

Flexible free-form lightweight PV modules for vehicle integration

Publieke samenvatting / Public summary

Aanleiding

Currently the standardized solar panel layout limits the application of PV technology to the areas with well-defined geometrical shapes, such as the rooftops or building windows. It is desirable to have flexible free-form PV modules that can be cut and used in any shape to create additional applications of thin film PV.

Doelstelling

The aim of the project is to develop technologies for interconnection on flexible CIGS and Perovskite photovoltaics. Using this technology we will fabricate fully free-form thin-film solar panels, which can be applied on any irregular shapes and curvatures without performance loss. The results will be demonstrated by encapsulation and integration of the developed flexible free-form modules as “solar” doors of the Lightyear One car.

Korte omschrijving

The following elements will be investigated to make free-form thin-film solar panels: 1. High quality flexible thin film solar cells, 2. Free-form cutting of solar panels, and interconnection designs 3. Encapsulation technology for flexible substrates with variety of sizes and shapes The development of perovskite and CIGS solar cells will be carried out using large-scale deposition routes of TNO-Solliance. Post-deposition interconnection for both perovskite and CIGS on foils will be pursued using the knowledge developed on glass-based CIGS modules. Design and optimization and encapsulation of the

Projectinformatie / Project information

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Algemene informatie / General information

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modules for the best performance will be carried out by TNO-Solliance: Perovskite and CIGS foils will be electrically connected and cut to fit the shape of the Lightyear One car door without performance loss. Design will be optimized to reduce the impact of inhomogeneous illumination. The company Lightyear One and De Voogt Naval Architects will make in-kind contribution within this project.

Resultaat

The technology developed in this project will be demonstrated by the application of fully functional free-form flexible PV modules and cells on car doors that have a specific shape and curvature. This possibility creates opportunities to integrate thin film solar technology in a wider range of vehicles, enabling further implementation of emission-free transportation.

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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