



Sustainable Places 2020

BIPVBOOST

Bringing down costs of BIPV multifunctional solutions and processes along the value chain, enabling widespread nZEBs implementation

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INDEX

1. Project
2. Objectives
3. Overview
4. Results
5. Next Steps

1. PROJECT

Grant agreement: n° 817991

Call: H2020-LC-SC3-2018-RES-SingleStage

Topic: LC-SC3-RES-6-2018 Demonstrate significant cost reduction for Building Integrated PV (BIPV) solutions

Coordinator:  Inspiring Business

Budget: 11.4 M€

Duration: 10/2018 – 09/2020

Consortium: 19 partners, 7 countries

Consortium



2. OBJECTIVES

Moving from iconic and costly BIPV towards a mass-market and cost-effective approach allowing real market implementation



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2. OBJECTIVES

What: reducing the **extra cost of BIPV by 50% (SET PLAN for PV)**

How: holistic cost-reduction roadmap along the value chain

Pillars:



Flexible and automated BIPV manufacturing line development



Large portfolio of multifunctional BIPV product



Digitalized process and energy management system (EMS) along the value chain



Advanced standardization activities supporting the qualification of BIPV systems for a massive implementation in the building skin



3. OVERVIEW



4. RESULTS

WP1. ROADMAP FOR COST REDUCTION



25
Sep

Sept. 25, 2019

Competitiveness status of BIPV solutions in Europe



07
Oct

Oct. 7, 2020

Cost-reduction roadmap for the European BIPV sector

- Methodology for the assessment of competitiveness and cost reduction of BIPV
- **Public reports** on competitiveness and cost-reduction roadmap of BIPV available at: <https://bipvboost.eu/public-reports/>
- Upcoming public reports on BIPV potential assessment in the compliance of nZEB-related regulation & first Life Cycle Assessment screening

4. RESULTS

WP1. ROADMAP FOR COST REDUCTION



KEY TAKEAWAYS ON COMPETITIVENESS

- Enormous **dependence** on the compensable retail electricity prices & supporting schemes (e.g. BE with “green certificates” and IT with net-billing)
- **BIPV already attractive** investment, in all locations, **when roof systems applied on residential housing** are investigated.
- Most **façade** systems not competitive, except where **support schemes** for PV and/or **irradiation** are particularly generous, such as in Belgium, Italy or Spain (high cost and sub-optimal performance).
- Sensitivity analysis shows that the improvement of certain parameters have a significant impact on competitiveness (e.g. **↑10% efficiency + ↓10% end-user cost** → **50% competitiveness**)
- Cost competitiveness is not so far away from existing end-user cost levels
- In most cases, **competitiveness is planned to be reached around 2025** under the three “realistic scenarios” (“technology-push scenario”, “demand-pull scenario” and “balanced scenario”)

BIPVBOOST already acting on most influential factors of the competitiveness
(module efficiency, end-user cost, self-consumption rate)

4. RESULTS

WP2. TOWARDS MASS MANUFACTURING OF BIPV



Completely flexible & automated BIPV manufacturing line, drastically reducing manufacturing costs

- Compatibility with a broad range of cells
- Flexibility in the string length, cell distances and positioning in the module
- Automatic string lay-up equipment for string placing
- In-line quality control (advanced EL)
- Overall manpower reduction by 50% and scrap reduction by 80%
- Start set-up at ONYX scheduled for 11/2020
- Operational for 12/2020

