

Abstract:

There are a lot of factors that can affect the solar energy that PV panels harvest one of the main factors is the soiling effect. The performance loss occur because the dust particles block the sun rays from getting in the PV cells therefore less power generated. The more the tilt angle is increased the harder the dust particles get sticky on the PV panel's surface due the gravity pull them down. The objective of this study is to see whether increasing the tilt angle and how much will affect the soiling effect, PV panels will be set on tilt angles of (0°,15°,30° and 45°) degrees, The soiling effect will be calculated by measuring the difference between the power generated by the cleaned and uncleaned PV panels on same time. The study had calculations of the soiling effect on different scenarios Monthly, each two weeks and weekly for Monthly average it has found that tilt angle of 45° the soiling affect has become low 2.53% on tilt angle of 30° has become 6.33% on tilt angle of 15° has reached 7.94% on tilt angle of 0 has become 10.20%.Also the study has recorded a spike in Khamasinee winds which is known that it causes high soiling effect as it caused the soiling loss of tilt angle of 0° spikes from 18.89% to 20.59%, tilt angle of 15° from 16.52% to 20.59%, tilt angle of 30° from 16.52% to 18.89% and tilt angle of 45° from 3.53% to 8.11% as daily readings for each one. The study has concluded the more tilt angle is increased the more soiling effect goes down also it has founded that the first half of May month and the last week of April do not cause huge soiling as it was founded in results but the second half of May were soiling effect tends to be a concern.