

Boost Of Organic Solar Technology for European Radiance – BOOSTER

Introduction:

The BOOSTER project targets the deployment of organic photovoltaic (OPV) technology to the building applied photovoltaic (BAPV) market. OPV is a technology that addresses the challenge of global energy production with an eco-responsible approach. Manufacturing OPV modules via printing techniques features a low energy-payback-time (EPBT) and uses resources that are abundant, easily accessible and non-toxic. Additionally, OPV demonstrates properties (flexibility, lightweight) that make it easily suitable for BAPV. Recently, the technology benefited from a rapid progress of performances with development of advanced materials. The project BOOSTER aims at bringing the OPV technology to a TRL 7 by increasing efficiency, lifetime together with optimizing costs and lowering carbon footprint.

Activities in the project:

Three demonstrators will be installed to illustrate BAPV concepts. BOOSTER will provide an efficient multi-layer OPV architecture demonstrating efficiency up to 12 %. Advanced multifunctional barrier films will be manufactured to increase the lifetime to 35 years. With a large-scale production approach, efforts will be placed on scaling up all the materials and optimization of the R2R manufacturing line to coat all the layers with minimization of performance loss while targeting drastic cost reduction.

BOOSTER BAPV products will be integrated in three different locations (FAU and ASCA in Germany, ENI in Italy), where real-life efficiency will be studied during last year of the project.

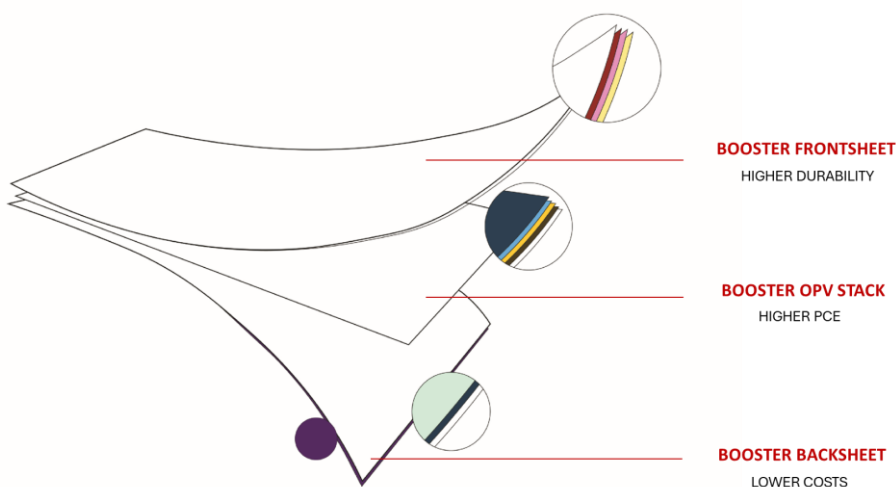


Figure 1 BOOSTER Project Concept



Project facts:

Start date: 01/09/2020
End date: 28/02/2027

Duration in months: 78

Project budget: 8.2 mln €
EU contribution: 6.1 mln €

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Topic:
Next generation of thin-film photovoltaic technologies

Keywords:
OPV, R-2-R, thin film photovoltaic, non-fullerene acceptor, building applied photovoltaic

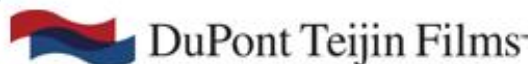
Expected Impact:

The BOOSTER project will make a significant contribution to the technological development of thin film OPV modules. The project will have the following impact.

- Cost reduction of the innovative thin film devices. The BOOSTER strategy is to lower the costs of the innovative thin film device through the use of cheaper and more efficient raw materials and their optimized industrial production. BOOSTER aims to reduce the current costs of OPV modules from 270 €/m² to 90 €/m².
- Environmental impact and preliminary life-cycle assessment. In BOOSTER, the LCA evaluates not only the energy payback time (EPBT) but also the environmental impacts per unit of area (i.e. impact ascribed to 1 kWh of produced electricity).
- Significantly increased efficiency, stability, device lifetime (> 35 years) and performance. BOOSTER, with the implementation of high-performance materials is targeting to increase almost 3 times the efficiency at module level (from 4-5% to 12%) of the current commercial printed OPV modules.
- Novel PV applications and new routes for strengthening the EU PV manufacturing industry. To reach additional sectors, the project will organize a competition on novel applications for the next generation thin-film OPV developed in the project.



The BOOSTER project consortium is a blend of leading research institutes in their field combined with private companies and SMEs capable of producing large-scale materials, barrier films and Roll-2-Roll manufactured OPVs.



Consortium:

FEP	Germany
AVA	Switzerland
DPT	United Kingdom
BM	Canada
FAU	Germany
STUBA	Slovakia
ENI	Italy
ABIMI	Czech Republic
UOXF	United Kingdom
ASCA	Germany

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