Sistemas de Energia Solar

Laboratory Guide: Determination of the working conditions and main characteristics of a charge controller

The aim of this laboratory task is to study the performance of the charge controller under normal operation condition as well as the thresholds for overdischarge and overcharge.

In order to test the normal operation conditions of a charge controller, a DC power supply should be used as a PV module, as well as a battery and a load (variable resistor), all connected via the charge controller. The current and the voltage from PV module, batteries and load should be measured and the power should be calculated. This procedure should be done for the following conditions:

- PV on, load off,
- PV on, load on,
- PV off, load on.

The threshold for overdischarge can be found by using the DC power supply as the battery and the load as before. By decreasing the battery voltage, the students should be able to find the low voltage disconnect of the charge controller.

The threshold for overcharge can be found by using the DC power supply as the PV module, and batteries and variable resistors as the battery. By increasing the battery voltage, the students should be able to find the high voltage disconnect of the charge controller.

The work should be carried out with the group spread in the table, with each one responsible for one of the tasks: (1)taking notes; (2)making the readouts and (3)switching setup configurations.

The report should be written using the template made available in the same Fenix subsection.

The report should be handed at the end of week after the lab session, which means, second Friday after Lab, by 10 AM. (This rule excludes the first work report. Advise with the professor). These are to be handed in via email (ivocosta@fc.ul.pt), with the reported attached in PDF AND WORD formats.