SunPass

Publieke samenvatting / Public summary

Aanleiding

Recently, ECN and Tempress started working on the integration of the concept of carrier selective passivating contacts into the industrial n-PERT technology (published as PERPoly cell), which will boost the cell efficiency to above 22% (using large area and processes based on screen-printed contacts). The results up to now are very encouraging: recently it was demonstrated that this new cell reaches above 21% solar cell efficiency (21.5% peak efficiency, published at the 2017 EU-PVSEC). Another recently developed concept is the Mercury interdigitated back-contact (IBC) cell, with a front floating emitter. Its basis lies in our n-PERT concept, and was successfully introduced in a pilot production environment. At the same time, Jolywood produces high-efficiency IBC cells on a large scale. Combining the two developments, a very attractive high-efficiency concept of an IBC cell with carrier selective passivating contacts is obtained: poly-Si based IBC. Results on completed cells of this type have been published by only a limited number of institutes and universities. Moreover, to the best of our knowledge, no results on module integration have been published so far.

Doelstelling

Therefore, important improvements are still required to bring this concept further, including an improved cost per Watt-peak, to the level of industrial concepts like n-Pasha and PERPoly. The Cost of Ownership (CoO) of the current poly-Si based IBC cell can still be lowered, focusing on conversion efficiency, process simplification, reduced material consumption and higher

Projectinformatie / Project information

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Algemene informatie / General information

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Publicaties en materialen / Publications and attachments

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throughput of the processes. Demonstrating an attractive and industrially feasible cell and module solution, combined with the high efficiency of the cells and modules, is the main goal of this project. It is also important to determine the efficiency limits of the concept, and the influence of application of industrial processing on these limitations. What limits the performance when we introduce non-ideal industrial-like methods? And do we see opportunities to overcome these limits by introducing the innovative solutions we come up with? Finally, for successful market introduction, also the operational reliability is an important criterion of the new poly-Si based IBC modules.

Korte omschrijving

For this reason, one work package of the project is dedicated to that aspect. Accelerated degradation tests, under varying operational conditions, will be performed to test the robustness of the poly-Si based IBC laminates developed in the project.

Resultaat

In summary, the project will deliver a low cost, high throughput, high efficiency process for the industrial production of poly-Si based IBC cells and modules.

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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