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Energy Monitoring & Management System (EMMS)

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emms

The Energy Monitoring and Management System

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Our Project

The Need: An estimated 16% of the global population do not have access to electricity. When one looks at the 50 poorest nations in the world, 79% of the population does not have access to electricity.

The Goal: The Energy Monitoring and Management System project is developing a meter to help manage energy use in order to maintain a reliable energy supply for these impoverished areas. Our primary partner is Open Door Development, located in Mahadaga, Burkina Faso, a remote location in western Africa. We are developing meters to be used with various isolated solar power systems the organization has installed throughout the region.

Method

Method: Our solution consists of a meter which allocates a configurable daily energy limit per facility, along with a display that provides feedback to the user. This display includes information about how much energy remains in a day and how much power is being used at any time.

How It Works: By connecting to an energy source in parallel, the meter is able to measure the voltage and current drawn by the system, and is then able to calculate how much energy is being used. In the field, a meter is typically installed on a building by being wired into the incoming power lines. Once installed, the measured energy can be accessed from either the Display Module or from a computer over WIFI.

Project Status

This past year, the team has been working to fix known bugs in their code. Now approaching completion of this goal, the team is preparing to send the new finished code to their clients to get their meters up and running. The team also began work towards creating a new meter layout. This new layout allows for a more compact design, leaving room for more modules to be added in the future. Finally, the team has been developing an administrative software to access meters remotely.
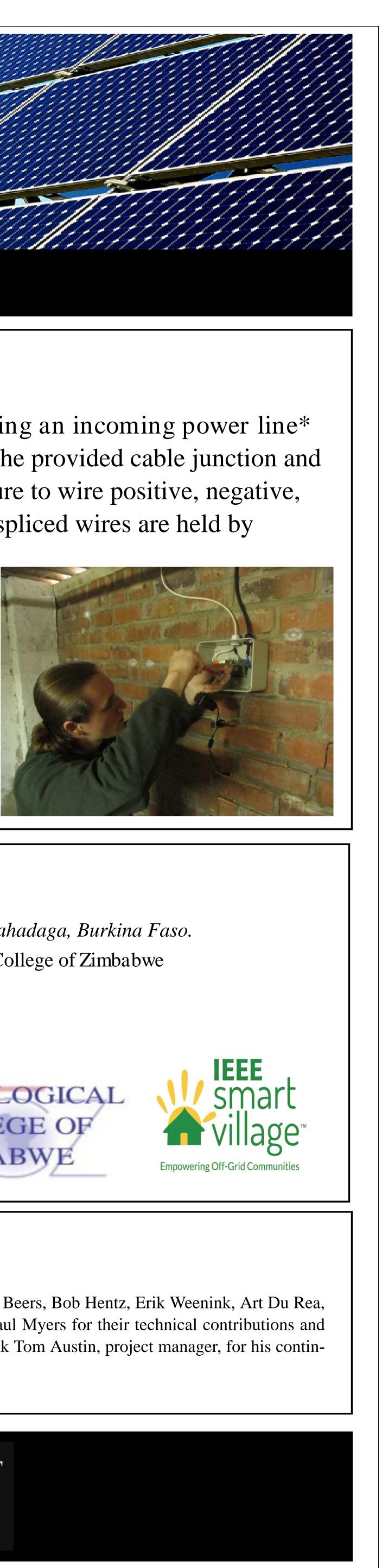
Meter Installation

Installing a meter requires splicing an incoming power line* (120VAC or 240VAC) and using the provided cable junction and labels housed in the meter enclosure to wire positive, negative, and ground through the box. The spliced wires are held by screws and housed inside the enclosure to prevent exposed wires and prevent the connections from weathering.

*safely

Clients

- *Matt Walsh*; Open Door Development, *Mahadaga, Burkina Faso.*
- *Ray Motsi*; President of the Theological College of Zimbabwe
- *Institue Missiologique du Sahel (IMS)*
- *IEEE Smart Village*

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