GEODESIGN, ECO-BRUTALIST ARTFACTS FOR ARCHITECTURE AND URBANISM

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ABSTRACT

The aim of this project is the development of new architectural products, integrating industrial waste of class C and F, generated by companies based in the North of Portugal, namely in the fields of foundry, glass and paper. This selection results from technical consulting from “Waste to Value” assisted by the contribution of scientific research in geopolymers of the laboratory of the University of Minho, consultancy of the University of Trás-os-Montes and evaluation of resistance by the Materials laboratory of the University of Aveiro. The flying ash from thermoelectric plants, sludge from aluminium anodizing and glass polishing among others, offers different plastic and chromatic qualities. When chemically integrated by geopolymerization, they exhibit different physical qualities of strength, resistance to use and aging. Taking into consideration their physical qualities and, consequently, the resulting chromatic, textural and economic diversity, several functional products of wall covering, sound barriers and furniture with an expressive aesthetic impact were designed. Exploring the plastic qualities of a new brutalist, recyclable and sustainable aesthetic, was born a generation of artefacts that we generally call Geodesign, introducing competitive advantages in the offer of products for application in tourism, architecture, hotel and urban furniture. It will be the design of this brutalist aesthetic that will constitute the factor of evidence to motivate the socially inversion of the industrial unsustainability. The project foresees the technological test of manufacture, in particular regarded to the pre-treatment in a small scale of residues and moulding and finishing processes, evaluating its economical and environment aspects.

Keywords: architecture, design, geodesign, sustainability, waste.

INTRODUCTION

Several industrial sectors in the northern region of Portugal, such as foundries, steelworks, surface treatments, metal-mechanics and paper production, generate waste (non-hazardous and inert), usually disposed of by landfill, not being valued and generating cost, however due to their physical and chemical characteristics, it can be used in the manufacture of products for civil construction, namely for hotel and urban furniture applications. In view of this, the European Commission has defined strategies to guide waste management for their recovery. This is particularly the case with Directive 2008/98 / EC, which privileges waste recovery solutions to the detriment of disposal, taking into account the environmental issue and the shortage of mineral resources on the European continent. It is in this context that strategic lines such as the "circular economy" or the creation of "industrial synergies" appear recently, in which the aim is to optimize the use of secondary raw materials in the existing productive
sectors. It is intended to develop 10 formulations of new composite materials incorporating lime-based and geopolymer-like residues for applications in the manufacture of products to be developed with Brutalist aesthetics taking advantage of the natural characteristics of the material. Brutalism is a controversial, muscular term for a controversial, muscular style born during the 60’s, considered to be the high point of architecture in the entire history of humanity (B. Calder, 2016).

EXPECTATIONS

Although it is acknowledged that there’s a problem and an opportunity in the absorption and recycling of industrial waste. It is estimated that its viability will inevitably be due to the assumption of a new aesthetic and, in this sense, by the inclusion of the consumer in the understanding and appropriation of a new generation of products, designed to solve a problem (which is everyone's) and not to its aggravation.

The impact of Geodesign project will depend on the communicational and emotional involvement of prescribers and final consumers, whose efficiency can be enhanced by the creative participation, not only in the choice of colors and models of geopolymer coating materials, but also in the creation of Patterns, environments and, above all, new consumption arguments, with a high tourist impact.

The material nature of these artifacts (floor and wall cladding modules with acoustic, water and thermal insulation potential, supporting vertical gardens or floor lighting, visual limiters such as sanitary and urban architectural support vessels and Plastic exploration of strong textures and brown tonalities that resemble natural and ceramic handicrafts, giving visibility to a naturalistic, ecological and traditional expression, very timely in tourism projects of architecture and ecotourism.

Geodesign proposes to integrate hundreds of thousands of tons of industrial waste, transforming them into geopolymers of application to architecture and urbanism, for tourist valorization of the territory that will present itself with a more natural, ecological and, above all, ideologically more timely design in the Exemplification of an active, engaging, participative and creative social ethic, which will generate a new trend of taste and consumption. This is the intention conveyed by its name: the brand of a chemical recycling process but, above all, the necessary emergence of a new design for the Earth.

REFERENCES

[1]-Calder B. Raw Concrete: The Beauty of Brutalism, 2016, p. 5.