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INNOVATIVE ECO-DESIGN:

Making a way towards green brand strategy

WHITEPAPER

Connected World.
Connected Experiences.

Abstract

A few centuries back we assumed that we had tapped into infinite natural resources like gas, oil and even coal only to realize how wrong we were. Our constant use of planet's resources to convert into energy has given rise to carbon emissions and global warming. As a result, this has awakened the need for more sustainable practices, leading to the concept and practice of eco-design. Eco-design is a management approach that considers environmental impacts in product development and aims at improving the environmental performance of products throughout their lifecycle. This purpose of this paper is to understand the requirement for eco-design, review current practices and describe how innovative approaches and ways might significantly contribute to sustainability while also giving a competitive edge to companies.

Key Takeaways

Introduction | Business drivers for eco-design | How can we implement Eco-design | Environmental Assessment tools | The challenges | The Way Forward

Introduction

Eco-design is a method to design a product with special consideration for environmental impacts of the product during its complete lifecycle. The product lifecycle consists of procurement, manufacture, use, and disposal. It is important to take responsibility to understand the ecological footprint on the planet. There is a growing need to build new solutions that are environment friendly and limit the consumption of conventional resources. Eco-design should be integrated into the product lifecycle. Representatives from advance development like production, design, marketing, and project management should contribute since they have the best chance to understand the product and its effects on the environment..

Organizations are discovering that consumers nowadays want to spend their money they can feel good about. They want to be associated with an eco-friendly brand and these companies are the ones with the most marketplace power contributing to a healthier planet. Considering the potential environmental impact of a product as a part of design still is relatively new concept in the industry. This research aims to provide a simple introduction to eco-design, covers the important aspects such as steps to eco-design, its benefits, trends, and challenges faced towards implementing a sustainable strategy.

Business Drivers for Eco-design

Eco-design is a systematic process which contains substantial environmental factors of a product in addition to the stakeholder requirements into product design. It is extremely crucial to gain clarity on the business drivers for eco-design. Listed are some of the common drivers which can prove relevant to the company at some level.

Product marketing, brand value, and corporate social responsibility

If a company decides to show environmental performance of operations or products, it may help to increase sales, share prices and brand value if only it addresses areas of concern based on a solid scientific evidence. However, if it fails to meet any of the concerns, the companies can be accused of 'green washing' – making false claims/ using environmental marketing to surge brand value. [2]

Instead companies can choose eco labels to report on the environmental performance of the product, such as **"Carbon Trust's product carbon footprint label"** which does not set any minimum performance requirements but requires you to calculate and report the potential environmental impacts of the product and commits you to reduce footprint over the next two years.[2]

ISO 14006:2011 is established to provide guidelines for companies to maintain eco-design which is also the expectation of the stakeholders and customers for the companies to be socially responsible. Thus companies must align themselves with these goals or they have a risk of being scrutinized by discerning customers.

Cost and supply chain management

When eco design is taken into consideration during designing of the product it can reduce the manufacturing costs because of reduced materials and energy usage while also eliminating wastage. Companies like Walmart and P&G have extensive supply chain reporting where they analyze reports on environmental issues like water footprint, embodied energy and carbon emissions and measure supplier performance and identify environmental hotspots in the supply chain.

Stimulus for innovation

Companies can tap into opportunities for innovation when they consider the environmental impact of their products. For example, the Dyson's 'Airblade' hand dryer uses high efficiency electric pumps to cut water off the hands of the user instead of trying to evaporate it. They claim that it requires 77% less time and uses 80% less energy. So eco-design can help deliver both functional and environmental benefits.

How can we implement Eco design?

Eco-designing a product consists of making it appealing to customers while still evaluating its entire life cycle and applying environmental requirements at each stage. More than merely recycling materials is involved in extending the usable life of items. It refers to retaining a product as near to its original state as feasible throughout time, such as through extended usage, repair, upgrade, refurbishing, or remanufacturing. Consider these stages for a smooth incorporation of eco-design.

Methodology

Product Planning

Understand the user's needs to discover its motivations, challenges, and behavior. Similarly identifying network partners and clarifying the functions to collect components, parts, materials, and lifecycle stage information of the product. Once product is selected, project team is set up for its development.

System design and Innovation

Value and supply networks should be designed in a circular fashion. Define the issue by considering the entire system from a lifecycle perspective. In process design, plan to add new methods to utilize and reuse the product as early as the design phase. Close the loop by utilizing technological and societal advancements.

