

Cover Power Smart Glass Coatings for Innovative BiPV Solutions

Project duration: from 10.2018 to 09.2021

Report submitted: 10.2018

Publishable Summary

When analyzing the reasons for the optical appearance of photovoltaics it becomes clear that its appearance is predominantly determined by the cover glass. In particular, the reflections at the cover glass are substantially higher (more than twice) than these at the solar cell. From an optical design perspective this fact makes it difficult to tune the aesthetics of a photovoltaic module effectively only by changing the color of the cells. More promising is the approach to tackle the surface which is mainly responsible for the design: the air-glass interface. Combining different kinds of coatings with various patterns of glass allow for new degrees of freedom in designing new BiPV solutions. In particular an issue could be tackled which turned out to be a road-block for some facade integrated BiPV projects - namely glare. The target of the project is to develop BiPV module prototypes based on glass-glass technology and c-Si solar cells (including bi-facial cells) and applying novel glass coatings for the outer side (environmental side) of the cover glasses. Those module prototypes should show 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
- Ageing and adhesion of surface coatings is carefully investigated and reliable for at least 30 years

A further objective is the realization of a prototype BiPV installation for demonstrating the feasibility of the developed module prototypes, which 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