

## **Solar energy: heat and clear skies reduce output**

*Düsseldorf, 25<sup>th</sup> July 2022 – A hot summer with lots of sun may be optimal vacation weather. But photovoltaic systems tend to like it a bit cooler with slightly overcast skies. "The efficiency of the panels drops when they get too hot", says Markus W. Voigt, CEO of aream Group. "However, one type of power generation in particular suffers even more."*

Basically, the heat effect on solar panels is fairly easy to calculate: for every degree the panel gets warmer, the efficiency drops between 0.35 and 0.45 percent. "This refers to the most commonly used silicon-based modules", Voigt says. "In that respect, it's clear that module performance will always be higher on a nice spring day than on a hot summer sunny day." The exact loss of power depends on the type of modules, but also on other factors.

For example, the tilt angle of the panels also plays a major role. "Especially with systems mounted directly on roofs, two effects come together here," says Voigt. "On the one hand, the panels often heat up much faster because of the small distance to the roof." On the other hand, the angle to the sun is predetermined by the roof pitch. "Here we see that especially the higher sun angles in summer are often less well captured than the somewhat flatter ones in spring and fall", Voigt says.

While private systems on house roofs often cannot be designed any other way, professional ground-mounted systems are already optimized for sun positions and ventilation during the planning stage. "A steady wind, is the best cooling", Voigt says. "That's one reason why sites in northern Germany can deliver the same or similar output as those in the south, despite fewer hours of sunshine."

Variations due to heat are always included in the calculation for power generation. "However, in very hot summers like the current one, it can happen that not the panels but the transfer stations with large transformers get too hot", Voigt says. "In these cases, the solar farms are shut down to conserve infrastructure."

"Actual weather conditions therefore contribute more to power fluctuations than pure heat", Voigt says. "For example, panels under a slightly cloudy sky actually deliver more power." This is because white clouds scatter more light toward the earth and more power arrives. "A hazy sky, on the other hand, scatters light diffusely, resulting in a loss of power", Voigt says.

Overall, the reduction in power caused by heat is no more than five percent. But despite the circumstances that lead to lower electricity output, renewables are also much more robust in this respect than conventional power plants. "The latter need immense amounts of water to cool their plants, which they take from rivers", says Voigt. "And not only do the rivers currently carry little water, but the return of the warm cooling water to the rivers is always limited in the summer so as not to harm the biotopes." Just recently, French nuclear power plants had to be shut down again for these reasons. "The price of electricity rose rapidly on the markets there as a result", Voigt said. "Renewables are much more predictable and stable in that respect."



More information: [www.aream.de](http://www.aream.de).

### **About aream**

The aream Group is a fully integrated investment and asset manager for institutional investors with a focus on sustainable infrastructure in the renewable energy sector, which includes wind and solar power, grids and storage technology. In this context, aream is represented along the entire value chain from project development to plant operation. With a transaction volume of more than EUR 1.5 billion, the company has been covering the entire spectrum of asset management services for over 15 years and ensures the commercial and technical optimization of the assets. In addition to classic project investments in clean energy, aream also offers investment opportunities in climate-tech companies: directly or via private equity solutions. aream combines investment expertise with technical and commercial know-how and ensures sustainable performance with stable distributions, returns and value growth through a structured investment and risk management process.

### **Contact**

AREAM Group SE  
Kaistraße 2  
D-40221 Düsseldorf  
Tel.: +49 (0)211 30 20 60 42  
E-Mail: [info@aream.de](mailto:info@aream.de)  
Web: [www.aream.de](http://www.aream.de)

### **Press contact**

news & numbers GmbH  
Bodo Scheffels  
Tel.: +49 (0)40 80 60 194 34  
M: +49 (0)178 / 49 80 733  
E-Mail: [bodo.scheffels@news-and-numbers.de](mailto:bodo.scheffels@news-and-numbers.de)  
Web: [www.news-and-numbers.de](http://www.news-and-numbers.de)