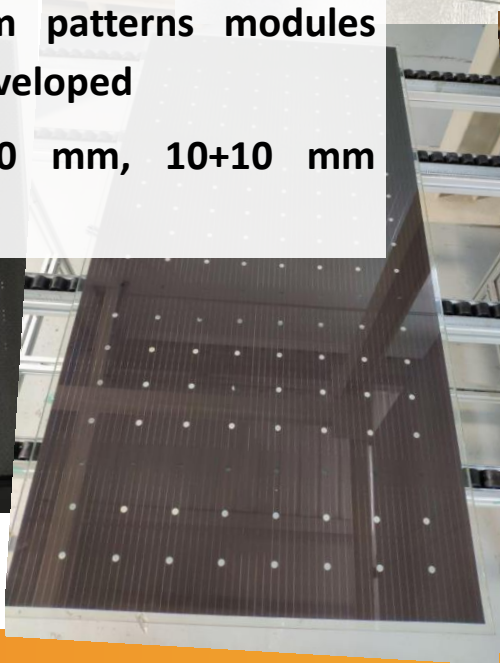
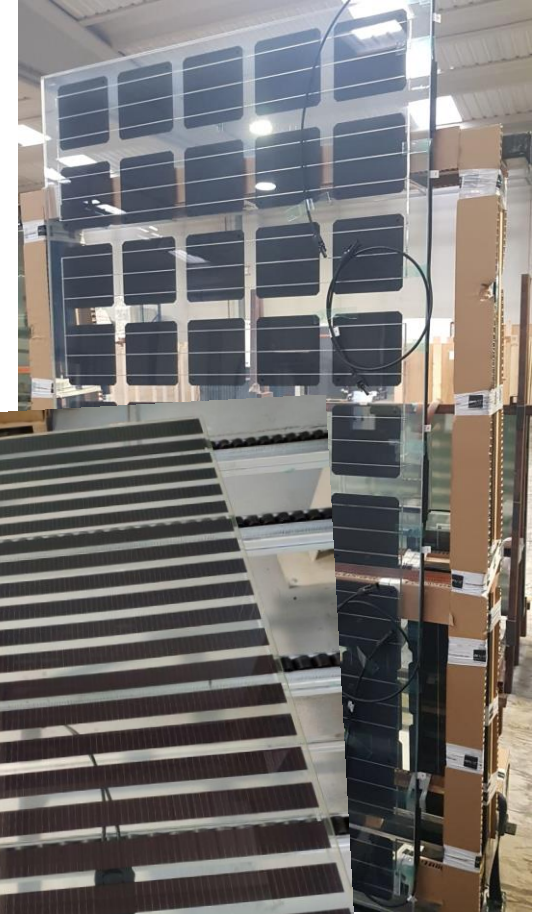
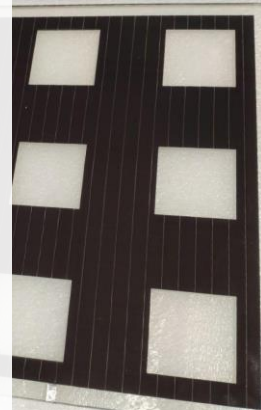


4. RESULTS

WP3. COST REDUCTION AT MODULE LEVEL



- Range of BIPV products using:
 - a novel coloured rear glass technology
 - new aesthetic a-Si solutions
 - back-contact walkable floor
 - bifacial solutions for balustrade
- a-Si: 2000 x 635 mm patterns modules prototypes tested & developed
- Bifacial: 2000 x 1000 mm, 10+10 mm laminate



4. RESULTS

WP4. COST REDUCTION AT BUILDING SKIN LEVEL



- ePIZ multifunctional BIPV + insulation system
- c-Si and CIGS technologies
- Expected system cost reduction by the end of the project ~30%



