

ANALYSIS OF THE APPLICABILITY OF PHOTOVOLTAIC PANEL CLEANING METHODS FOR DISTRIBUTED GENERATION SYSTEMS IN SOUTH AMERICA

Sergio Llanos, Renán Orellana-Lafuente, Daniel Felipe Sempértégui-Tapia

ABSTRACT

In the last decade, solar panels have emerged as a key solution to mitigate the effects of global warming and are generally the first option to diversify the energy matrix in many countries. In addition, several governments in the region are promoting micro-generation for self-consumption through legislation regulating activities in Distributed Generation Systems, which tend to be mostly photovoltaic systems. However, photovoltaic systems present certain challenges, including a significant reduction in energy production due to excessive heating of the panel surface and the accumulation of dust and dirt. To maintain the efficiency of a panel, periodic cleaning of the system must be carried out, which is complicated by the location of the panels in hard-to-reach places. In this paper, the applicability of various cleaning methods is analyzed focusing on the degree of accessibility and their possible application in Distributed Generation Systems in South America, considering that it is an emerging technology in this region. This study represents the first step towards the proposal of a technically and economically feasible PV panel cleaning system design for use in Distributed Generation Systems in South America based on the Bolivian experience.

Keywords: Photovoltaic Panels, Efficiency, Cleaning Methods, Distributed Generation.

DOI: 10.23881/idupbo.024.1-9i