



1MI1 ECODESIGN COMMUNITY

INTRODUCTION

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PREPARED BY
ECOVANE ENVIRONMENTAL



Building an eco-design community to promote product eco-design, manufacturing, green supply chain and green product market

Executive Summary



*Green product innovation is a team work that demands engagement and outputs from the whole **community** members including designers, engineers, scientist, environmental experts, end users and the last but not at all the least important, the supply chain.*

Green product is becoming a new norm for companies who focus their core value and business model on this emerging market. According to UN's estimate, by 2020 the global market for green product will reach 20trillion USD, a figure around 5-10 times of today's market of green products. More and more leading business have seen the tremendous opportunities from greener automobile, building, electronics, fashion, packaging, material, energy and other product categories, and hence take actions to research and develop greener products.

Green product innovation is a team work that demands engagement and outputs from the whole community members including designers, engineers, scientist, environmental experts, end users and the last but not at all the least important, the supply chain. Experience from Ecovane and partners on greener product design and development has shown that eco-design requires interdisciplinary knowledge and collaboration among the whole community, which is beyond today's business organization pattern, especially in most manufacturing companies where people are divided into small silo units called business and functional units, e.g. quality department, procurement department, R&D department and so on. Dialogue to generate and test ideas which is a must-have for greener product innovation is seldom seen among the community mentioned above.

Hence Eco-design calls for an innovation in the organization format itself to provide an empowering environmental to allow more engagement and contribution from every bright mind on the table. A community based eco-design model provides a foundation for the success of green product and beyond.



Product eco-design is more than just adding another attribute of environment to the product besides appearance, function, price and quality, eco-design provides an opportunity for business to innovate and find chances to stay ahead the market.

Introduction: Eco-design and green product development

Product eco-design is more than adding another environmental attribute to the product besides appearance, function and quality, eco-design provides an opportunity for business to innovate and find chances to stay ahead the market. Through connecting the product to a broad and organic eco-system of production and consumption, green product becomes the key ingredency for a sustainable business model to meet the unsatisfied, if not increasing demand of supply and needs in a challenging world with limited carrying capacity by our mother nature – earth.

The fundamental philosophy of eco-design is to create a product or service that meet the function the society needs with the minimal negative impact on the environment and society. The way to achieve this goal is not limited to in-house cleaner production and waste treatment and management such as recycling. A logical beginning to design a greener product always begins with asking the right question: where is the hotspot and source of environmental impact, what is the priority and then the solution.

Life cycle thinking and life cycle assessment (LCA) has traditionally been considered a powerful method to identify the hotspots of a product through the whole life cycle value chain, i.e. from raw material supply through transportation and production until usage and final waste disposal, or from cradle to grave in the LCA terminology. In an ideal world, the finding from a LCA study enables designers and engineers to focus on the right question and come up with solutions or roadmap to address the issue with a ‘star product’ eventually.

Unfortunately, in the real world, green product development is far more complex a challenge than finding answers simply from a LCA study. Company usually doesn't have a lot time and resources to be specially allocated to eco-design in a fast pacing and evolving world, not to mention that if the product range under study reach hundreds or even hundreds of thousand categories. Using a conventional LCA plus design & manufacturing model, the efficiency as well as effectiveness is a question all business need to consider before making such a commitment to embark on eco-design adventure.



Eco-design challenge and causes

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Uncertainty in both supply and demand sides is becoming more and more apparent and it gets into every way we design and produce product and service. From the demands side, high uncertainty means consumers are constantly asking for more to meet their needs, which calls for nimble innovation on product manufactured and delivered. From the supply side, high uncertainty comes from globalization and free flow of information, which make technology advancement faster and faster. There are industries with less uncertainty and industries with much higher uncertainty from both supply and demand side, whichever the case, less or more uncertainty, product innovation, to make it even more challenging, innovation that takes into account environmental and social externality, and the whole value chain, is becoming a mission nearly impossible in today's isolated business structure and setting.

Under this backdrop, we identified six causes of challenges business usually faces for product eco-design, we divide them into three groups: knowledge, tool and integration. The lack of either one of the elements will make the three-leg stool of green product development a doomed failure.

