



Contribution ID: 164

Type: Oral Presentation

## On the Thermal and Electrical Properties of Low Concentrator Photovoltaic (LCPV) Modules

*Wednesday, 13 July 2011 11:15 (15 minutes)*

Efficient thermal management of low concentrator photovoltaic (LCPV) modules ensures that the maximum power capabilities of the LCPV system are harnessed, and may substantially prolong the operating lifetime of the photovoltaic (PV) cells. A general understanding of the thermal transfer properties of PV modules is thus necessary to effectively design, construct, and implement viable LCPV systems.

A basic thermal model based on one-dimensional heat transfer was developed and includes various energy dissipation mechanisms, such as convection and radiation. Panel fans were used to simulate air flow across the surface of the PV module and temperature measurements of the front and back surface of the PV module were recorded to analyse energy dissipation in accordance with the basic thermal model.

Initial results indicate that 50

**Level (Hons, MSc, &nbsp; PhD, other)?**

MSc

**Consider for a student &nbsp; award (Yes / No)?**

Yes

**Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?**

No

**Primary author:** Mr GERBER, Jacques (Nelson Mandela Metropolitan University)

**Co-authors:** Prof. VAN DYK, Ernest (NMMU); Dr VORSTER, Frederik (NMMU)

**Presenter:** Mr GERBER, Jacques (Nelson Mandela Metropolitan University)

**Session Classification:** Applied

**Track Classification:** Track F - Applied and Industrial Physics