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Prototyping of an Energy Harvesting Power Supply for an Application Specific Wireless Device.

ABSTRACT - Masterthesis

Energy harvesting is a process of converting renewable or ambient energy into electric energy. This can be done by using many resources such as solar, vibration, radio frequency, heat, etc. This work concentrates on the prototyping of an energy harvesting power supply for an application specific wireless device. Many wireless devices are powered by batteries. Long lasting batteries have a limited existence and need to be replaced. Replacement is not really possible when there are hundreds of devices installed in remote areas. Energy harvesting technologies focus on supplying low power equipment with unlimited operating life and even eliminate the need for battery replacement. Devices which uses wireless sensor nodes (WSN) or Internet of Things (IoT) can be powered by this technology. Different methods have been used to achieve high efficiency as well as to extract maximum power from different sources.

Literature survey of the possible resources that can be used to harvest energy, along with their advantages and disadvantages has been done. Also, a decision is made regarding the best possible source to power the device. The second part aims at designing a circuit and the PCB for maximum possible power efficiency. The designed circuit is able to store energy for future use. LTspice is used for simulation of the circuits and Eagle is used for designing a PCB.