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Year 2002–2003

### **Abstract**

The purpose of this project is to design and develop a switch converter, which allows sources such as solar cells and power stations to provide energy to the main electricity network.

In the last few years there has been a growing demand for energy sources which are environmental friendly, i.e., accessible energy from the planet such as wind, sun, and water. Furthermore, the fact that the planet's resources are limited and the desire to minimize dependence on the oil producing countries, along side the aspiration for cheaper energy sources, only strengthens this demand.

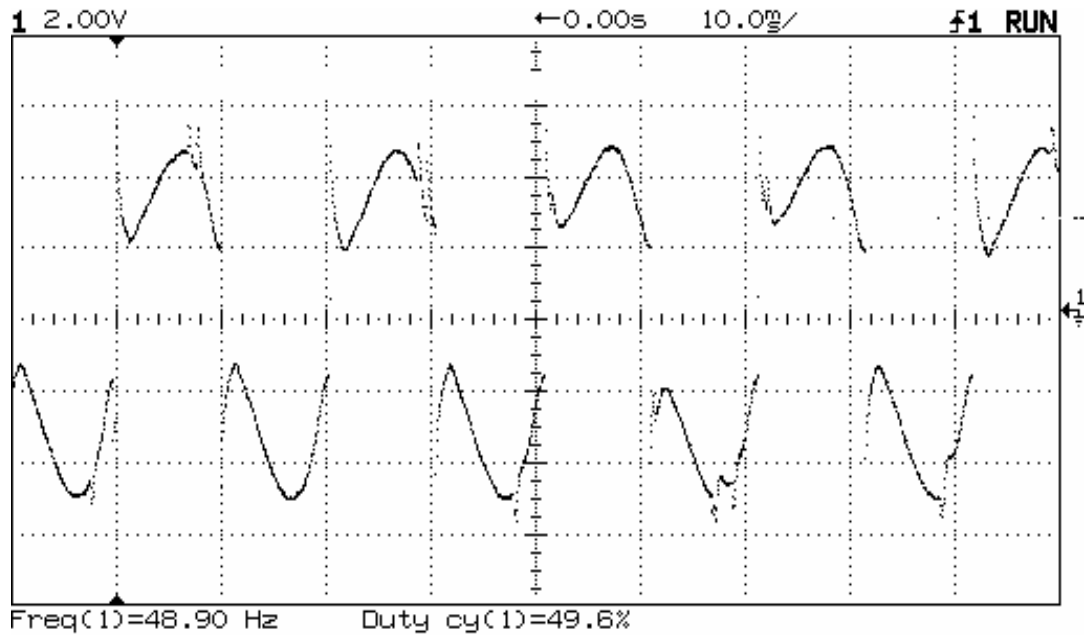
This has led to the development of various systems which at present serve as supplements to the existing electricity network, converting energy produced and feeding it to the network.

In order to receive optimal results, the current must be in phase with the voltage of the electricity network.

This project deals with "feeding" the maximum energy possible to the electricity network by designing and developing a DC-AC converter, which will convert DC voltage to an AC current suitable for the electric current within the electricity network.

The system will be controlled by a PIC16F876 microcontroller and include:

1. Controlling the shunt overload.
2. Controlling the PWM and operation frequency of the converter so that the converter's output produces the required momentary frequency (net frequency) and the required phase (based on the status of the net itself).
3. Receiving the momentary data of the net and synchronizing the current in the converter's inlet.



The Output Current

