INTERFERENCES IN ECO-CONCEPTION

INTERFERENȚE ÎN ECO-CONCEPȚIE

PRALEA JENI
University of Art George Enescu, Department of Design, Iassy, Romania

Abstract. *The increasing importance of ecologic criteria within the products and services designing (projection), in the conditions of a diversified and particularly dynamic offer, induces a preoccupation towards improving the environment performances. In this view, many organizations allocate important amounts, out of their investments (volume), in the favour of eco-conception (the research and development of processes and products compatible to the environment, environmental-friendly). The design contributes (tends) to a reinvention of a society that can live in harmony with the environment, activity that has to promptly and very courageously respond to the ecologic concepts' challenges: the quality and environment philosophy, the restriction of the natural resources, the cultural identity, biotechnology promotion, demographic lack of balance etc. The products and processes designers must assure that these excels in all aspects that lead to clients demands' satisfaction by assuring the functional performances, the economical profitability, reliability and, in equal measure, the impact on the environment (Sarbacker, 1998). Taking into account the designer's involvement along the life cycle of a product, a service ,etc, this research presents experiments concerning the wood treatment in order to obtain some aesthetic finishing (in a large wide of colours), with the aid of plants. These tests create multiple possibilities of wood treatment, from aesthetic point of view, with the support of some natural substances, having a zero negative impact over the environment.*

Rezumat. *Creşterea importanței criteriilor ecologice în proiectarea produselor şi serviciilor în condițiile unei oferte diversificate şi deosebit de dinamice, determină o preocupare în sensul îmbunătățirii performanțelor de mediu. În acest scop, multe organizații alocă sume importante, din volumul lor de investiții, în favoarea eco-concepției (cercetarea-dezvoltarea de procese şi produse compatibile cu mediul, environmental-friendly). Designul contribuie la reinventarea unei societăți care să trăiască în armonie cu mediul, activitate care trebuie să răspundă prompt şi cu mult curaj provocărilor conceptelor ecologice: filozofia calității şi a mediului, limitarea resurselor naturale, identitatea culturală, promovarea biotehnologiei, dezechilibrele demografice, etc. Proiectanții de produse şi procese trebuie să se asigure că acestea excelează în toate aspectele care conduc la satisfacerea cererilor clienților prin asigurarea performanțelor funcționale, profitabilității economice, fiabilității şi în egală măsură, a impactului asupra mediului (Sarbacker, 1998). Având în vedere implicarea designerului pe toată durata ciclului de viață a unui produs, serviciu, lucrarea prezintă experimente privind tratarea lemnului, pentru obținerea unor finisaje estetice (într-o gamă variată de culori), cu ajutorul plantelor. Aceste teste creează posibilități multiple de tratare a lemnului, din punct de vedere estetic, cu ajutorul unor substanțe naturale, având impact negativ zero asupra mediului.*

GENERALITYS

Eco-conscious design is a preventive method of work, which offers concrete applications for improving the life cycle of products, and sustains innovative solutions in the environment strategy of the company, improving the commercial profile with eco-products designs, and reducing the costs regarding the pollution of the environment. Experimental and theoretical research attests that ecological materials are used in an increasing variety of fields: Real estates, the garment and accessories industry, furniture and auto industry, etc. *(1, 2, 3, 4)* This natural materials of provenance: vegetal (wood, reed, cotton, silk, beet, etc), animals (shorn wool, bones, skin, etc.), either minerals (argil, soil, stone, etc.) have been used from ancient times. The manufacture of those products (traditional houses, fabrics, pots, accessories, etc.) has been possible through simple hand-made technologies. By reinventing environment friendly materials and technologies (environment friendly), we define (open) new ways to new products.

The concept of ecological car, (fig.1) developed by Dr. Kerry Kirwan and Ben Wood, from the Warwick University is worth to be mentioned here. This concept wants to demonstrate that ecological cars don't represent just a small vehicle with poor performance. High Performance vehicles can be made using biodegradable materials and in the future, these technologies could be used in the process of auto manufacturing. This car, Eco One, is a race car made (in proportion of) 95% out of ecological materials. With the exception of the steel chassis and the steering wheel, the rest of the components are biomass: tyres from potatoes, body from hemp and colza oil. The fuel is a mixture of sour corn and sugar beet. The vehicle is capable to reach a speed of 240 km/h through the driving mechanism recovered from a Triumph Daytona motorcycle, which accelerates from 0 to 100 km/h in 4 seconds. This engine is economical, with an average consumption of 6 litters per 100 km. *(2)* This concept manages to cover from conception to recycling the specific phases in the activity of eco-design.

