This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 691768
PVSITES: Objectives

Main objective is to contribute towards a larger market deployment of BIPV technology

To be achieved by:
• Identifying and addressing the main BIPV market barriers and challenges
• Demonstrating (TRL 5 to TRL 6-7) an ambitious portfolio of BIPV solutions in terms of flexible design, simulation of performance, architectural integration, functionality, cost-effectiveness, grid integration, energy management, LCA, training and awareness
• Business models and support to dissemination and commercialization
PVSITES at a glance

▪ **Call identifier:** H2020-LCE-2015-2
▪ **Topic:** LCE-03-2015, Subtopic “PV integrated in the built environment”
▪ **Start - end date:** 01/01/2016 – 30/06/2019 (currently through month 33)
▪ **Coordinator:** TECNALIA Research & Innovation (ES)
▪ **Consortium:** Onyx Solar (ES), BEAR (NL), NOBATEK (FR), Film Optics (UK), CTCV (PT), Flisom (CH), Cricursa (ES), CEA (FR), ACCIONA (ES), Format D2 (BE), Vilogia (FR), R2M Solution (IT), CADCAMation (CH), WIP (GE)
▪ **Funding:** 5.47 M€ from EU + 1.4 M€ Switzerland
▪ **Website:** [www.pvsites.eu](http://www.pvsites.eu)
▪ **Contact:** Dr. Maider Machado – maider.machado@tecnalia.com
Achievements (module technologies)

Glass – glass crystalline silicon based solutions (ONYX Solar)
Achievements (module technologies)

CIGS on metal BIPV modules (FLISOM)
Achievements (compliance with standards)

Application of the new BIPV standard, EN 50583 (2016)

Testing at CTCV, TECNALIA and CEA.
Achievements (outdoor testing)
Achievements (Grid interface-BEMS)

- **Best storage solutions for BIPV** defined
- Grid interface using storage system with DC coupling (TECNALIA)
- SiC based inverter – current source inverter topology (CEA)

• Planner tool PV storage systems

• Refinement of **BIPV** generation and building electrical consumption forecasting tools

• **Building Energy Management System** for each use case
Achievements (BIPV design software tool)

BIM-based software tool (available for download at http://pvsites.enerbim.com/)
Demonstration in real buildings
Demonstration in real buildings
Demonstration in real buildings
• Planner tool adapted and license sold by TECNALIA for use in radio-frequency stations to an ESCO.

• Demonstration of forecasting tools and BMS agreed, possibility of licensing to a large energy company in Spain (in progress, TECNALIA).

• Exploitation agreement for TECNALIA storage inverter in progress with ELSON Electronics.
180 kW BAPV retrofitting of bitumen roofs in the Netherlands with e-Flex CIGS product (FLISOM)
PVSITES in the market – CIGS products

30 kW BAPV installation at EMPA (FLISOM)
PVSITES in the market – CIGS products

250 kW installation of e-Flex CIGS product (FLISOM) in Johannesburg (SA)
PVSITES in the market – cSi glass-glass

BIPV glass-glass elements for installation in Austria (in progress, ONYX Solar)
Mass coloured glass-glass for a BIPV installation in Palencia (Spain) (ONYX Solar)
Prototypes for Canopy Landscapes, Kalamazoo-Michigan (USA) (in progress, ONYX Solar)
PVSITES in the market – cSi glass-glass

PVSITES prototypes and 3x1.5 m, 340 W laminated glass units (ONYX Solar) for Balenciaga storefront (Miami, USA)
PVSITES in the market – cSi glass-glass

16 kW BIPV glass-glass curtain wall (ONYX Solar) at Balenciaga storefront (Miami, USA)
PVSITES in the market – cSi glass-glass

Awarded “Most Innovative Curtain Wall project” in the US
PVSITES in the market – cSi glass-glass

Canopy in Czech Republic, blue tinted glass (ONYX Solar)
PVSITES in the market – cSi glass-glass

Canopy in Czech Republic, blue tinted glass (ONYX Solar)
Further step: bringing costs down by 75%

BIPVBOOST H2020 project starting October 2018:

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

Compliance with SET Plan cost objectives by means of:
- Optimized design
- Automated and flexible manufacturing process
- Integration in the building skin
- Digitalization along the BIPV value chain
- Advanced standardization schemes
PVSITES team
Thank you for your attention

www.pvsites.eu