Monoscribe
Roll-to-Roll Monolithic Interconnection of Customizable Thin-film Solar Modules

Project duration: from 11 2015 to 09.2018
Final report submitted: 11.2018

Publishable Summary

The overall goal of the project is the conception and development of a roll-to-roll (R2R) machine prototype based on a novel solar cell interconnection technology that enables the production of customized **photovoltaic modules "on-the-fly"** without excessive set-up times.

The integrated and printed solar cell interconnection allows the production of photovoltaic modules with varying voltages, sizes and shapes. Combined with the pliability and the high yields of the underlying CIGS based solar cells such PV modules are ideal candidates for a multitude of applications ranging from PV-integrated products (sensors, chargers, lighting) to the use in BIPV products.

In order to achieve low production costs, the whole machine set-up is based on an R2R approach wherein selective **laser ablation processes** and **printing processes** are integrated. "Monoscribe" tackles the technical issues arising with the **low-cost R2R structuring and interconnecting of flexible thin film (CIGS) photovoltaics** leading to a groundbreaking production method with high freedom of module designs, increased efficiency and shortened production time. This innovation will be reached by the combination of cost-effective printing technology (inexpensive, digital controllable, with resolution of > 10µm) with highly precise laser structuring technology (depth resolution >50 nm, lateral resolution about 1 µm).

To solve these challenges Monoscribe's project consortium comprises European manufacturers (PV modules, solar cells, printing inks), experts in printed electronics and micro laser processing and equipment manufacturers with a strong background in PV manufacturing. At the end of the project, the industrial feasibility has been demonstrated by producing batches of PV modules with regular and extraordinary photovoltaic module designs with sizes up to 250 mm width.

Project consortium

Coordinator and contact details:

Full name of organisation	Sunplugged GmbH
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Participating countries and financing:

Country	**Number of organisations involved**	**Project costs in EUR**	**Public funding in EUR**
Austria	5	540'552	324'332
Finland	2	678'894	388'000
Germany	2	441'404	350'371
Total	*9*	*1'660'850*	*1'062'703*

Funding agencies involved and contracts

Funding Agency	**Contract N° and Title**
FFG	5139195/Monoscribe
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TEKES	1375/14 Roll-to Roll Monolithic Interconnection
TEKES	3286/31/2014 / Monoscribe
Forschungszentrum Jülich GmbH	0325922A
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