International Conference on Sustainability in Energy and Buildings

Invited Sessions

Title of Session:

Monitoring, diagnosis and evaluation of Photovoltaic Systems

Name, Title and Affiliation of Chairs:
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Description:

Nowadays, it is understandable that natural sources, such as oil, coal, natural gas, and nuclear are finite and limited in time and may generate pollution, face increasing environmental concerns such as global warming. Thus, the use of renewable energy sources, especially solar power as a major kind of clean technology will be the best choice to solve the energy crisis in future.

Very recently, photovoltaic system has become an essential part system in production of worldwide electrical power, since the efficiency of modules have now reached 40 % with the use of some new technologies.

There are a number of different types of solar photovoltaic systems available in the market all of which convert solar radiation into electricity, but have different characteristics and prices. The monitoring and evaluation of such systems will define the characteristics and the behaviour with temperature, spectral mismatch of the PV system in outdoor environment.

Monitoring photovoltaic systems can also provide useful information about their operation and the means to improve their performance if the data is reported correctly. To be useful, a monitoring report must provide information on relevant aspects of the operation in terms that can be easily understood by a third party. Appropriate performance parameters must be chosen, and their values constantly updated.

In some cases, it may be useful to monitor the performance of individual components in order to refine and improve the system, or be alerted by a loss of performance over time for preventive action. In the typical monitoring situation, the output will be sensed every minute, or every hour and the result stored and this will generated a huge amount of data. To be useful, the raw data must be checked for integrity then summarized and the minimum data needed to be collected should be for at least twelve months to reflect seasonal variations. Monthly averages are a convenient interval for summarizing energy production, consumption, losses and efficiency.

Thus, this special session aims to focus on the recent research and trends for the development and application of new methods for monitoring and evaluating photovoltaic systems as a key of the deployment of large scale PV systems around the word.

Aims and Scopes (include but not limited to):

1- PV module indoor and outdoor measurement;
2- PV module and PV system measurement;
3- Diagnosis method for PV system and array;
4- Concentrating PV system ;
5- Further reliability and testing methods for PV modules;
6- Numerical model for the forecast of the PV power production ;

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