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"MODELLING OF THE PHOTOVOLTAIC MODULE CHARACTERISTICS USING VISUAL BASIC FOR APPLICATION MICROSOFT EXCEL"

Dani Rusirawan, Ph.D

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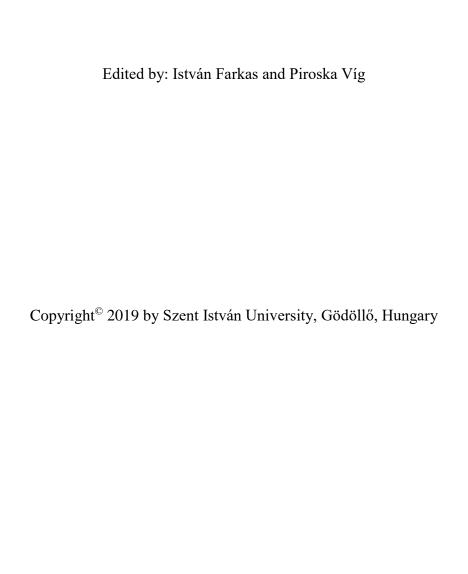
BOOK OF ABSTRACTS

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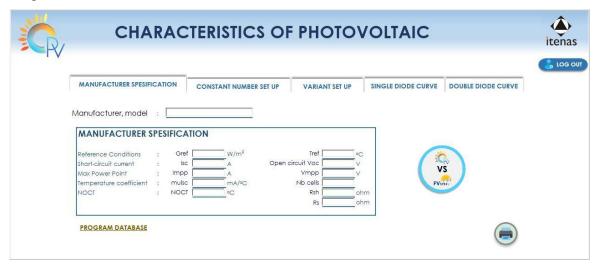
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MODELLING OF THE PHOTOVOLTAIC MODULE CHARACTERISTICS USING VISUAL BASIC FOR APPLICATION MICROSOFT EXCEL

D. Rusirawan[1], N. Sari[1], F. Hidayat[1] and I. Farkas[2]

[1]Department of Mechanical Engineering, Faculty of Industrial Technology
Institut Teknologi Nasional (ITENAS) Bandung, West Java – Indonesia
Jl. PKHH. Mustapa No. 23 Bandung 40124, E-mail: danir@itenas.ac.id

[2]Department of Physics and Process Control
Szent István University, Páter K. u. 1., Gödöllő, H-2100 Hungary
Tel.: +36 20 4360719, E-mail: Farkas.Istvan@gek.szie.hu

In this research, modelling of the photovoltaic (PV) module characteristics has been performed using Visual Basic Application (VBA) Microsoft Excel, which is the later named as characteristics of photovoltaic (Cpv) software. The feature of the Cpv software is presented in the figure below:

A model was developed based on single diode model (five parameters: light generated current, I_l; reverse saturation current, I_o; diode quality factor, n; series resistance, R_s; and shunt resistance, R_{sh}) and double diode model (seven parameters: R_s, R_{sh}, I_l, I_{01}, I_{02}, n_1, n_2). One of the outcome of this research is finding the appropriate type of PV model (single or double). The PV module characteristics resulted by PVSyst commercial software is used as a reference. The margin error parameter is used as an indicator to find the suitable model Cpv and PVSyst.

Based on the Cpv simulation, it is found that the PV module characteristics executed by single diode model in Cpv is similar with PV module characteristics resulted by PVSyst, with margin error less than 7%. It means that the model used in PVSyst can be said as single diode model. As a case study, the type of PV module used for simulation is JA Solar, JAM-6-60-250.

References

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