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### **ENVIRONMENTAL KNOWLEDGE ACQUISITION DURING THE FUZZY FRONT END OF INNOVATION – STATE OF USE OF TOOLS, METHODS AND TECHNIQUES IN THE ...**

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1319

This paper presents the state of use of different Tools, Methods and Techniques (TM&T) for environmental information acquisition during the Fuzzy Front End of innovation (FFE) in the Basque Country. The FFE, activities undertaken before the innovation process, is highly influenced by external environmental factors. Different TM&T could be used by companies to support and improve the proficiency of environmental information acquisition during the FFE. This study highlights the low frequency of use of TM&T for environmental information acquisition during the FFE. Firms primarily focus on both industry environment and technological factors from the lens of the present state of those environments, leaving aside possible future evolutions.

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### **PARAMETRIC ECODESIGN – AN INTEGRATIVE APPROACH FOR IMPLEMENTING ECODESIGN INTO DECISIVE EARLY DESIGN STAGES**

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1327

The methodology of parametric Ecodesign incorporates proposing reference products for environmental evaluation systematically and will help using life cycle assessment data to optimize product designs and to implement Ecodesign strategies already in the early stages of product development. The parametric description of the reference product correlates technical and environmental data. A comparison of the resulting environmental impacts of a certain design with an appropriate reference of this product is facilitated then. By knowing the potential environmental impacts and by being aware whether selected impacts become higher or lower due to design changes, an optimization of design and environmental performance can be achieved.

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### **A NEW APPROACH TO IMPLEMENT THE REACH DIRECTIVE IN ENGINEERING DESIGN**

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1335

The REACH regulation (Registration, Evaluation and Authorization of Chemicals) has to be applied since 01/06/2007 (mandatory from 01/06/2009) by all the companies in Europe. It gives a new framework to better manage substances used in production, but also to design new products and to upgrade current products. Companies have to react quickly to adapt their industrial procedures to this regulation and their products to the evolving market without waiting for the deadlines in order to secure their business. The paper aims at proposing a new engineering design approach to support the regulation and throughout the whole product development. A specific tool has been developed to support it and is implemented in a French company.

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### **ECO-DESIGN DIRECTIONS: EVOLUTIONS OF THE AESTHETIC DIMENSION**

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1341

The aim of the paper is to take into consideration the diverse approaches to the issue of sustainable design, focusing in particular on some of the major problems arising from the relation of the ecological aspects with a new aesthetic sensitivity on one hand, and with social and ethical reflections on the other. New ecological-industrial aesthetics may be born only out of a critical approach which stresses the distance which however exists between nature and strictly human values. The specific purpose of the paper is to analyse whether and how eco-design has paved the way to a new aesthetic dimension, and which is the role played by the aesthetic factor within the different eco-design-related issues.

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### **ECODESIGN STRATEGIES USING CLASSIFICATION OF ENVIRONMENTAL CHARACTERISTICS**

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1351

This paper proposes a framework for classification of environmental characteristics of offers, utilizing Kano Model and willingness to pay. The framework is connected to some design management, i.e. design itself and external-communication, strategies for companies which are also proposed in this paper. The integration of the classification and the strategies is applied to several typical environmental characteristics against Japanese markets. The results include that plant-based plastics in a chassis of a notebook-typed PC for businessmen over 50 years old cannot be recommended to be adopted within the development team. However, the company could also focus on the positive effect on its corporate branding.

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**CHANGING ENERGY CONSUMPTION BEHAVIOUR THROUGH SUSTAINABLE PRODUCT DESIGN**Tang T., Bhamra T. - *Loughborough Univeristy (GBR)*

1359

Energy consumption during the use phase of electrical products' lifecycle has a significant environmental impact, mainly determined by the user behaviour. Product designers are in a position to shape the way in which consumption occurs and to bridge the gap between environmental values and user everyday action. This paper analyzes the barriers to sustainable energy use and by linking the design strategy research with the psychological theories, the breakthrough points that potentially enable design to influence the user behaviour and habits are identified. Employing a user-centred approach, the results of a pilot study are presented that provide an understanding of user perceptions of environmental issues.

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**SUSTAINABLE COMMUNITY DESIGN – BENNY FARM / MONTREAL AS A SAMPLE**Yilmaz M. - *Hacettepe University (TUR)*

1367

Since the middle of the 1980's the concept of sustainability has become a guiding principle for human settlements at all levels of governance. The design decisions that are made without regard to the environment, are potentially devastating. Therefore, a design approach should be maintained for creating the buildings that have to be responsive to environmental forces by investigating problems in different contexts and at different scales. Within this context, Benny Farm Settlement in Montreal is searched as a case study which houses low and middle income people\*.

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