

A Global Review of the Management of Electrical and Electronic Wastes

Natasha Corballis*

School of Civil Engineering and the Environment, University of Southampton, Southampton, UK

*Corresponding Author: Natasha Corballis, School of Civil Engineering and the Environment, University of Southampton, Southampton, UK, E-mail: Corbnatasha@hotmail.com

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Description

The purpose of this article is to verify the efficacy of green practices in influencing competitive enablers of organizations in the electrical and electronics industry. This study applies quantitative modeling, supported by a survey of 70 companies in southern Brazil and a structural equations model. The model includes four constructs: green strategy, green innovation, externalities management in green operations, and information management in green operations. The model also includes three factors influenced by the constructs that facilitate the construction of the organizational competitiveness: compliance, strategic drivers, and corporate image. The main result obtained suggests that green strategy and green innovation are more likely to influence competitiveness in the industry, and information management only partially influences competitiveness, while externalities management appears to have no influence.

Electric Power

There is a clear trend in the automotive industry to use more electrical systems in order to satisfy the ever-growing vehicular load demands. Thus, it is imperative that automotive electrical power systems will obviously undergo a drastic change in the next 10-20 years. Currently, the situation in the automotive industry is such that the demands for higher fuel economy and more electric power are driving advanced vehicular power system voltages to higher levels. For example, the projected increase in total power demand is estimated to be about three to four times that of the current value. This means that the total future power demand of a typical advanced vehicle could roughly reach a value as high as 10 kW. In order to satisfy this huge vehicular load, the approach is to integrate power electronics intensive solutions within advanced vehicular power systems. In view of this fact, this paper aims at reviewing the present situation as well as projected future research and development work of advanced vehicular electrical power systems including those of electric, hybrid electric, and fuel cell vehicles (EVs, HEVs, and FCVs). The paper will first introduce the proposed power system architectures for HEVs and FCVs and will then go on to exhaustively discuss the specific applications of dc/dc and dc/ac power electronic converters in advanced automotive power systems. The purpose of this paper is to

explore critical factors for implementing green supply chain management (GSCM) practice in the Taiwanese electrical and electronics industries relative to European Union directives. A tentative list of critical factors of GSCM was developed based on a thorough and detailed analysis of the pertinent literature. The survey questionnaire contained 25 items, developed based on the literature and interviews with three industry experts, specifically quality and product assurance representatives. A total of 300 questionnaires were mailed out, and 87 were returned, of which 84 were valid, representing a response rate of 28 percent. Using the data collected, the identified critical factors were performed via factor analysis to establish reliability and validity. His paper presents a review of the electrical and electronic technologies investigated in More-Electric Aircraft (MEA). In order to change the current situation of low power efficiency, serious pollution, and high operating cost in conventional aircraft, the concept of MEA is proposed. By converting some hydraulic, mechanical, and pneumatic power sources into electrical ones, the overall power efficiency is greatly increased, and more flexible power regulation is achieved. The main components in an MEA power system are electrical machines and power electronics devices.

Power Electronic Converters

The design and control methods for electrical machines and various topologies and control strategies for power electronic converters have been widely researched. Besides, several studies are carried out regarding energy management strategies that intend to optimize the operation of MEA power distribution systems. Furthermore, it is necessary to investigate the system stability and reliability issues in an MEA, since they are directly related to the safety of passengers. In terms of machine technologies, power electronics techniques, energy management strategies, and the system stability and reliability, a review is carried out for the contributions in the literature to MEA. The rate of Waste Electrical and Electronic Equipment (WEEE) is growing at an alarming rate, especially in organisation for economic cooperation and development (OECD) countries where markets are saturated with huge quantities of new electronic goods (Widmer et al., 2005). The large quantities of WEEE and the wide variety of materials they often contain (many potentially harmful to both humans and the environment) has focused attention on how WEEE is handled,

generated and ways in which it can be prevented. The potential adverse health and environmental consequences of incorrect handling and treatment of WEEE (e.g., in China, India, USA, etc.) has further heightened concerns in relation to the management of WEEE (Fishbein, 2002, Puckett et al., 2003, NEP, 2006). WEEE can be regarded as a resource of valuable metals such as copper,

aluminium and gold; when such resources are not recovered, raw materials have to be extracted and processed to make new products, resulting in significant loss of resources and environmental damage necessitated by mining, manufacturing, transport and energy use.