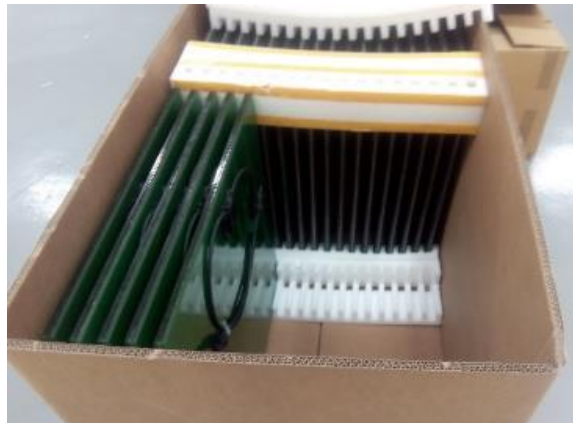
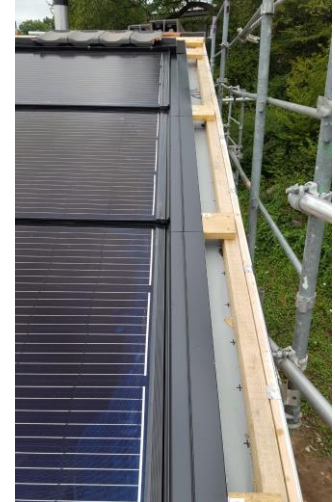
- TULIPPS's new lock & go easy installation solution
- Optimization of the gluing and assembly line from 5 modules/hour to current 25 mod/h
- Cost optimization: reduction of components & assembly time → Cost reduction 50%



4. RESULTS

WP4. COST REDUCTION AT BUILDING SKIN LEVEL

- Flisom's CIGS module on Schweizer's Solrif roofing kit
- Redesign Solrif Kit for lower costs (under evaluation)
- New flashing system now catering to modules with +/- 50 mm in module height/width (suitable for most of the 60 cell modules)



- Improving back-end logistics at BIPV production facilities by enhanced crating
- Reduction of BIPV modules direct cost due to crating by 57%

WP5. ADVANCED STANDARDISATION SCHEMES

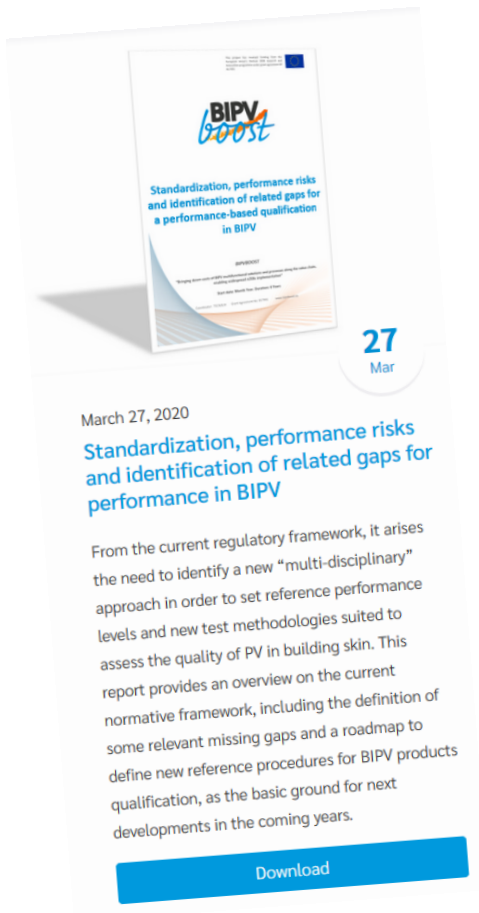
University of Applied Sciences and Arts
of Southern Switzerland

SUPSI

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Business

CSTB
le futur en construction

From EN 50583 to a BIPV-specific performance-based approach



- **Current status:** independent PV & construction qualification schemes
 - Qualification as a building product (CPR 305/2011, CE Marking...) and PV module (LVD, IEC 61215&61730, etc.)

PV + Building ≠ BIPV

- **New approach:** BIPV-specific standardisation framework
 - New testing methodologies using a combined PV-construction approach
 - Topics: energy economy, mechanical, fire and Electrical safety in non-conventional scenarios


