DISC

Newsletter#2

Double Side Contacted Cells

with innovative carrier selective contacts

General description

The DISC project addresses the need to reduce the consumption of fossil fuels by developing key technologies for the next generation of high performance photovoltaic (PV) solar cells and modules, allowing ultra-low solar electricity costs with minimum environmental impact.

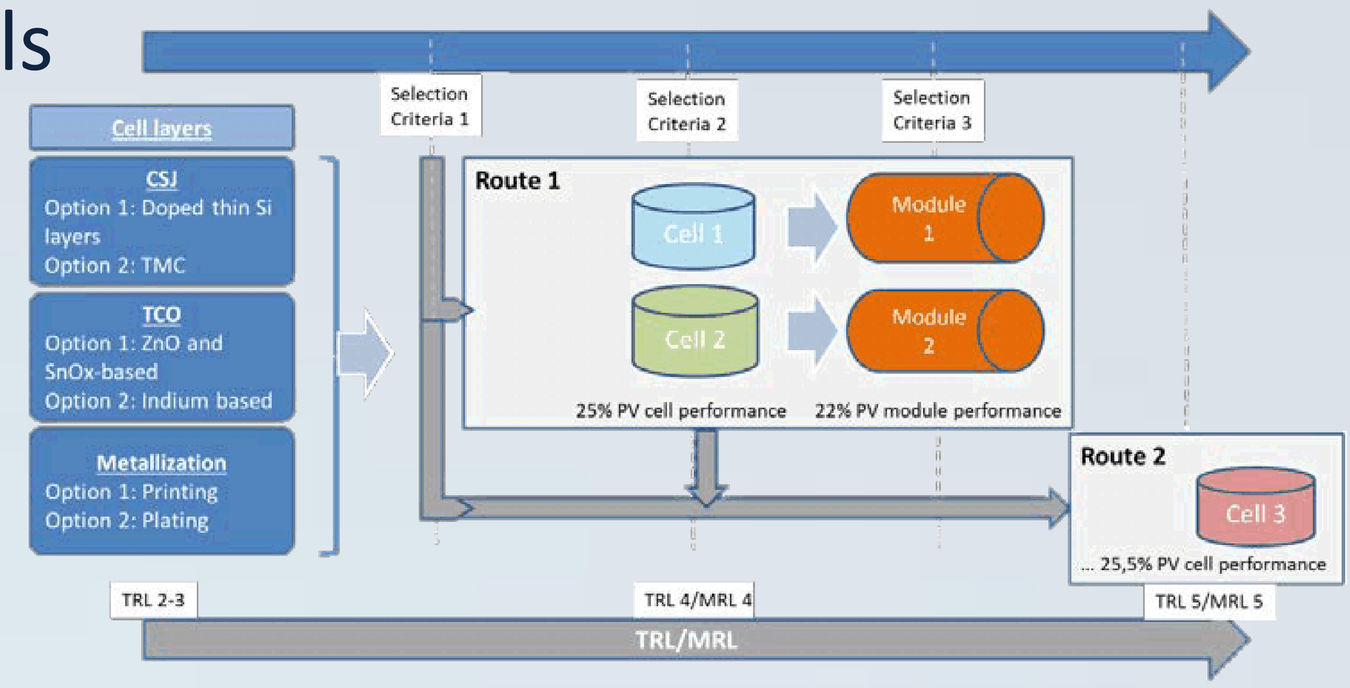

Fig. 1: DISC Routes

Focus & targets

Technological
- Double-side contacted Silicon solar cells with carrier selective junctions and optimized metallization and TCO.
- Efficiencies > 25.5% on large area cells (>100 cm²) and >22% at module level with area < 1.65 m².

Economical
- Lower levelized costs of electricity between 0.04 – 0.07 €/kWh.
- Reduce fabrication complexity and production line investment: 0.04 €/W_p of production cost on module level and a mid-term potential of 0.33 – 0.35 €/W_p

Sustainability
- Increased efficiency, reliability and durability.
- Reduced non-abundant material consumption (Silver, Indium)

Increased viability and attractiveness of the PV systems

More competitive EU PV scientific and industrial stakeholders

Highlights at April 2018 (M18)

Transparent Conductive Oxides

The first round-robin test on TCO and CSJ layers summarized all the efforts done by all the partners on the development of TCO layers and of CSJs:
- the effect of TCO deposition on passivation that led to the conclusion of the necessity to develop low-damage TCO processes
- the complete and advanced characterization of all tested TCOs that helped to better understand conduction mechanisms

Metallization and Interconnection

Demonstration of the next generation smart wire interconnection technology with 2.63% relative increased module efficiency, also demonstrating less than 2% performance loss in 2x IEC 61215 damp heat and thermal cycling accelerated aging tests.

Modelling and characterization

Development of the simulation model for raytracing analysis of smart-wire modules.
Evaluation of the optimal approach for the half cutting process.

Economical assessment

Establisment of data questionnaires for the Life Cycle Assessment.

Dissemination and exploitation

EU PVSEC 2017 with 6 contributions
Metallization & Interconnection Workshop 2017 with 4 contributions
PVSEC-27 with 1 contribution
SiliconPV 2018 with 10 contributions

Partners

- ISFH
- EPFL
- CEA
- FH-ISE
- CSEM
- MEYERBURGER
- TOTAL
- Univerza v Ljubljani
- Von Ardenne
- MECO
- ECOSOLIFER
- AYMING
- ERM

Looking ahead

- DISC is now entering the integration phase, combining the best components from all partners (carrier-selective junctions, TCOs, metallisation and interconnection schemes) on highly-efficient cells and modules
- Underpinning of process flow with life-cycle analysis and cost assessment

Countries involved

France, Germany, Netherlands, Slovenia, Switzerland, Hungary, United Kingdom

Duration

3 years: 01/10/2016 to 30/09/2019

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