**Optimal Output Power Of Photovoltaıc (PV) Electrical Systems Using Artificial Neural Network (ANN)**

***Alkhansa O M ABDALLA 1,\*[C:\Users\Abdullah\AppData\Local\Microsoft\Windows\INetCache\Content.Word\ORCID-iD_icon-16x16.gif](https://orcid.org/0000-xxxx-xxxx-xxxx), İlkay ÖZEROGLU 2[C:\Users\Abdullah\AppData\Local\Microsoft\Windows\INetCache\Content.Word\ORCID-iD_icon-16x16.gif](https://orcid.org/0000-xxxx-xxxx-xxxx)***

*1 Tokat vocational high school, Department of Electricity and Energy, Tokat Gaziosmanpaşa University, Tokat, Turkey.*

*2 Çankırı vocational high school, Department of Electrical Engineering, Çankırı Karatekin University, Çankırı, Turkey.*

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| **Abstract**  One of the biggest problems facing manufacturers and researchers after installing the solar energy systems is to increase their efficiency and meet the demand loads of consumers, Also when starting designing a project to produce energy by solar energy cells, the output energy to be produced from this project is first determined, accordingly the type of panels, their number, their output energy and the way of connecting them are determined series and in parallel, and the type, capacity and number are determined of Inverters required, Cable connections, chassis, etc...  All of the aforementioned causes a loss of part of the energy, and one of the biggest problems that designers and implementers of projects faces is the inability of them to calculate these losses with the required accuracy, here in this study presented one of the methods that contribute to increasing efficiency by verifying the selection of the correct data and inserting it correctly in its appropriate location to establish a solar energy network in a way It is true, and this was done by using two different computer programs and they were combined with each other, the first program which is (PVsyst 6.8.5), As for the second it is an artificial networks algorithms, that to find the best values that can be used to achieve the highest level of effectiveness and the highest output power values when applying the energy solar system. This controller is designed to produce the maximum power from the PV module.in this study it was found that using the PVsyst 6.8.5 in conjunction with Artificial Neural Network (ANN) gives better results at a high rate to estimate the prediction output power which helps engineers and designers to accurately evaluate the final external effort and reduces the time spent in finding out put power when calculating it with Other programs or manually calculated, therefore, combining program information PVsyst 6.8.5 with the Neural Networks algorithm (ANN), is recommended to use. |
| Keywords: *Artificial Neural Networks (ANN), PVsyst 6.8.5, Solar Cell, Renewable Energy; Solar Cell* |