information is the 12 monthly mean values of the daily global horizontal irradiation. Several sources of solar radiation data are available. The corresponding values, for the same location and the same month, can significantly differ from one source to another. The corresponding uncertainty does not derive primarily from a lack of precision in the measuring instruments, but from the random nature of the solar radiation. The intrinsic uncertainty of solar radiation represents an important limit to the significance of the results of any PV design exercise, irrespective of the complexity of the model supporting the particular design tool. Because of this, rather simple design methodologies can yield results of similar confidence that results from sophisticated ones. The annual solar radiation availability on horizontal surfaces, optimally tilted fixed surfaces and several types of tracking surfaces has been calculated for 30 different places distributed all over the world. The hope is that the readers could find here a similar location, both in latitude and clearness index, to the location of their interest.

On the other hand, the PV module's conversion efficiency of solar radiation into electricity has also been considered. A model for predicting the $I-V$ characteristic of a PV generator at any prevailing condition such as solar irradiance, ambient temperature, wind speed and so on, have been described. The only required input data are the short-circuit current, the open- circuit voltage and the maximum power under the STC, and the Nominal Operating Cell Temperature. All these data are commonly found in the manufacturer's standard information. Particular attention has been paid to the consideration of the dust and angle of incidence effects.

Some relevant aspects related to the design of the more important PV applications have been disclosed. It has been stressed that, whatever the detailed methodology, stand-alone PV-system sizing relies on future prediction (the expected system lifetime) based on past observations of the solar radiation data. The corresponding uncertainty, unavoidably associated with the random nature of the solar radiation, encompasses that simulation models can provide exact numbers but not automatically exact predictions. Concerning SHS, by far the most widespread PV application nowadays (in terms of the number of systems currently in operation), the difficulties for deriving representative standard energy consumption values have been pointed out. Finally, energy performance ratios for grid-connected PV systems have been defined.

ACKNOWLEDGEMENTS

Montse Rodrigo has been extremely kind in preparing all the figures. The comments of the editor have been extremely valuable. The writing of this chapter has been at the expense of many hours away from my loved ones. I must thank the large tolerance and patience of Leda and Cristina Celena.

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