

PanelPV

Sandwich panels with integrated PV with freedom of size and color

Project duration: from 01.2018 to 10.2020

Report submitted: 06.2021

The project PanelPV aimed at the development of new façade elements with integrated PV. Starting components were sandwich panels made by Panelen Holland and CIGS based PV foil made by Flisom. In the project we have integrated these two into new power generating façade elements. As PV panels generally shows only a dark, almost black color, translucent PV films were developed to allow for color coming from the outside of the sandwich panel. Translucence was achieved by structuring the PV foil with a laser process in such a way as to create a high number of small enough voids. The human eye cannot resolve these individual patterns and perceives only a colored surface. 50% transparency with remaining 40% of the original electrical performance was demonstrated by the use of a new approach developed by TNO. This is an impressive achievement, especially in view of the often observed shunting that can be induced by such laser patterning steps. This translucent approach gives the producer of the sandwich panels full freedom in color or print selection.



During this project the PV foils have been integrated by means of lamination to the outside layer of the sandwich panel. This outer layer as such became the back sheet (BS) of the PV panel. During the project processes such as coatings on the front side of the sandwich panels and adhesion layers between the sandwich panels and the PV foil were tested and optimized. A suitable BS has been identified, and the required lamination process successfully demonstrated. The outer layer with laminated PV was then combined with the insulation and inner protective layer to form full sandwich panels, together with required environmental testing of this final product.

Finally we have fabricated a demo façade at Panelen Holland in which several sandwich panels having two different sizes and with different colors were integrated. Kiwa BDA established a knowledge base related to the product properties, the construction and product regulations.

Project consortium

Coordinator and all contact details:

Full name of organisation:	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek
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Participating countries and financing:

Country	Number of organisations involved	Total project costs	Public funding
The Netherlands	3	712'208	503'443
Switzerland	1	292'624	117'049
<i>Total</i>	4	1'004'832	620'492

Funding agencies involved and contracts

Funding Agency	Contract N° and Title
Rijksdienst voor Ondernemend Nederland (RVO)	TESOL17003 "PanelPV"
Swiss Federal Office of Energy (SFOE)	SI/501698-01 - Verbundpanelen mit integrierter PV und Wahlfreiheit bei Dimension und Farbe (PanelPV)

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