عنوان فارسی مقاله:
خصوصیات پانل PV و بهینه‌سازی کلی پارامترهای مدل آن با استفاده از الگوریتم ژنتیک

عنوان انگلیسی مقاله:
Characterization of PV panel and global optimization of its model parameters using genetic algorithm

توجه!
این فایل تنها قسمتی از ترجمه میباشد. برای تهیه مقاله ترجمه شده کامل با فرمت ورد ویرایش همراه با نسخه انگلیسی مقاله اینجا کلیک نمایید.
5. Conclusions

In this paper, a modeling method based on the genetic algorithm is proposed. The values of the PV module parameters were computed in such a way that the error between the simulation results and the data sheet information is minimized. A global optimization for the values of the parameters was realized, so the values extracted using this algorithm are applicable for the entire range of the solar radiation and temperatures. The information provided by the manufacturer’s data sheet of a certain PV module is the only requirement for this approach. The Matlab–Simulink environment was used to simulate the operation of the PV module using the parameters obtained by the genetic algorithm. The accuracy evaluation of this approach was achieved by comparing the results of the simulation based on the extracted parameters with the manufacturer’s data sheet information. The result validation was conducted for three types of PV modules from different technologies (mono-crystalline, poly-crystalline and thin-film). Different cases were also analyzed for the purpose of comparison. It was found that the error between the simulation results, based on the extracted parameters and the data sheet, was minute for different simulated types at different temperatures and different solar radiation. The most accurate results (achieving least error) were obtained using single-diode model with three extracted parameters (ideality factor, series resistance and shunt resistance).