Knowledge:

Environmental knowledge: no matter which business sectors a company operates in, the knowledge to understand environmental impact from their products and value chain is a premium requirement for greener product development. Ecovane's experience shows that the vast majority of business in China has less than one person who understand LCA and eco-design, and as far as we know, there are only a handful of universities that started teaching LCA in either undergraduate or graduate level courses. The demand for eco-design talents is far more than supply on the human resource market, should China wants to reach its goal of get 10000 products eco-designed by 2020 (policy by MIIT, ministry of industry and information technology).



*As a word of wisdom tells:
the knowledge we know
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knowledge on a creative
job, the knowledge we know
we don't know accounts for
another 5%, and the
knowledge we don't know
we don't know accounts for
the rest 90%.*

Unknown knowledge: besides environmental knowledge, product innovation also demands knowledge on material, process, physics, chemical, electronics, mechanical, marketing, culture, behavior, neuroscience and so on. And to create solutions with innovative ideas, we also need knowledge on social and organizational change, all of above unknown knowledge is far beyond the capacity reserve of most companies.

As a word of wisdom tells: the knowledge we know accounts for 5% of the total knowledge on a creative job, the knowledge we know we don't know accounts for another 5%, and the knowledge we don't know we don't know accounts for the rest 90%.

That means, for eco-design and green innovation, we are literally walking in the land of darkness and the only guide we can rely upon is the dim light from the torch in our hand, the light of knowledge, even though it accounts only 5% of the knowledge a creative job touches.

Tool:

LCA tool: product life cycle assessment (LCA) has traditionally become a learning tool for both academic and business purpose, however since LCA is very technical and the practice and learning is really time consuming, LCA as a tool is not very compatible to business's fast pacing environment, especially in the information era today. Recent trend has shown to shorten the learning cycle of LCA by developing easier tool or through collaboration with external capacity center or outsourcing to third party. However, in general the difficulty of learning and using LCA tools in a business environment is still impeding the spread of eco-design and green product innovation.

Design and innovation tool box: product eco-design is far more than understand its environment footprint, which can only be regarded as the beginning of the exploration of product environmental excellence. To design a green product, in addition to traditional designing tools a designer will employ, such as tools to do new product prototyping, user survey, product testing and so on, we also need tools to integrate environmental elements into the innovation and product development.



How to overcome the challenges of limited time and resource from business and uncertainty from both supply and demand side, and create solutions to help business solve the problem with lack of knowledge, tool and collaboration among people, has become the top agenda of the imi community based eco-design model.

People:

Isolated team: in a traditional business environment, people works most of their time in isolated and segregated fields of expertise. Dialogue on value chain innovation among various functional unit is rare, if not impossible. Since eco-design involves not only research and development department, but also engineering, procurement, supply chain, marketing and also environmental experts, communication with generous listening and positive interaction becomes a compulsory need to make the organization effective on green product development.

Value integration: eco-design is not only about environmental value, but also the value of the product itself: functional, aesthetical, emotional and social, last but not the least economical. We cannot create an environmental friendly bicycle that costs a family big fortune, in the other words, eco-design must be affordable, acceptable and achievable (technically and economically) for both business and consumers.

The above-mentioned challenge and three categories of causes are common among all business and countries, as observed by Ecovane and its partners around the world. How to overcome the challenges of limited time and resource from business and uncertainty from both supply and demand sides, and create solutions to help business solve the problem with lack of knowledge, tool and collaboration among people, has become the top agenda of the imi eco-design community.

1mi1 Eco-design Community

The challenge business and society face today are usually complex, the problem with sustainability are in fact problem also associated with poverty, equity, economy, and creativity. In the other words, sustainability is not an isolated technical, economic, social or environmental issue along, sustainability need a community approach with a total and systematic solution. The more perspectives we address the issue, the deeper the exploration and the more inspiration and solutions we might come up with.



In the end, innovation in eco-design is a result of collective wit and action among the community with members from the whole product value chain, including your product owner, designer, researcher, engineer, environment scientist, supplier, dealer and end users. Eco-design is not about some shining ideas you should expect from your ‘secret weapon’ with a title like chief innovation officer. For most of the time great idea and product are the crystallization of the collective wisdom.



