BING

Publieke samenvatting / Public summary

Aanleiding

The n-Pasha cells are by nature bifacial. However, the vast majority of the n-type industrial modules are still sold as monofacial modules with an opaque back sheet. The Yingli Panda modules are a prominent case in point. On the other hand, there is a growing interest in both bifacial and glass-glass modules. This is to harvest more power due to the transparency of both front and rear panels. Also glass-glass modules have better mechanical properties and increased reliability compared to standard modules with a TPT-like back sheet, for installation in high UV, high temperature conditions.

Doelstelling

The main goal of the project is to improve performance of bifacial glass-glass modules.

Korte omschrijving

In BING, we follow a top-to-bottom approach. We start by creating models and tools for evaluating and understanding bifacial module performance and associated levelised cost of electricity (LCoE) and monitoring the outdoor performance of bifacial systems. In parallel, we will research technologies to improve the rear side efficiency of the n-Pasha cell. Improved cell results can directly be fed back into the energy gain and LCoE models. As an example, the relation between cell temperature in outdoor bifacial modules and the free carrier absorption in the IR range will be studied. The present glass-glass module based on Yingli's commercial n-type Panda solar cell is the starting point for this work.

Resultaat

Projectinformatie / Project information

Projectnummer / Project number
TKITOE1409101
Subsidiebedrag / Grant amount
€ 558.959,00

Algemene informatie / General information

Publicaties en materialen / Publications and attachments

- **10.12.2018**

  Eindrapport BING 2018 (TKITOE1409101)

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1) Show a much higher energy yield due to bifacial glass-glass modules in the field and a lower levelised cost of electricity than for standard monofacial modules. 2) Develop an annual energy yield model for bifacial systems including shading and thermal effects. 3) Understand the gains (and losses) of bifacial systems with respect to monofacial systems. 4) Improve the present n-Pasha solar cell to front efficiency of >21.5% and bifaciality factor of 95%, corresponding to a rear efficiency of 20.4%. 5) Show the effect of free carrier absorption in the IR on the heating of a bifacial solar cell/module, if not negligible, show reduction of the free carrier absorption and lowering of the corresponding heating.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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