

A Practical Investigation on the Electrical, Film Flexibility, Optical, Temperature, and Solvent Resistance Properties

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Description

Brain tumor risk associated with electrical and electronics jobs and with occupational exposure to microwave and radiofrequency (MW/RF) electromagnetic radiation was evaluated with the use of data from a death certificate-based case-control study of brain tumors and occupational risk factors in northern New Jersey, Philadelphia, PA, and southern Louisiana. Next-of-kin of 435 white men who died of a primary brain tumor and of 386 controls who died from other causes were interviewed to obtain information on lifetime occupational history and other factors that might be related to excess brain tumor risk.

Electric Power

Furthermore, risk was elevated for electronics workers who were considered to have no exposure to MW/RF radiation. Electrical tradesmen are exposed to extremely low frequency electromagnetic radiation, while men in some jobs associated with electronics manufacture and repair are exposed to electromagnetic radiation in the very high frequency and ultra-high frequency ranges and also may be exposed to soldering fumes, solvents, and a variety of other chemicals. Wind energy conversion systems (WECS) nowadays offer an extremely wide range of topologies, including various different types of electrical generators and power converters. Wind energy is also an application of great interest to students and with a huge potential for engineering employment. Making WECS the main center of interest when teaching power electronics and electrical machines can therefore be highly advantageous. This paper describes a novel teaching experience using wind energy as the starting point for understanding power electronics and electrical machines. The results point out the wide variety of concepts involved in the course, the numerous competences that it can enhance, and its positive reception by learners.

Power Electronic Converters

A new era of power electronics was created with the invention of the thyristor in 1957. Since then, the evolution of

modern power electronics has witnessed its full potential and is quickly expanding in the applications of generation, transmission, distribution, and end-user consumption of electrical power. The performance of power electronic systems, especially in terms of efficiency and power density, has been continuously improved by the intensive research and advancements in circuit topologies, control schemes, semiconductors, passive components, digital signal processors, and system integration technologies. In Korea due to rapid economic growth followed by urbanisation, breakage of large traditional families into small nuclear families, continuous changes in equipment features and capabilities causes tremendous increase in sale of new electrical and electronic equipment (EEE) and decrease in sale of used EEE. Subsequently, the ever-increasing quantity of waste electrical and electronic equipment (WEEE) has become a serious social problem and threat to the environment. Therefore, the gradual increase in the generation of WEEE intensifies the interest for recycling to conserve the resources and protect the environment. In view of the above, a review has been made related to the present status of the recycling of waste electrical and electronic equipment in Korea. This paper describes the present status of generation and recycling of waste electrical and electronic equipment, namely TVs, refrigerators, washing machines, air conditioners, personal computers and mobile phones in Korea. The commercial processes and the status of developing new technologies for the recycling of metallic values from waste printed circuit boards (PCBs) is also described briefly. Since 1998, three recycling centers are in full operation to recycle WEEE such as refrigerators, washing machines and air conditioners, having the total capacity of 880,000 units/year. All waste TVs are recently recycled on commission basis by several private recycling plants. The recycling of waste personal computers and mobile phones is insignificant in comparison with the amount of estimated obsolete those. Korea has adopted and enforced the extended producer responsibility (EPR) system. Korea is making consistent efforts to improve the recycling rate to the standards indicated in the EU directives for WEEE. Especially environmentally friendly and energy-saving technologies are being developed to recycle metal values from PCBs of WEEE.