



**“Gheorghe Asachi” Technical University of Iasi, Romania**



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## **EXPERIMENTAL INVESTIGATION OF TEMPERATURE EFFECTS ON THE PARAMETERS OF PHOTOVOLTAIC PANELS**

**Sebastian Valeriu Hudisteanu, Marian Pruteanu\*, Theodor Dorin Mateescu,  
Maricica Vasilache**

*“Gheorghe Asachi” Technical University of Iasi, Faculty of Civil Engineering and Building Services,  
13 Dimitrie Mangeron, Iasi, 700050, Romania*

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### **Abstract**

This work presents an experimental analysis of the influence of a monocrystalline photovoltaic (PV) panels' temperature on its main operating parameters. Victron Energy, SPM 30-12 PV panel is tested, using a double climatic chamber. The PV panel is placed as a barrier between the two rooms of the climatic chamber. The study is focused on the establishing the effect of raising temperature of PV panel over electrical parameters: voltage, current and power produced and also over the efficiency and fill factor. The experimental data are obtained considering a constant solar radiation, generated by a solar simulator placed in the hot room of the climatic chamber. The operating temperature is controlled by the flowing of cold air on the backside of the PV panel. The coefficients of the mean variation of the parameters with photovoltaic panel's temperature are  $-0.52 \text{ \%}/^{\circ}\text{C}$  for efficiency, while for voltage and current they are  $-0.48 \text{ \%}/^{\circ}\text{C}$  and  $+0.10 \text{ \%}/^{\circ}\text{C}$  respectively.

*Key words:* climatic chamber, efficiency, photovoltaic panel, solar radiation, temperature effect

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\* Author to whom all correspondence should be addressed: e-mail: [pruteanu\\_marian@yahoo.com](mailto:pruteanu_marian@yahoo.com); Phone: +407 63694261