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Monitoring of grid-integrated photovoltaic systems comprising different solar cell technology type

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This paper addresses the monitoring of four Photovoltaic (PV) systems that comprise different technologies and are grid-connected. The main outcome of the study is to obtain an insight into the power generation and performance of PV systems in an embedded generation environment. This study is based on operational systems at the Outdoor Research Facility (ORF) on the NMMU South Campus. These are AC-coupled systems that form part of the embedded generation reference network established at NMMU. The purpose of the network is to monitor all PV systems aspects operating under the same environmental conditions. The four systems analysed are; a) 3.2 kWp polycrystalline Si, b) 1.36 kWp copper indium diselenide (CIS), c) 1.41 kWp monocrystalline Si and, d) 1.32 kWp Cadmium telluride (CdTe). The custom-designed and constructed data logging systems measure AC and DC parameters to evaluate the performance parameters of each PV array and inverter. The measured data facilitates analysis of performance and energy yield

Summary

This paper will discuss the data logger design, algorithms used to collect and process data, and give a detailed analysis of preliminary data; such as PV performance, performance ratio, final yield, and the reference yield for each PV system.

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Level for award
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Msc

Main supervisor (name and email)
and his / her institution

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