

Evaluation of Methodologies for Measuring Harmonics and Inter-Harmonics in Photovoltaic Facilities

Authors : Anésio de Leles Ferreira Filho, Wesley Rodrigues de Oliveira, Jéssica Santoro Gonçalves, Jorge Andrés Cormane Angarita

Abstract : The increase in electric power demand in face of environmental issues has intensified the participation of renewable energy sources such as photovoltaics, in the energy matrix of various countries. Due to their operational characteristics, they can generate time-varying harmonic and inter-harmonic distortions. For this reason, the application of methods of measurement based on traditional Fourier analysis, as proposed by IEC 61000-4-7, can provide inaccurate results. Considering the aspects mentioned herein, came the idea of the development of this work which aims to present the results of a comparative evaluation between a methodology arising from the combination of the Prony method with the Kalman filter and another method based on the IEC 61000-4-30 and IEC 61000-4-7 standards. Employed in this study were synthetic signals and data acquired through measurements in a 50kWp photovoltaic installation.

Keywords : harmonics, inter-harmonics, iec61000-4-7, parametric estimators, photovoltaic generation

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020