



SUSTAINABLE PRODUCT DESIGN AND EXAMPLES OF LEATHER MATERIAL RECYCLING

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Abstract: Many garments made of leather, end up in landfills as waste following the end of its useful life. However, in the flow of production of a leather product, intense energy, chemicals, high volumes of water are consumed. This means that the carbon footprint and environmental loads are high. There are many research activities related to the recycling of textile products, and recycling chains, in this regard famous clothing brands have been organizing grand campaigns. In order to assess the case for leather products that have an important place in the ready-to-wear segment, one should ask the following questions: “How do the big companies and brands in this sector participate in the environmental movement? And importantly, what are the best attempts to recycle leather products? What can be done about the future of leather products recycling and innovative sustainable designs?” when considering sustainable design using recycled leather from end-of-life leather products. In this study, examples of innovative best practices, which were adopted by new brands for recycling and reuse of various types of waste, in order to perform a sustainable product design were presented with the attempt of clarifying aforementioned questions. These new initiatives and practices can develop a novel perspective for academicians and professionals engaged in the field of leather and fashion design, and the concept of sustainable design can be introduced to wider masses.

Keywords: leather materials recycling, sustainable design, innovative design, fashion design

1. INTRODUCTION

1.1 Methods of Leather Materials Recycling

Leather clothings, shoes and scraps generated during the leather production process are important materials that can be used for designing new products through diversified methods. Throughout this cycle different recycling scenarios and methods are practiced considering the required end-product. These may be classified as four main methods which emphasized in Figure 1.

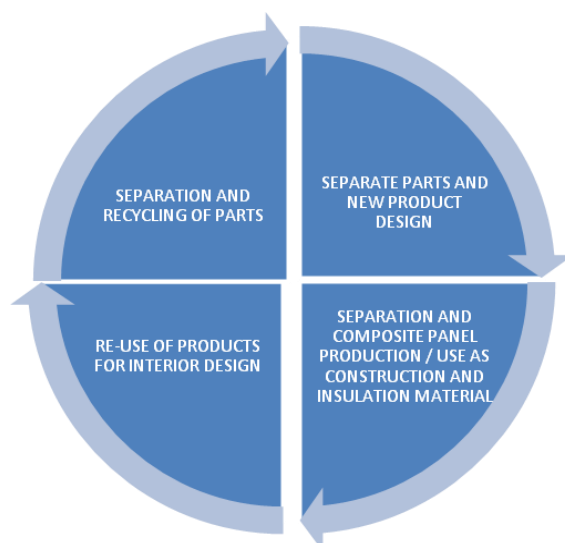


Figure 1: Recycling methods of leather materials

1.2. Innovative Designs of Recycling

Innovative designs of recycling are remaining on the agenda as a global movement around the world. Both fashion and industrial designers are using the concept of nature friendly, ecological and sustainable design in their works and reflecting on their products.

Beyond being a new and interesting movement, this intention is an important trend which involves concept of social responsibility and supports the idea of preserving the environment along sensibility and conscious approach on use of natural resources. There are intensive work and outturn samples of sectors and giant brands in this context. However, featuring, popularizing and promotioning outputs, along both professional areas and ones formed by consumer profile, can be named as a green innovator project concerning whole planet.

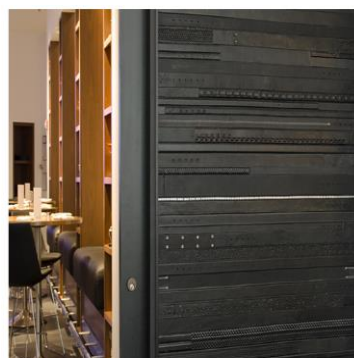
It is an important subject that shared samples and products creating a prudential vision for all designers, engineers and related domain experts and this trends becoming a remaining method rather than being a short-tempered but disappearing mainstream, and increasing of innovator designs and products.

The U.S. EPA found that two million tons of textiles were recovered for recycling and reused in 2010. The leather jacket in the back of your closet is a bulky item that should not go directly into the trash. The item would join billions of textiles congesting American landfills. According to the U.S. Environmental Protection Agency, in 2010, more than 13.1 million tons of textiles were generated, but only 14 percent of clothing and shoes were recycled [1, 2].

EcoDemo Leather Surfacing Fabrication Company designs new surfaces for doors composed from belt panels, bedrails and similar furnitures in segment of recycling leather. They also, put floor made from leather clothing cut into pieces, surface dressing for wardrobes, leather furniture, pouf on the market and bring into use, and produce an environmentalist production emphasized company name [3, 4].



Rainforest Collection



Phoenix Collection

Figure 2: Eco-Demo recycling leather products [5]

Daniel L. Vermeer has developed social innovation strategies using data and storytelling to help transform companies, nonprofits, and the communities in which they work and projects. In the article entitled “7 upcycling companies that are transforming the fashion industry” emphasized the alternatives of recycling in leather garments within the scope of recyclable, fashionable fashion products [6].

Despite the stereotypes, “eco-friendly footwear” doesn’t have to mean hemp sandals or Birkenstocks. British shoe company Terra Plana has been putting its own unique stamp on eco-friendly style since 2001, with their quirky shoes made from environmentally sustainable materials like recycled rubber, vegetable tanned leathers, and recycled Pakistani quilts [7].



Figure 2: Terra plana eco-friendly shoes [7]

Verdura Shoes and Sandals are handcrafted in Tuscany, Italy, by master shoemaker Andrea Verdura. The use of recycled and vegan materials, together with the eccentric, boundary-less design, make the shoes and sandals a unique walking experience. Each pair is a vibrant, pulsing creation, born from the unrivalled tradition of Tuscan shoemaking. They aim is to offer a wide range of quality footwear with all the crucial elements a great shoe needs to have: standards of beauty, comfort and durability – while prioritizing environmental impact. It has taken years of research, the best natural and vegan materials, knowledge of manual skills, innovative designs to create Verdura Net Sandals. Verdura’s designers cut the net and wash it several times to soften the fabric. They dye it with natural pigments and then combine it with cork, recycled rubber sole and waste leather left over from shoe production.

The insole is anatomic, made of natural cork. The sole itself is available in two different versions, one composed of recycled Vibram rubber and the other of recycled, vegetable-

tanned leather. They use these eco-conscious materials to craft stylish, comfortable footwear for women, men and kids [8].



Bitta Boots

Fishing Net Bag

Figure 3: Verdura ecofriendly shoe and bag [8]

3. CONCLUSIONS

Adoption of clean production technologies within all sectors that support national economies, optimization of sustainable designs and resource utilization in all areas and when following this track, production of consumer goods from recycled materials is a mega project, which can be performed with the participation of financial environments and academia.

These new production systems, concerning our planet and living areas directly, exhibit its reflections in all areas related leather, textiles and leathercraft products. However, it is required to popularize best application samples and brands, and adopt this logical framework. Consequently, researches and outputs should be intensified by addressing innovative and ecological designs in every aspect. Leather is a recyclable or reusable material and end of life leather products are potential resources for various innovator products.

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