Eco design implementation

To initiate the eco-design task, few factors are to be considered. Include significant environmental parameters associated with strategies. Identify relevant implementation measures for improvement of the product and making it eco-friendly. Develop a product concept by selecting variants. The variants are evaluated against economic, technical, social and environmental criteria. The environmental quality function deployment should be performed and benchmarked with competitor's product.

Environmental business Model

Following the completion of the eco-design tasks, a more environmentally friendly product is created, which is then launched to the market in the hopes of growing market share and improving the product's and company's image. Build on the relationship between products and services - product as a service – to develop new circular business model breakthroughs. It's important to remember to look for economic business models and to understand society behavior.

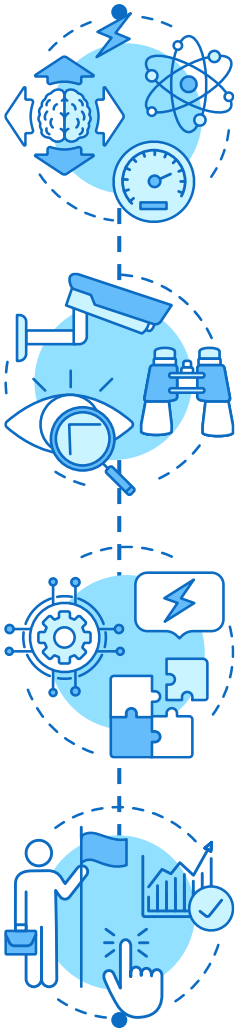
Environmental Assessment Tools

Life cycle Assessment (LCA): An LCA is a systematic tool which analyzes the environmental aspects of the product throughout its entire life cycle as well as the potential impacts of these loads on the environment. The impacts constitute of emissions to air and water such as CO2, solid wastes and resource consumption. There are four stages of in life cycle assessment.

- Goal Definition includes defining target audiences, product of the LCA study while scope definition includes defining product system, functional unit and data parameters
- Once this is set, the input of materials is processed and output which is the product and emissions are collected and life cycle inventory analysis analyses results by summing all contributions of input and output.
- The Life cycle impact assessment generates quantitative environmental load information of the product in its lifecycle.
- The last phase in an LCA study is life cycle interpretation where environmentally significant issues are identified and the LCA results are assessed with respect to completeness, sensitivity and consistency. In addition, conclusions, recommendations and reporting are also part of this phase.

The MET points method: The MET points method is classified into three main categories; material cycles (M), energy use (E) and toxic emissions (T). The material cycles represent the resource consumption while designing the product.[5] The formation of greenhouse gases, global warming, smog and acidification belong to the energy group. The toxic emissions include ozone layer depletion and eco-toxicity. These parameters are used to determine the impact value of the product while designing and companies can use this as a reference method to minimize the effects while incorporating it into the design.

The Challenges



Time constraint

When a product is designed, the designers are already dealing to balance the project requirements such as functional performance, efficiency, cost measures, compliance with regulatory bodies. Including eco-design adds another issue therefor limited time is spent on it.

Poor integration with design team

Eco-design activities are treated as a different entity instead of inculcating it in every step of the product development activity. Many companies employ consultants or environmental experts where most of the time they are not in regular contact with the design team hence there is little to no follow-up initiated to ensure to meet with the environmental aspects of the design

Complex and rapidly changing legislation

The standards and compliance requirements of eco-design are becoming increasingly complex and demanding. It is difficult to keep track of the implications which is a major information technology challenge that most companies fail to keep up with.

Lack of commitment/cost concerns

The common notion that implementing eco design in companies might improve the product but would also lead to increased costs which can overwhelm the companies and dismiss it being an unnecessary and costly activity.

The Way Forward

Implementing eco-design in an organization can have a significant impact and change its internal structure by introducing the need to consider, evaluate and incorporate in all the processes and products. Ecodesign is an approach that should affect all levels of the organization from top management down to the employees. Everyone should contribute towards working together to implement develop eco-design by developing the scope and goals. The problem, costs and challenges involved in implementing eco-design are negligible compared to the long term benefits for a sustainable future. It is a big time commitment and there is significant investment but it should not be considered a costly tool. The costly aspects include the development and implementation of the system and the innovations and changes that are there to e included. It ultimately reduces the environmental impact of the products, gives organizations a real and significant competitive advantage over others.

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