



Abstract

During the summer of 2014, two ETHOS students worked with two renewable energy organizations in Auroville, India. Auroville Consulting conducts research and strategic planning, seeking to promote sustainable technology. While working here, Michael studied the current solar photovoltaic (PV) systems in Auroville and concluded the best plan for the area was a central solar photovoltaic plant. Katrina worked at Cynergy with a device that can monitor energy usage and automate loads, called the Wattmon. She installed several Wattmons, studied renewable energy use, and developed tutorials and marketing materials for the Wattmon.

Introduction

- Auroville is an experimental community focused on unity & sustainable living
- Auroville is looking to develop a Sustainable Energy Master Plan with the help of Auroville Consulting
- Part of this plan is knowing about the current renewable energy in Auroville
- The Wattmon is a preliminary computer device that combines data logging, remote monitoring, and automation
- The Wattmon can determine energy inputs (PV panels, wind turbines, etc.) & energy outputs (the load) through a current sensor connected after the charge controller & before the inverter

Project Description

Auroville Consulting:

- Develop baseline energy use & inventory of current resources
- Analyze most common types of PVs to better understand energy use
- Obtain information with the Wattmon & through site visits to determine the best type of solar PV for Auroville

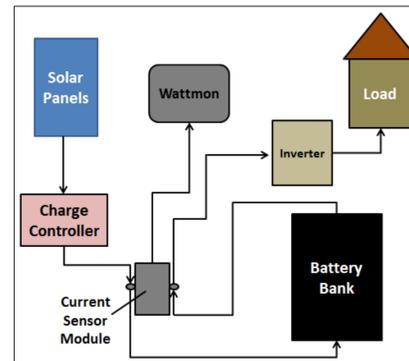


Figure 1: Typical Wattmon Setup

Wattmon:

- Install & troubleshoot problems with Wattmons in the Auroville area
- Work on marketing and promotional ideas for the Wattmon
- Use the Wattmon to gather data on different types of solar PV
- Determine the effect of Indian weather conditions on the panels



Figure 2: Wattmon Daily Energy Graph

Results & Discussion

Auroville Consulting:

- Rooftop solar photovoltaic is a feasible option for Auroville
- Study analyzed 7 types of solar PVs based on maintenance, costs, and components of the system
- Could not reach a definite conclusion due to complexity of each system
- Best option appeared to be a centralized solar PV system for Auroville

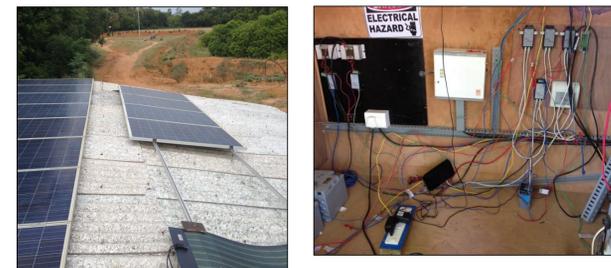


Figure 3: Solar Panels & Setup at Sacred Groves

Wattmon:

- Viewed as a vital tool for people relying on renewable energy due to its comprehensive overview & accessible data of the system in use
- The wind turbine-Wattmon setup was finished and is being used in conjunction with a solid state relay to control the speed of the wind turbine
- The study of different types of PV with the Wattmon was not able to be completed due to one of the charge controllers breaking
- The results will partially show which type of solar panel works best in the harsh conditions of Southern India

Recommendations

- Install more Wattmons in Auroville so solar PV users will have better understanding of their energy usage
 - This will allow for people to rely less on the grid
- Connect all of the houses to a central solar PV plant over a grid network
- Work on the marketing aspects of Wattmon & promote its benefits
- Install a new charge controller for Sacred Groves' solar PV study



a



b



c



d

Figure 4a-4d: a.) Wattmon Sensors & Battery Bank; b.) Auroville Consulting Office; c.) Chicken Curry & Rice; d.) Dosa at GP Cafe

Acknowledgements

1. Martin Scherfler & Vikram Devatha, Auroville Consulting
2. Akash Heimlich, Wattmon
3. Aurovilleconsulting.com
4. Wattmon.com