Performance of photovoltaic module at different tilt angles in Perlis, Northern Malaysia

Abstract

This paper presents a calculation of the tilt angles and the solar irradiance on PV module in Perlis, Nortern Malaysia. A mathematical modeling is used to calculate the tilt angles and the solar irradiance, which depend on latitude and day number. The optimum tilt angle of PV module was determined by searching a yearly maximum total and average solar irradiance. The tilt angles of PV module in Perlis, Northern Malaysia are -17.16 ^{0} to 29.74 ^{0}. For the state of Perlis, Northern Malaysia (has latitude 6.29 ^{0} N) is recommended that the optimum tilt angle of the PV module from the horizontal be put equal to 6.84 ^{0} (an angle of the latitude of the location +0.55 ^{0}). The best performance of PV module is reached when the tilt angle is 6.84 ^{0}.