

Intelligent Energy System for Small Scale Alternative Intermittent Power Sources

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INTRODUCTION

This project is the design and implementation of an intelligent energy system for an existing setup of intermittent alternative energy generators. This includes solar and wind energy, and a small scale energy bank.

INTELLIGENT POWER SYSTEM

The IES will monitor incoming and outgoing power to the system, and intelligently control power drains according to their capabilities. Some are scalable (ie. dampable lighting) and some are binary (ie. power inverter), and they should be controlled differently depending on its importance. In case of overcharge on the battery bank, some power sources can be disabled to avoid catastrophic overheating of the battery.

We will implement a rig to measure the relevant power and voltage levels, and the IES itself will be implemented on an Arduino Duemilanove microcontroller. It will communicate with a light controller implemented on a separate microcontroller via a serial communication link, which might also be used to reach simple controllers for other sources and drains.



Picture of energy sources (credit: Lars Bertelsen, ing.dk 2008)