

Fraunhofer Institute for Solar Energy Systems ISE

confirmed: 42.9% additional yield with the tracking systems from DEGER!

Anyone who strives for greater efficiency has to move away from fixed systems.

DEGERtrackers are generating a 5.3% higher yield compared with astronomical controlled systems.

Fraunhofer ISE confirmed the additional yield with DEGERtrackers

Comparative measurements at the Solarpark Rexingen

Even though photovoltaic modules efficiency factor has been improved considerably over the last few years, the physical ceiling has essentially been reached. By tracking of the photovoltaic modules, the efficiency and the yield can be increased. This is reflected in the numbers of the Fraunhofer-Instituts für Solare Energiesysteme (ISE).

In the comparative measurement four different systems for generating solar energy were examined in solar park Rexingen in southern Germany. The aim of the two-year study was to determine the efficiency and higher yield of the photovoltaic modules compared to fixed tilt installed, astronomic tracked and tracking by sensors of single- and dual-axis systems.

Conditions

The efficiency of solar panels depends on various factors such as temperature, air pressure and radiation values. So that the comparison measurements were carried out under the same conditions, all four systems were installed on the former landfill in Rexingen and equipped with the same modules and inverters. Measurement of yield was determined for two years and was carried out under the following parameters and performance

System 1

Fixed tilt installation 30° south-facing



System 3 Dual axis astronomical controlled



Analysis procedures

For the evaluation two different methods were used.

Installation site:48° 26' 50" North, 8° 39' 48" EastElevation N.:569 metersIrradiation:1,010 kWh/kWp (PVGIS)Installed modules:Per unit 36 modules
Sanyo HIP-215NKHE1Nominal power:7.74 kWpPV Inverter:Per unit one SMA SMC 8000TL
8.0 kW

System 2

Single-axis DEGERtracker with MLD sensor



System 4 Dual-axis DEGERtracker with MLD sensor



The normalization method, in which all performance variables such as cable length, actual module output, inverter efficiency and other similar variables are taken into account. By the evaluation with the standard method the yield takes into account a theoretical consideration of the cable losses resulting directly from the measured data without further corrective calculations.



Results

According to the one hundred percent availability of data in 2012 the following values are determined with the standard method:



Comparative measurements in 2012 in solar park Rexingen

Additional yield monthly results in 2012 compared to fixed tilt systems



Additional yield monthly results in 2012 compared to fixed tilt systems in percent

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
single-axis DEGERtracker	15.7%	15.2%	24.4%	19.8%	27.2%	23.1%	26.5%	29.5%	24.7%	18.8%	12.4%	19.8%
dual-axis astronomical	29.4%	-8.9%	33.5%	23.0%	36.8%	32.5%	34.4%	39.4%	29.0%	25.9%	22.6%	32.5%
dual-axis DEGERtracker	52.5%	36.2%	35.9%	27.8%	38.6%	32.6%	38.5%		33.8%	30.6%	29.5%	62.3%

Looking at the earnings figures it is obvious that the tracking systems with the patented MLD technology from DEGER achieve higher yield, especially in the winter months.

The result of the study

- DEGERtracker are generating a 42.9% higher yield compared with static systems.
- DEGERtracker are generating a 5.3% higher yield compared with astronomical controlled systems.
- DEGERtracker have the lowest operating power consumption compared to the measured tracking systems in this study.
- During the winter, astronomically controlled units may not even out perform fixed systems when foggy or cloudy conditions are present. Only MLD technology senses that the diffuse irradiation is best captured with by presenting the most surface area possible.

Source: Fraunhofer ISE, Report: PMZ940-Adr-1201-V1.01





Sales and production locationsInstalled DEGER systems

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