manufacturing Committee, Jordanstown, 1998.
- Ben and Jerry's. www.benjerry.com/co.index.html. South Burlington: Ben and Jerry's, 1999.
- Bhamra, T., S. Evans, M. Simon, T. McAloone, S. Poole, and A. Sweatman. "Integrating Environmental Decisions into the Product Development Process: Part 1 The Early Stages." A paper delivered at the EcoDesign '99: First Symposium on Environmentally Conscious Design and Inverse Manufacturing, Tokyo, Japan, February 1-3, 1999.
- Body Shop. <http://www.the-body-shop.com/aboutus/body-profile.html>. 1999.
- Branzi, Andrea, Emilio Genovesi, Marco Susani, Mario Trimarchi, and Roberto Tagliabue. "The New Industrial Design." *Domus*, September 1998.
- Brezet, Han. "Dynamics in ecodesign practice." *UNEP Industry and Environment* (1997).
- Brezet, Han, and Carolien van Hemel. *Ecodesign: a promising approach to sustainable production and consumption*. Paris: Rathenau Institute, TU Delft, UNEP, 1997.
- Datschefski, Edwin. www.biothinker.com. London, 1999.
- deLong, Ed, John F. Elter, Timothy Sallade, Gail Burke, Patricia Calkins, Kimberly Crawford, and Sarah Davidson. *Turning Vision into Reality*. Xerox, 1997.
- Dewberry, E.L. "EcoDesign - Present Attitudes and Future Directions." Ph.D., Open University, 1996.
- EcoRedesign. <http://131.170.154.4/outcomes/erdnews/erd6/Kettle.html>, 1998.
- Gunther, Jurgan. "SONY: addressing different stages of the product's life cycle." *UNEP Industry and Environment* (1997).

Hockerts, Kai. "The SustainNovation Workshop." Fountainbleu, 1999.

Interface. *Sustainability report*. : Interface, 1997.

Kearins, and Klÿn. "The Body Shop International plc." In *Greener Marketing - A global perspective on greening marketing practice*, ed. M Charter and M. J. Polonsky: Greenleaf Publishing, 1999.

Kramer, Jurgen, and Markus Ferstera. *Wilkhahn Green - A company in the process of change*. Wilkhahn, 1995.

Lofthouse, V.A., and T Bhamra. "Ecodesign Integration - Part 1: Putting the Co into Ecodesign." A paper delivered at the CoDesign 2000, Derby, 2000.

Lofthouse, V.A. , T. Bhamra, and S. Evans. "Effective Ecodesign: Finding a Way Forward for Industry." A paper delivered at the 6th International Product Development Management Conference, Cambridge, July 5-6, 1999.

Ottman, Jacquelyn. "How to Communicate Green with Impact." In *Green Marketing - Opportunity for Innovation*. Illinois: NTC Business Books, 1997a.

Ottman, Jacquelyn. "Two Companies That do Everything Right." In *Green Marketing - Opportunity for Innovation*, pp195-208. Illinois: NTC Business Books, 1997b.

Patagonia. www.patagonia.com, 1999.

Philips Electronics. <http://www.homeandbody.philips.com>. company web site. 1999.

Philips Electronics N.V. *From necessity to opportunity - corporate environmental review*. Eindhoven: Philips Electronics N.V. (CEEEO), 1997.

Sherwin. *Shades of Green*. Cranfield: Cranfield University, 1999, Internal report.

Sherwin, Chris, and Tracy Bhamra. "Beyond Engineering: Ecodesign as a proactive approach to product innovation." A paper delivered at the Ecodesign '99: First International Symposium on Environmentally Conscious Design and Inverse Manufacturing, Tokyo, Japan, 1-3 February 1999.

Xerox Corporation. *Environment, Health and Safety 1997 Progress Report*. Xerox, 1997.

Xerox Corporation. *1999 Environment, Health and Safety Progress Report - Towards Sustainable Growth*. Xerox, 1999. Environmental Report.

Xerox Corporation. <http://www.rankxerox.com/> Xerox Corporation, 2000.

Figures

Figure 1 Example of the presentation style used for EIDC	3
Figure 2 Focus for Benchmarking Project	4
Figure 3 The process used in the Promise manual (adapted from Brezet and Hemel, 1997)	11

APPENDIX

Vicky Lofthouse BSc has a First Class honours undergraduate degree in Industrial Design and Technology, from Loughborough University. She practised as an industrial designer in a multidisciplinary design consultancy for 2 years before starting her PhD in ecodesign at Cranfield University. Vicky is currently half way through her PhD which is being sponsored by the Electrolux Industrial Design Centre. Her principle areas of research are; ecodesign and the industrial designer and creativity as a tool for encouraging ecodesign. Vicky has published a number of papers in a variety of conferences including 6th International Product Development Management Conference in 1999 and CoDesign 2000 scheduled for later this year. She is a founder member of the Eco Innovations Group at Cranfield University and a member of the Eco2-irn research forum for designers interested in ecodesign.