

Cover Power

Smart Glass Coatings for Innovative BiPV Solutions

Project duration: from 10.2018 to 09.2021

Report submitted: 05.2020

Publishable Summary

From many research & development activities on PV module applications it has been found in recent years that the optical appearance of PV modules is mainly determined by the outer side (environmental side) of the cover glass of the modules. In particular, reflections of the incident light on the cover glass surface are essentially responsible for the overall optical perception of the modules. It is precisely this fact that makes it difficult to effectively tune the aesthetics of a photovoltaic module, for example by changing the color of the solar cells used. In contrast, it is more promising to modify the surface that is mainly responsible for the optical perception to match the design: the outer surface of the cover glass.

The project Cover Power addresses exactly this challenge. By combining different kinds of glass coating technologies, the project results will allow for new degrees of freedom for the design of PV modules for BiPV solutions. The results will in particular enable the modules to be colored effectively and also address a problem that in the past has proven to be an obstacle for some facade-integrated BiPV projects: glare. The aim of the project is to develop prototypes of BiPV modules that are based on the typical glass-glass PV module technology in combination with Si solar cells by applying novel glass coatings to the outer side of their cover glasses. These module prototypes should have the following properties:

- Flexible and innovative design in terms of color and surface texture
- Minimum glare (less than 0.1% of specular reflection)
- At least 150 W/m² (STC) by exploiting back reflected light in bi-facial cells
- Aging and adhesion of surface coatings are carefully investigated and reliable for at least 30 years

A further objective is the realization of a BiPV installation in a façade and a roof to demonstrate the feasibility of the developed module prototypes. This installation will be in operation beyond the end of the project.

Project consortium

Coordinator and all contact details:

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Participating countries and financing:

Country	Number of organisations involved	Project costs in EUR	Public funding in EUR
Austria	5	363'037	210'306
Switzerland	1	107'750	43'100
<i>Total</i>	6	470'787	253'406

Funding agencies involved and contracts

Funding Agency	Contract N° and Title
FFG	Project Number: 863509 eCall Number: 11019633 Title: Cover Power: Smart Glass Coatings for Innovative BiPV Solutions
SFOE	Contract no. SI/1501627-01 Order no. 810005388 Title: Cover Power: Smart Glass Coatings for Innovative BiPV Solutions