

# Outdoor temperature coefficient of different PV module technologies at ABD-plant in a one-year period

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Photovoltaic provides one of the possibilities in the renewable energy sector for the future supply of energy; however the energy sector needs a good prediction of the energy producibility. To have a better understanding of the behavior of the PV-modules under outdoor exposure, indoor measurements are not sufficient. It is well known that the behavior of most of the different PV technologies changes under real conditions compared to indoor conditions (STC - Standard Test Condition) and a closer outdoor examination is therefore needed.

To perform the necessary outdoor investigations, data acquired at the ABD-plant (ABD - airport bolzano dolomiti) in Bolzano (South Tyrol) has been examined over a 1-year period. This investigation considers the temperature dependence at three different irradiance levels of the majority of commercially available PV technologies: single, double and triple junction amorphous silicon, micromorph, silicon heterostructures (HIT), monocrystalline silicon, polycrystalline silicon, copper indium gallium diselenide (CIGS), and cadmium telluride (CdTe). Temperature coefficients for electrical current, voltage and power are derived as parameters for all technologies.

The results of this work show that outdoor measurements are strongly needed in combination with indoor experiments to better estimate and understand outdoor behavior of PV technologies. Better understanding of the behavior under real conditions will improve the technologies in order to have higher energy production in realistic conditions.