

Cradle to Cradle Design of Operations



Production & Operations

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ABSTRACT

Currently the business establishments are designing and developing the products to serve its life-time only. This has led to the vast pollution in the atmosphere. The solution could be to design the product after its life-time also which means the product can take re-birth in the form of some other product. The current design is cradle to grave. The need of the hour is cradle to cradle design and development of products.

The various aspects of such designs are follows:

Develop cradle to cradle solutions.

Material and product platform.

Cradle to cradle design paradigm.

Opportunities for companies to change the focus only on product quality.

Cradle to cradle business strategy.

INTRODUCTION

After the industrial revolution in Europe many technologies were developed all over the world for the comforts of humanity. While the humanity has enjoyed the benefits of these technologies, forgotten conveniently the evils arising out of these technologies which are in the form of wastes thrown in the open resulting in environmental degradation. This has happened because every product is designed only for its life time, which means a practice of 'cradle to grave' system of design. When the design parameters can be extended beyond the life time of a product, the design paradigm becomes cradle to cradle design, which ensures that there is no waste thrown in the open, but the product after serving its useful life can take a rebirth in the form of some other product.

1. Afflictions of cradle to grave design paradigm

A. Environmental disasters

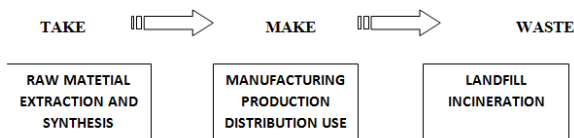
The scraps and wastes thrown in the open have caused irreversible damages on the environment. The industrial, commercial and domestic waste waters have polluted the ground water, made several millions of streams to disappear in the past and have resulted in the death of some rivers and some others are slowly dying and the situation will add to the water shortage and ultimately attain a stage of 'NO WATER'.

B. E-Waste

Electronic inventions and industries are of recent origin in the technology development. But the damage done by these technologies on earth is the worst ever. No country in the world has found even any way of disposing the e-waste. In India itself the e-waste lying in various locations may sum up to 5 lakhs tons. These are more dangerous than other wastes.

C. Cradle to grave design paradigm

D. Food Products



There are lots of food products which are identified as slow poison by UNESCO. To name a few are pizza, burger, noodles etc. These food products if consumed regularly or beyond certain limitations are capable of sending the consumer to the grave earlier than their life time. Through the global organization is taking earnest effort to ban the production of these things, no country is prepared to make a compromise on their business. They are not even prepared to accept to print a caution on these food packets that its consumption is

injurious to health.

2. Develop cradle to cradle solutions

The concept involves three steps

- i) Investigates and optimizes products and material flows
- ii) Develops alternatives to materials that are harmful to human and environmental health
- iii) Develops innovative service concepts

These steps create opportunities for the companies to change the focus on product quality with specific reference to environment.

3. Material and product platform

All manufactures should aim at constant changes and continuous collaboration with other industries to identify the alternate use of products and services with mutual benefits. Jointly they must create a knowledge base for information about new and innovative materials. A cluster of industries over a period of time will able to establish innovative materials libraries. In addition, the research and development wings of industries should concentrate on scientific approaches such as 'value engineering and waste control' to develop innovative materials and products.

4. Cradle to Cradle design paradigm

The waste is called as waste because we are ignorant of its use. We should understand that waste equals our food.

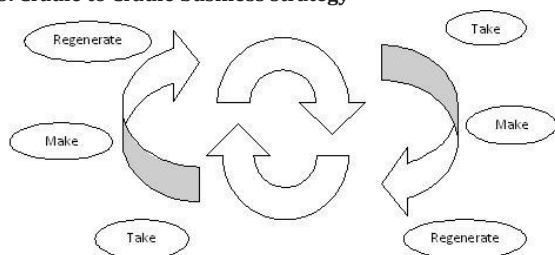
While designing a product itself, the energy input for making the product should be only from renewable energy sources. The concept of energy labeling should be made compulsory for all products. The label will contain full details of energy sources consumed for producing the product.

There should be vast diversity on the usage of the component of a product. Standardization of components and materials will go a long way in achieving this objective.

The concept could also be termed as 'design beyond product design as it involves the biological systems of the product so that reuse, renovate, recycle are taken care of after recovery of the product on attaining its life time.

Currently green products are available in the market, but they are not 100% green. Hence quality of the product must be judged from the angle of 'eco-effectiveness'.

5. Cradle to Cradle business strategy



Innovation and leadership are the only survival strategies in securing the future of the globe. There must be a through change in the attitude of the industries. People who were concentrating only on profit and competition should now give a thought to manufacture only eco- effective products.

To begin with innovation, developing eco- effective products could be aimed at in case of textiles and apparels which could easily be successful. Bio degradable shirts, blouses and shoes are certain products, if introduced in the market will create a great awareness on environment among customers.

6. Cradle to Cradle leads to new business service concepts

A. Value of materials

All materials have many values such as use value, functional value, economic value, esteem value, cultural value etc. Similarly same materials may have enumerable usages. While designing a product all these must be evaluated before manufacturing the products. All manufactures should introduce a system of 'Take back concept'. For example if water is sold in bottles, it is the duty of the manufacturer to take the container back and recycle it. This concept must be followed for all product containers and packages.

B. Customer relation

There must be continuous networking relationship between business and customer. Every customer must be linked with business in the sale of every product atleast till the expiry of the lifetime of the product. The system of products and services and its sales and distribution must be a co-operative enterprise between business and customer and customer should be major share holder in value creations.

C. Leasing, renting instead of selling

The customer should be educated on the various service values and how these values change over the life time of the product. Investment by customer and financing by the agencies for the investment should redesign their marketing strategies so that the products could be on lease or rent instead of selling. On completion of life time, the product should be taken back by the manufacture for redesign, renovate, recycle or reuse alternatively etc. The technical investments to carryout these processes have to be either borne by the customer as the products will be priced marginally higher or else subsidized by the government from the general revenue.

7. Case studies

Leasing system

How to use a chair?

The chair is given for a price on lease for 3 years and afterwards taken by the manufacturer and the materials are disassembled, repolymerized and used for chair manufacturing thus making it an endless cycle of raw materials a reality.

The framework system

How to use a car?

The car is given on lease to the customer for 1, 00,000 km. Apart from regular servicing and routine repairing which is paid by the customer the car is taken back after 1, 00,000 km for improving its quality and again leased to the same customer on a lesser lease for the next 1, 00,000 km. Afterwards the car is taken back, disassembled and the concept of endless materials for the chairs is followed.

Bio – degradable products

Very large no of consumer products like dress (shirts & blouse etc) shoes etc can be made of cotton which is bio degradable in nature. It is also healthy to wear such things.

CONCLUSION

At the global level there should be a mechanism to regulate all product developments so that there are no wastes thrown in the open in future. UNESCO should step into the situation and lead the countries across the globe towards manufacturing only eco-effective products.

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