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According to the U theory by the Presencing Institute, the quality of the results that we create in any kind of social system is a function of the quality of awareness, attention, or consciousness that the participants in the system operate from...a deeper source of knowing is learning from future by sensing and actualizing one’s highest future possibility—acting from the presence of what is wanting to emerge.

In imii community, we build on the best of every person’s potential and passion for a sustainable future and develop from this vision. Using a *creative community model* developed and matured by PYE in the last 20 years, we unite and collaborate with people from internal and external of a company, provide them with tools and knowledge for collaboration, and invite them to solve the problem the product faces in terms of sustainability, and continuously support the effort of innovation and development of greener product and economy development through a joint imii eco-design community.

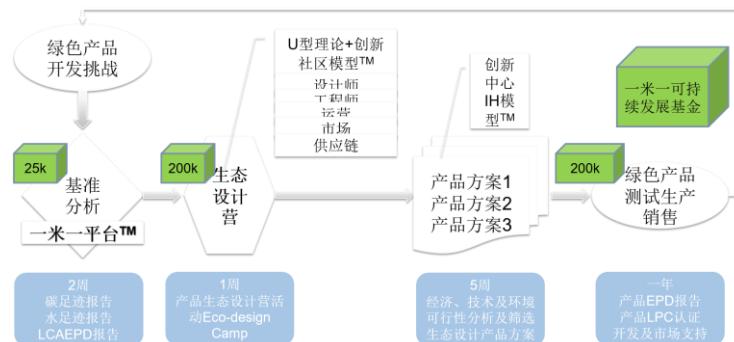


Figure 1: the 1MI1 eco-design community model

Step 1 – request for joining the community: The eco-design community received a company request for an eco-design challenge of one or more of its products, the product can be a phone, an automobile or a building product such as carpet or air product.

Realizing that product innovation and implementation is a dynamic process, product trial and design may follow a none linear process, and during the process of new product design testing, there is great chance new innovation and or research will be required, imii community will stay with the company to provide continuous support, should there be another innovation camp, or research on material or engineering.

Step 2 – LCA benchmarking: upon receiving the request, imii will conduct a screening LCA study upon the product, in case the company has done LCA study before, imii will review the study and list down the key finding on the environmental impact relevant to the targeted product; usually the benchmark study takes around 2 weeks;

Step 3 – eco-design camp: once the benchmark is done, imii will summon an eco-design camp together with the imii community and the company, a team around 10-20 people from various background including engineer, designer, environmental experts, and people from relevant scientific and professional background will be formed. The camp will last for 5 days through a specially designed eco-innovation program. A detailed introduction to the program (in general but not for specific industry yet) can be referred to in [attachment](#).

The audience will receive introduction on the product, LCA, eco-design tools and innovation skills, they will form 2-4 innovation teams and by the end of the camp they will choose an eco-design challenge associated with the product to solve in the next two and a half days.

Each innovation team are provided with tool and guidance to conduct market research, quick product prototyping and product evaluation. In the afternoon of the fifth day a presentation of the work will be done to the senior executives of the company and or potential interested investors. After the presentation, the company and or the investor can decide whether or not to further fund or test the prototype of the innovation.

Step 4 – from prototype to product: in case the innovation proposal from one or more innovation team will be accepted by the company or investor, a series of continuous product test and or innovation will be conducted by the company with support from imii eco-design community. Specifically, imii will help evaluate the environmental impacts from the new design and promote the product utilizing certification program and marketing support the imii community provides for its specific targeted audience.

imii eco-design community strongly believes: with a creative community, anything is possible.

Look forward to seeing you in imii eco-design community.