Public report on **standardisation SoA and missing gaps:**

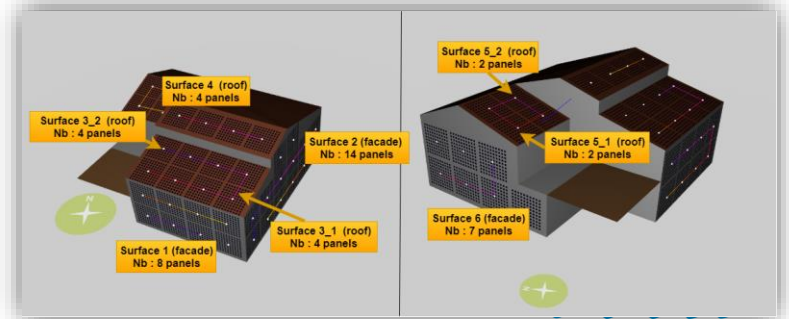
<https://bipvboost.eu/public-reports/>

4. RESULTS

WP6 & 7. DIGITAL & DATA-DRIVEN PROCESS FOR BIPV COST REDUCTION ALONG THE VALUE CHAIN

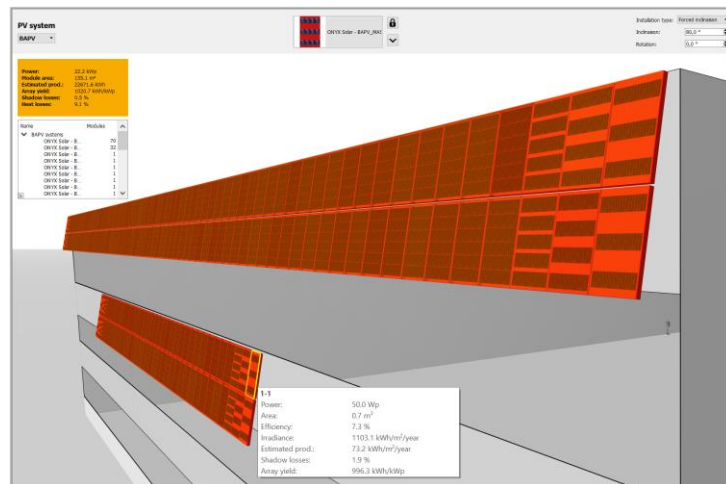
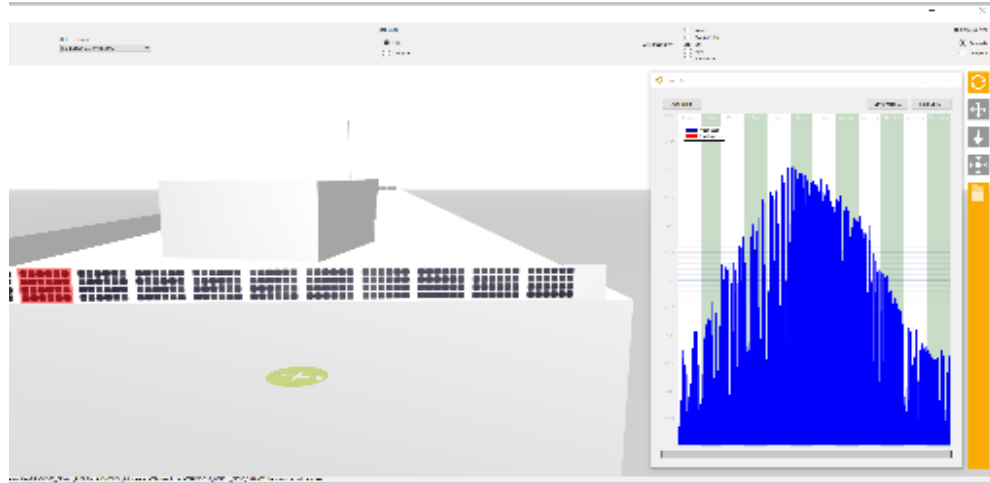


- **BIMsolar**  → Transition from a SW tool to a collaborative platform
- Workflow supported by **BIM** innovations (Building Information Modelling/Management)
- First prototype developed to **optimise BIPV layouts at pre-design stage considering costs and energy production**
- Conceptual design of **BEMS**, analysing **cost model parametrization** for the different use cases and identifying the required monitoring and control systems.
- Prototype development of the **BIPV Digital Twin** aimed at providing **generation forecasting tool to BEMS and training datasets to Failure Detection and Diagnosis (FDD)**.



