

On the effect of lightning on a solar photovoltaic system

ABSTRACT

A solar PV system was modelled and the effect of lightning striking different parts of a solar PV system was studied and the results discussed appropriately. Lightning strikes of different wave shapes and different magnitudes were considered. The purpose of this research is to observe the transient current and voltage that appears in a solar PV system when struck by lightning. The results show that a transient current will appear at the nearest point to the lightning strike and the value of the transient current is same as the lightning current, while the transient voltage will appear at AC side at any point of lightning strike. This could damage the inverter which requires a high cost to repair or replace. The information of this paper can be useful to decide a suitable lightning protection system before installing a solar PV system.

Keyword: Different points; Lightning strike; Lightning wave shape; PSCAD/EMTDC; Solar PV system; Transient current; Transient voltage