COMMUNITY MANAGER
RETA YANG
EMAIL:

reta.yang@imii.cn Or
community@imii.cn



Attachment: five days 1mii Eco-design Camp program(draft)

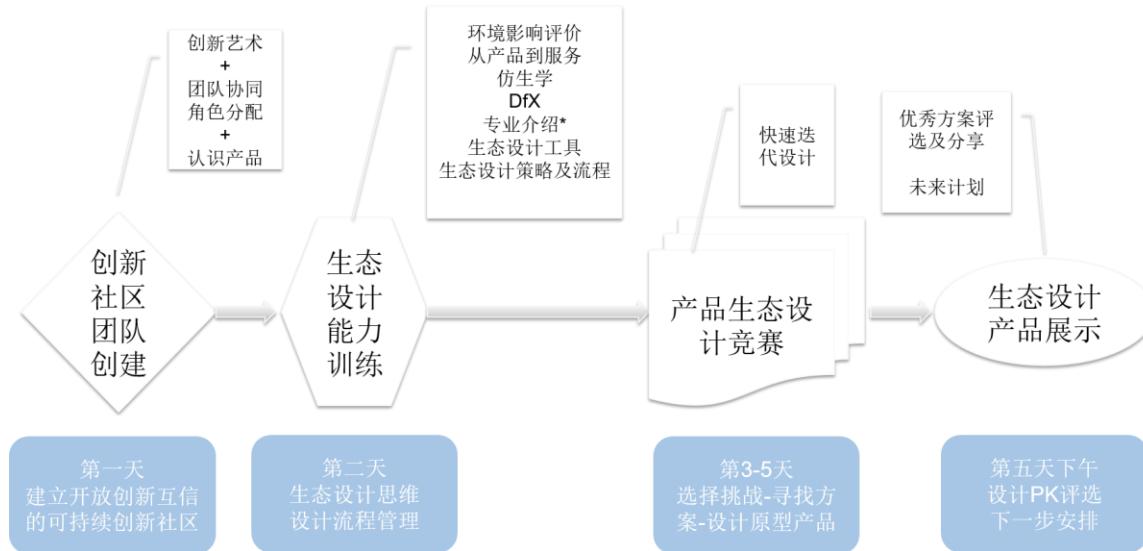


Figure 2: the 1mii eco-design camp model

Background and Purpose:

The 1mii eco-design camp model is part of the eco-design community program, which is a key step in the community to link the creative power of the community members to solve the environmental problem the product and company face, and create an exploration opportunity for product eco-design and innovation, generate potential ideas and direction for innovation and better plan the eco-design program of a company. The product prototype from the camp will be judged and or tested by the company for the manufacturing and market potential after the camp closed.

Principles:

- Everybody can speak and can be creative
- let your true talent and passion be your guide, don't expose your real life working identity,
- every product can be greener and
- we can create a sustainability future with 1mii eco-design community

Program structure:

Upon benchmarking and reviewing of the LCA, 1mii will identify environmental impact issues around the product and find key challenges to solve for eco-design. The camp will be organized to address the issue and challenges identified specifically. Accordingly, the five days' eco-design camp program is divided into four major steps, i.e.

1. *Community building.* As innovation needs team work, a constructive team is a pre-requirement for successful eco-design. Effort will be put on building trust, confidence, cooperation of the team on the first day;
2. *Knowledge and capacity building:* after the team is formed, the team will go through an intensive day of eco-design 101 training to get to know the environmental hotspot associated with the product, tools and methods to conduct product eco-design, and procedure for effective innovation and get ready for new idea searching and prototyping;
3. After the capacity building, the team will go through a 2.5 days' *product innovation experiment*, utilizing the introduced tools and method for eco-design, the team will come up with one or more solutions for their selected problem to address;
4. In the final day, the team will present their prototype of solution and present to the executive or judge team of the company for comments and evaluation possibilities for further testing or innovation; award will be given to winning team and selected product prototype will go to next round innovation;

Target audience:

Upon finishing the LCA screening study or reviewing the existing LCA report, imi1 will generate a list of participants to invite to join the camp, taking into account the character of the industry and needs of the product under study, for instance, the audience may include electronic and software engineers for products such as mobile phones, and chemists for product such as paintings and bioplastics; the team will be made up of both internal and external staff;

Location:

to encourage more out of box thinking and creative idea, the location will be chosen based on the principle of maximum chance to boost communication, open innovation and collaboration.