Solar Forecasting with All-Sky Imagers

Publieke samenvatting / Public summary

Aanleiding

As the amount of photovoltaic (PV) systems in the Netherlands will continue to increase, fluctuations due to passing clouds will cause large power flow fluctuations in the electricity network. To support proper network management an accurate PV power forecast is necessary at a high temporal and spatial resolution.

Doelstelling

The objective of this project is to investigate how a set of all-sky imagers, or cloud cameras, can be used to analyse cloud movement and to predict how these clouds will move at future time horizons up to one hour, in order to forecast the power generated by solar PV systems on the ground.

Korte omschrijving

Three all-sky imagers will be installed at the UU campus. Movement of clouds will be analyzed by constructing sequences of images. Images of two cameras will be used for stereographic analysis, to infer cloud height. One all-sky imager will be installed at KNMI, where cloud height can be calibrated with an existing ceilometer. The projection of these 3D images on a 2D surface will result in a moving shadow field that affects the power generation of 4000 PV modules installed at UU buildings spanning several km2. Data of at least one year will be studied to develop a solar forecasting method that quantifies power fluctuations based on the moving cloud images. Based on the results, potential business cases will be designed together with the partners that are stakeholders in network management such as

Projectinformatie / Project information

Projectnummer / Project number
TKITOE1821406
Subsidiebedrag / Grant amount
€ 299.300,00

Algemene informatie / General information

Penvoerder / Secretariat
UU

Publicaties en materialen / Publications and attachments

- **18.04.2024**

  Eindrapport SolFaSi

Volg Topsector Energie op X / Follow Topsector Energie on X

@TSEnergie

distribution system operators or aggregators.

Resultaat

At the end of the project, an all-sky imager based solar forecasting method is available as well as estimates of the potential value of the roll-out for major cities in the Netherlands tuned to various stakeholders.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
Voor meer informatie over de Topsector Energie, ga naar **www.topsectorenergie.nl**.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar **www.rvo.nl/tse**.