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Increase the competitiveness of the EU PV manufacturing industry

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High-performance low-cost modules with excellent environmental profiles for a competitive EU PV manufacturing industry

HighLite- Deliverable report

D7.2: Intermediate module reliability testing results.

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About HighLite

The HighLite project aims to substantially improve the competitiveness of the EU PV manufacturing industry by developing knowledge-based manufacturing solutions for high-performance low-cost modules with excellent environmental profiles (low CO_2 footprint, enhanced durability, improved recyclability). In HighLite, a unique consortium of experienced industrial actors and leading institutes will work collectively to develop, optimize, and bring to high technology readiness levels (TRL 6-7) innovative solutions at both cell and module levels.

HighLite consortium members

Document information

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[1] **Deliverable Type**
Please indicate the type of the deliverable using one of the following codes:
R Document, report
DEM Demonstrator, pilot, prototype
DEC Websites, patent fillings, videos, etc.
OTHER
ETHICS Ethics requirement
ORDP Open Research Data Pilot
DATA data sets, microdata, etc.

[2] **Dissemination level**
Please indicate the dissemination level using one of the following codes:
PU Public
CO Confidential, only for members of the consortium (including the Commission Services)

Publishable summary

D7.2 - “Intermediate module reliability testing results”, is the confidential deliverable report related to the work package 7 (WP7) of the HighLite project.

On building applied photovoltaics (BAPV) the report presents the reliability testing of silicon heterojunction (SHJ) shingled modules. The work started from mini modules and was extended up to full size modules. Special attention was paid to the reduction of solar cell thickness from 160 µm down to 120 µm. The challenge of minimizing the cell overlap in order to increase the cell to module (CTM) power coefficient is addressed as well.

To reach the goal to produce a module with long-term stability over 35 years, the extended test matrix with different kinds of raw materials in combination with interdigitated back contact (IBC) cells was analysed. The test sequence consists of a combination of UV, thermal cycling (TC) and damp heat (DH) cycles and was applied to small samples. Based on the results a most resistant bill of materials (BOM) was identified and the first full-size module with IBC cells was produced.

Concerning building integrated PV (BIPV) modules the stability of coloured glass was evaluated and benchmarked to commercially available products. To test the reliability, the samples were UV, TC and DH stressed and periodically characterized. Furthermore, the test results of a module prototype design with IBC cells are presented.

In a third section the report describes the work on VIPV modules. The development and reliability of three different designs is described.