

nForce

Publieke samenvatting / Public summary

Aanleiding

After a spectacular growth in global market size during 2000 - 2010, significant consolidation is ongoing in the PV market at large. The production of solar cells and modules has shifted from Europe towards Asia, while the equipment industry has remained in Europe. On the technology side new breakthrough technologies are necessary for companies to remain competitive. In other words, the future competitiveness of cell and module concepts relies ever more on innovation towards high-efficiency, cost-effectiveness in Cost per Watt (CpW) and reliability. This provides challenges but also huge opportunities for (Dutch) manufacturers of the enabling equipment and high-volume-manufacturing tools. The project will support the Dutch industry in maintaining and improving its current and future competitive position as equipment suppliers for the PV industry. The collaboration within this project allows us to provide total solutions in the Netherlands by combining the expertise of Tempres as provider of furnace technology with that of ECN in the field of solar cell processing and module manufacturing and involve TSC as a future user of the technology.

Doelstelling

Providing an integrated cell-to-module solution on lowering the costs, while maintaining high efficiency of the modules, is the main goal of this project.

Korte omschrijving

Over the last decade, Tempres and ECN have become major players in the field of n-Pasha n-type Si and metal-wrap-through (MWT) modules, by

Projectinformatie / Project information

Projectnummer / Project number

TKITOE1409102

Subsidiebedrag / Grant amount

€ 514.325,00

Algemene informatie / General information

Publicaties en materialen / Publications and attachments

- 10.12.2018

**Eindrapport nForce 2018
(TKITOE1409102)**

Volg Topsector Energie op X / Follow Topsector Energie on X

@TSEnergie

providing the required cell and module production lines and process-technology to factories in Asia and the US. Nowadays, this technology is off-the-shelf available on the PV-market. Since a few years, ECN has been working on the combination of these two successful concepts, through the development of open rear side n-type MWT (n-MWT) solar cells. The results look very encouraging: recently it was demonstrated that this new concept can reach up to 21% solar cell efficiency with a batch average of over 20.8% and both Tempres and ECN received a lot of interest from foreign parties for this technology. Nevertheless, some improvements are still required to push the production of n-MWT modules towards an optimal cost per Watt (CpW) level, making n-MWT competitive to the highest efficiency solar cell concepts on the market.

Resultaat

After several iterations, the project aims to have produced a 2x2 cell mini module with an encapsulated cell efficiency of 21-21.5% with a reduction of the CpW of over 0.03 \$/Wp. In parallel, other approaches to reach a very high solar cell efficiency that are, possibly, not yet industrially available or optimized, will be tested in WP2 to increase both the cell and module efficiencies to values of 22% and higher. In summary, the project will deliver a low cost, high throughput, high efficiency process for the industrial production of n-MWT cells and modules with demonstrated operational stability.

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.