MATERIAL AND METHODS

Experimental researches have been made on samples of different wood type: lime, oak, beech, fir. In order to obtain the samples they used the method of mechanical debiting. Several types of debiting were used, for every essence of wood, to show the wood structure, regarding the angle of debiting and the direction of wood fibber. This test shows the aesthetic aspect of the wood, without other aesthetic coverings.

The next experimental test uses samples of wood, of a certain type. These samples have been treated using immersion, mechanical friction, blowing, brushing, with vegetal substances (naturals), having the purpose of colouring the samples.

Fig. 1 – Ecologic vehicle concept manufactured in proportion of 95% from Biodegradable materials *(2)*

RESULTS AND DISCUSSIONS

Aesthetic effects as a result of using wood, depending on the debiting angle and the direction of wood fibber.

The wood (ecological material), has lots of aesthetic features, that the designer can take advantage of in his work. The experiments demonstrate the capacity of the wood to respond to the most exigent aesthetic requirements. The effects of light and shadow, the lines of wood fibber, the quality of surfaces, the tones, revealing or hiding the defects, all this according to different qualities of different species of wood (lime, beech, oak) more or less hard, with lighter or darker tones, contribute to creating friendly, warm, ecological products. These finishes, which a designer can speculate, allow excluding some finishing processes, regarding the achievement of surfaces with aesthetic effects. These choices help us obtain an ecoproduct with a low-cost manufacturing process, little energy and fewer materials, and in the benefit of the manufacturer, user and environment.

Fig. 2 – Debiting the wooden material perpendicular on fibber, the faces of the cube revealing the fibber in different ways on every face.

Different types of aesthetical finishes (obtained after experiments), made on wood samples, show the result between the cutting angle of the tool and the wood Fibber, behaving differently according to the essence of wood being used. The results are displayed in fig. 2, fig.3, fig.4 and fig.5.

Fig. 3 – Debiting the wooden material perpendicular on the fibber, the fibber having an aesthetical role due to the game of tones and direction.

Fig. 4 - Debiting the wooden material longitudinal with respect to the wood fibber. The fibber presents an aesthetical role, through the game of colour tones, direction or some existent defects in the wooden structure (nods).

Fig. 5 – Different finishing types in wood (different tones, revealing the wooden structure in a different way, the quality of the surface, more or less shiny) are the result of cutting the different wood essences (lime, oak, etc.)

Aesthetical effects, obtained with wood, depending on the way the surface was treated and on the vegetal paint that was applied.

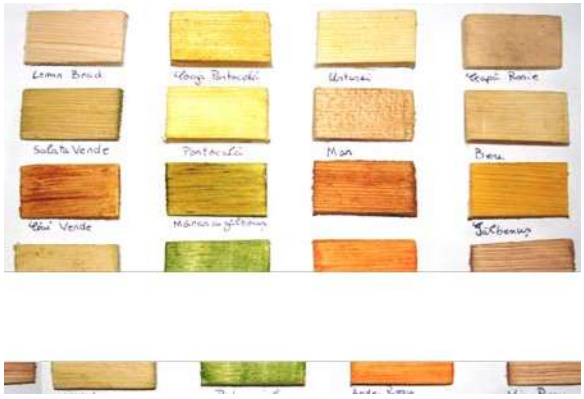

Fig. 6 – Samples of different colours, revealed according to the way the wood surface was treated.

Fig. 7 – Different ways of treating the wood surface

The samples in fig. 6 and fig. 7, are made from pin wood transacted longitudinal (fig.6) on the fibber of the wood, or cylindrical samples from pin wood, the wood fibre being longitudinal reported to the debiting section, and the wood treatment is done using vegetal substances, by the process of immersion. These aesthetical effects depend on the following parameters: the vegetal substance used, the time and the temperature of exposure, the way of applying the colouring substance (immersion, mechanical friction, brushing), the essence of the wood, the section of the samples (receded, the sectioning of wood regarding the wood fibber).

CONCLUSIONS

Having as a purpose the manufacturing of „friendly" products, this work proposes studies and concepts regarding the shape, finishes, materials, technologies, which can be used in eco-product design. Interfering with different fields, this prior objective of the eco-design activity can be accomplished.

Vegetal materials can constitute real resources of materials in the design of the most exigent products (ex: ecological car Eco One, construction materials, textiles, accessories, etc.)

The wood, a favourite material in furniture industry, constructions, accessories, etc. can be aesthetically exploited in different ways. This material confers multiple finishing possibilities, which can be exploited in the advantage of eco-conception: through its structure, through the way of debiting and finishing, through the essence of wood, the way of finishing the surfaces (the colouring substances used, time of treating these surfaces, temperature used, the method of application, the essence of wood).

Our study opens new possibilities of research in developing the eco-products field.

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