



Deliverable Report

Deliverable No: D4.32
Dissemination level: Confidential
Title: First prototypes; large 120 cells module

Date:	28-01-2018
Version:	FINAL
Author(s):	B. de Gier - Eurotron BV J. Bakker - Eurotron BV E. Widlak - TULiPPS
Reviewed by:	Paul Stassen - TPS Willem Verstraten - RTG
Approved by:	Coordinator – Paul Stassen – TPS

Grant Agreement Number: 322425
Project Type: FP7 – ENERGY.2012.2.1.2: Demonstrations of smart multifunctional PV modules
Project acronym: SUMMIT
Project title: Smart large lightweight long life Multifunctional PV Module Technology for large Power Installations and Distributed Energy Generation
Project start date: 01/12/2013
Project website: <http://www.summit.rtdproject.net>
Technical coordination: TULiPPS (www.tulipps.com) (NL)
Project management: TULiPPS / Uniresearch (www.uniresearch.com) (NL)



Executive Summary

This report describes the module design and fabrication of the 120 cells prototypes for flat roof applications.

The prototype production of the 120-cells back contact modules encountered some serious challenges during the development process. First, Eurotron, the producer of the back contact PV-laminates, withdrew from the SUMMIT project. We managed to solve this by cooperating with the module producer SI-Module located in Freiburg, Germany who supplied us with 120 cells PV laminates both in 2 mm glass-foil (ultra-lightweight) as well as 2 + 2 mm glass-glass for ultra-long-life properties. These large H-pattern PV modules from SI-Module produce an output of 600 Wp per module, hence fulfilling one of the goals of the SUMMIT project.

Second, we had to change of design of the back construction. Half way 2016 the prototype back construction made of molded PPLGF polymer seemed to fail. Two parallel design processes followed to tackle this severe challenge. First, further research was started to find the cause of the failure and the search for improvement of the PP back construction. Second, a new design of the back construction, based on aluminum profiles was initiated as reported in [D1.32 “Design optimized, first pilot run of metal components”](#). The first production of both types of prototypes are described: 1) back contact (MWT) modules paired with hybrid PP/steel back construction and 2) H-pattern modules glued on back construction of aluminum profiles.

In the second chapter the general wishes and requirements, including unique points on system level and electrical circuitry and produced module sizes are listed, followed by a description of the applied module technology. Specific type of material and supplier information can be found in Deliverable [D4.1: Specs PV laminate](#).

The third chapter starts with a short description of Eurotron's Test Center that was used to produce the laminates. All the deviating process steps are mentioned step by step. Also a list of challenges that were faced during module production and associated solutions is mentioned.

In chapter 5 the 120 cells modules and the polymer–metal hybrid back construction has been detailed.

In chapter 6 the redesigned PV modules utilizing 120-cells high performance H-pattern laminates with lightweight full metal rear side construction are detailed. Also the Yparex long-life POE encapsulant was successfully utilized by SI-Module in 22 units of 60 cells modules.

In chapter 7, the first 120 cells module dissemination activity is highlighted.

The general conclusion is that, despite some unforeseeable detours, all goals for the 120 cells modules have been accomplished. Now we will focus our effort on increasing output of production, achieving cost reductions, and implementing demonstration projects.

ACKNOWLEDGEMENT



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 322425 (Project acronym: SUMMIT)

http://cordis.europa.eu/fp7/cooperation/home_en.html

<http://ec.europa.eu>

Project participants:

TPS		TULiPPS B.V. (NL)
FTG		Femtogrid Energy Solutions B.V. (NL)
Fh-ICT		Fraunhofer-gesellschaft zur foerderung der angewandten forschung E.V. (DLD)
IBC NL		IBC Solar B.V. (NL)
KIWA		KIWA Italia SPA (IT)
UNR		Uniresearch B.V. (NL)
YPR		Yparex B.V. (NL)
RTG		Rimas B.V. (NL)
SOL		SolNed B.V. (NL)

Disclaimer

This project has received funding from the European Union's Seventh Framework Programme for research, technological development, and demonstration under grant agreement no 322425.

Every effort has been made to ensure complete and accurate information concerning this document. However, the author(s) and members of the consortium cannot be held legally responsible for any mistake in printing or faulty instructions. The authors and consortium members retain the right not to be responsible for the correctness, completeness, or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information that is incomplete or incorrect, will therefore be rejected. The information contained on this document is based on author's experience and on information received from the project partners.