



Deliverable Report

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Title: Serial produced components: large 120 cells module

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Technical coordination: TULiPPS (www.tulipps.com) (NL)
Project management: TULiPPS / Uniresearch (www.uniresearch.com) (NL)



Executive Summary

According to the scope of D4.2 – Part B, Serial produced components: large 120 cells module, the middle part and the connectors for the large 120 cells module were manufactured close to industrial scale. For this reason two standard injection molding machines of the Fraunhofer ICT were equipped with the corresponding tools (see Deliverable report D1.5 – Part B and D1.6 – Part B). Based on previous project results, hence the serious issues with the flame-retardant, it was decided to use a standard long fiber reinforced material combination without flame retardant for the demonstration of the serial production.

For both injection molding machines a fully automated manufacturing process could be demonstrated and parts for the back construction of more than 200 PV-modules were successfully produced without any problems. These parts formed the basis for further investigations of project partners in the field of manufacturing of the PV modules as well as testing of the assembled PV-modules. Since the results of performed load tests were unsatisfactory, various approaches to improve these results were evaluated. Particular focus was set on the change of the material and a adapted part design for the flat connector. Parts with different material combinations and fiber contents based on PP-Polypropylene and PA6-Polyamide 6 were produced. Furthermore, a test installation was set-up to test these parts to have the possibility to compare the different materials.

Unfortunately, regardless of the material combination all the tests show a failure in the connection area of the middle part and the middle connectors and it was not possible to produce parts that withstand the given loads as required for PV modules.

In conclusion, the planned approach of a support structure with polymer beams could be implemented and also demonstrated within the SUMMIT project. However, due to the issues and challenges that still need to be addressed, this approach has not been pursued and an alternative, Light metal based, back construction has been developed and implemented by TULIPPS.

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

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Project participants:

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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)
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YPR | Yparex B.V. (NL)
RTG | Rimas B.V. (NL)
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