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PD en Electrónica y Telecomunicaciones

ENERGY HARVESTING TO POWER WIRELESS SENSOR NETWORKS

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Energy harvesting technology is engaged in the research and development of systems to harvest energy for the environment and use this energy to supply different wireless systems such as electronic sensing devices and communications. Energy harvesting arises from the need to increase the versatility of electronic systems that already have wireless communications. The main objective is to remove the last physical connection, the power supply wire. The goal of this technology is to eliminate or reduce reliance on batteries and increase the lifetime of autonomous systems and Wireless Sensor Networks (WSN). All while maintaining the same functionality as would the system with a battery, also to reduce system and maintenance costs. In addition, with this technology new placement opportunities are created closer to the points of interest, not especially where energy sources are. Energy harvesting systems consist of three main elements: A harvester, a low power management and a low power storage system. The harvester is the device which collects energy from the environment, the choice of harvesting technology depends on the environment where you are using the system. The power management takes control of system devices and manages the low incoming and outgoing energy. The storage system stores the harvested low energy and supplies it to the WSN for a correct work. Current research into Energy Harvesting field is based on three areas: the physical-chemical enhancement of the harvesters, the physical-chemical enhancement of the storage devices, and the improvement in the energy management systems and the strategy employed by these. The applications of energy harvesting systems are aimed to different areas, such as, industry, medicine, automotive, space, transport and automation. Therefore it is requires to be modular systems in size and cost.