

Global research trends on photovoltaic maximum power extraction: Systematic and scientometric analysis	
Authors	Hassan M Hussein Farh, Ahmed Fathy, Abdullrahman A Al-Shamma'a, Saad Mekhilef, Abdullah M Al-Shaalan
Publication Year	2024
Grant Number	IMSIU-RG23030
DOI link	10.1016/j.seta.2023.103585
<p>Abstract: This paper is thought to be an early attempt to address both the systematic and scientometric quantitative and qualitative data analysis of the worldwide research trends on photovoltaic maximum power point tracking (PV-MPPT) from 1995 to 2021. The science mapping of notable PV-MPPT research outlets, co-authorship network, articles' citations network, keywords network, and active countries network in PV-MPPT research have been provided, discussed, and analysed. On the other hand, the major worldwide research trends of the PV-MPPT energy technologies have been discussed, classified, compared, and analysed, focusing on the significant issues and hot development areas that attracted the attention of worldwide researchers, industrial sectors, and countries. To the best of our knowledge, the worldwide research trends of PV-MPPT energy technologies have two major techniques: control circuit-based and power circuit-based techniques. The control-circuit based techniques are classified into nature-inspired MPPT and hybrid MPPT algorithms. On the other hand, the power circuit-based techniques have been classified into PV array-based and PV system arrangement-based techniques. The detailed comparisons proved that, both nature-inspired and hybrid algorithms performed well in case of static partial shade conditions (PSCs) with one global maximum peak (GMP), but they required reinitialization to track the dynamic GMP under dynamic PSCs. The hybrid MPPT algorithms performed well compared with the nature inspired MPPT algorithms in terms of GMP tracking, tracking speed, and fluctuations around GMP. However, their cost and complexity are high. This review enhances the collaboration between worldwide researchers and prominent countries in the PV energy area and provides some insights and future perspectives.</p>	

هـخوجه