4. RESULTS

WP8. DEMONSTRATION



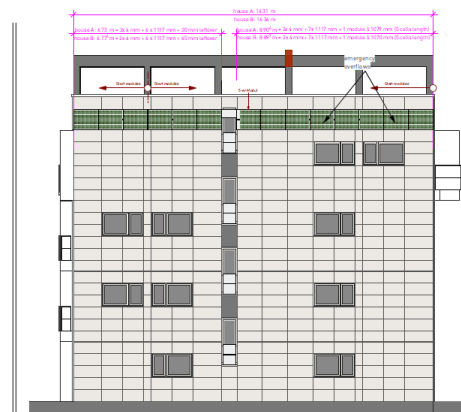
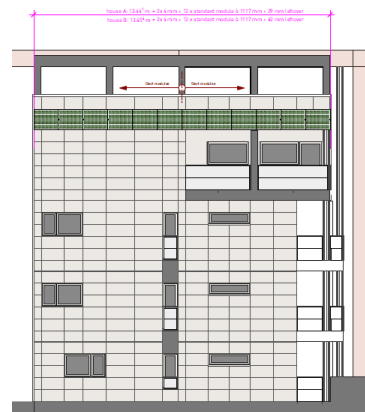
4. RESULTS

WP8. DEMONSTRATION



Viridén Partner Viridén Partner AG Zwergerweg 31, 8064 Zürich Telefon: 022 686 80 80 Fax: 022 686 80 80 www.viriden-partner.ch	BIPVBoost - Horizon 2020 Projekt PLE.S.r.l., Coepla 2 - Pal-A - Cossio Valtellino - Italy	C2 011 Plan-Nr.: AS26 Massstab: 1:100 Plan-Datum: A3
	Design - Demosite 4 Scenario E / Facade NW - Facade NE Two rows of cells per module	23.09.2020 23.09.2020
	provisional	
	← real dimension house A and B	

The final color has yet to be defined.
Representation of the new position of the modules with the sparkling gold cell.



4. RESULTS

WP9. EXPLOITATION, DISSEMINATION & COMMUNICATION



Updated market & regulatory framework for BIPV



25 Sep

Sept. 25, 2019

Update on BIPV market and stakeholder analysis

This report summarizes BIPV market trends and drivers, as well as the remaining challenges. It also provides an estimation of the "total addressable market" for BIPV in key European countries. A stakeholder analysis is then presented, based among others on the work conducted in PVSITES, consisting in an inventory of involved parties in BIPV project development and their respective roles. This analysis also allows to point out missing gaps and possible points to be optimized, in order to strengthen BIPV market development.

Download

Sept. 25, 2019

Update on regulatory framework for BIPV

This reports provides an inventory and analysis of regulatory frameworks impacting BIPV systems, both at national and European levels, in order to provide the most significant information for BIPV project developers. The country-level analysis especially focuses the following markets: Belgium, France, Germany, Italy, The Netherlands, Spain and Switzerland. For these, an overview of support schemes, costs and fees, as well as building codes impacting BIPV installations is provided in a comprehensive way. Finally, a brief discussion on potential improvements to be prioritized by policy-makers concludes the document.

Download

<https://bipvboost.eu/public-reports/>

Dissemination:



>13.000 visits



>7.200 downloads



8 articles in journals & conferences



3 Newsletters:
271 subscribers



5. NEXT STEPS

- Currently entering a new project phase, moving from design and development towards manufacturing, testing and demonstration
- Upcoming set-up and commissioning of the new manufacturing line, operational in 12/2020
- Comprehensive testing activities based on current standards and new BIPV-specific testing methodologies
- Demo installation foreseen by October 2021 (delayed due to COVID)

BIPV boost

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THANKS FOR YOUR
ATTENTION!!!

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