

HORIZON EUROPE PROGRAMME

TOPIC HORIZON-CL5-2021-D3-03

Demonstration pilot lines for alternative and innovative PV technologies

(Novel c-Si tandem, thin film tandem, bifacial, CPV, etc.)

GA No. 101084046

**Digitalised pilot lines for silicon heterojunction tunnel
interdigitated back contact solar cells and modules**



PILATUS

PILATUS - Deliverable report

Deliverable D5.3

**Deployment and performance of data-driven algorithms
for optimising module processing**



Funded by the
European Union

Publishable summary

This document outlines the implementation and testing of predictive maintenance solutions for the optimization of the module production line within the PILATUS Horizon Europe project.

Deliverable Context

The PILATUS project involves several stakeholders from the European PV industry, including wafer manufacturers, cells and modules producers, service providers, and applied research institutes. The project's objective is to set up pilot lines for heterojunction interdigitated back contact (IBC) cells and modules in Europe, integrating cutting-edge analysis and Industry 4.0 features. The module pilot line will demonstrate an annual manufacturing capacity of 170 MW with a production yield of at least 90%.

Deliverable Achievements

The present deliverable highlights the outcomes of task 5.3 entitled “Data analytics for module line optimization”, with contributions from MBCH (Task leader) and CSEM. CSEM and MBCH collaborated to develop and deploy a predictive maintenance solution for the module pilot line, with a focus on the stringer machine. The solution has been deployed in Meyer Burger Thun and underwent a first testing phase. The outcomes are documented and the next steps towards a full deployment of the solution on Meyer Burger production lines are outlined.

Deliverable Structure

The introduction outlines issues identified in module production lines at Meyer Burger, which are targeted for resolution through predictive maintenance tools within PILATUS. Chapter 2 documents the algorithm and Graphical User Interface solution developed by CSEM. Chapter 3 focuses on the deployment and testing stages, and documents the first findings (what worked/ what did not and why). Chapter 4 concludes and describes next steps towards full deployment on the production lines.

7 Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

Project partners:

#	Partner	Partner Full Name
1	UNR	Uniresearch BV
2	MBG	Meyer Burger (Germany) GmbH
3	MBI	Meyer Burger (Industries) GmbH
4	FhG	Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung EV
5	FZU	Fyzikalni Ustav AV CR V.V.I
6	EURAC	Accademia Europea di Bolzano
7	EXATEQ	Exateq GmbH
8	TNO	Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO
9	NCR	Norwegian Crystals AS (Terminated)
10	ULIEGE	Universite de Liege
11	PADA	Padanaplast SRL
12	ISRA	ISRA Vision GmbH
13	CSEM	CSEM Centre Suisse d'Eletronique et de Microtechnique SA – Recherche et Developpement
14	MBCH	Meyer Burger AG
15	MBR	Meyer Burger Research AG
16	PASAN	PASAN SA
17	WCH	Wacker Chemie AG
18	EPFL	École Polytechnique Fédérale de Lausanne
19	CPT	Cambridge Photon Technology Limited
20	NOR	NORSUN AS

Disclaimer/ Acknowledgment



Copyright ©, all rights reserved. This document or any part thereof may not be made public or disclosed, copied or otherwise reproduced or used in any form or by any means, without prior permission in writing from the PILATUS Consortium. Neither the PILATUS Consortium nor any of its members, their officers, employees or agents shall be liable or responsible, in negligence or otherwise, for any loss, damage or expense whatever sustained by any person as a result of the use, in any manner or form, of any knowledge, information or data contained in this document, or due to any inaccuracy, omission or error therein contained.

All Intellectual Property Rights, know-how and information provided by and/or arising from this document, such as designs, documentation, as well as preparatory material in that regard, is and shall remain the exclusive property of the PILATUS Consortium and any of its members or its licensors. Nothing contained in this document shall give, or shall be construed as giving, any right, title, ownership, interest, license or any other right in or to any IP, know-how and information.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101084046. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI) under the number SBFi-Nr. 22.00625.