PV40+
PV module with an enhanced lifetime of more than 40 years and reduced environmental impact

Project duration: from 10.2020 to 09.2023
Report submitted: 12.2022

Publishable Summary

The overall aim of the project is the improvement of the service life of a PV module from 25 to 40 years. The main objective of the project is the development and validation of a PV module architecture with at least 40 years operational lifetime. Within the project not only crystalline silicon, but also CIGS cell technology are considered. The main aim shall be achieved using double glass architecture and the use of an advanced polyolefin based encapsulant. The main benefit of polyolefin encapsulants will be the lack of acetic acid formation in operation, thus preventing or slowing down certain degradation modes like yellowing, corrosion or Potential Induced Degradation (PID). However, the most critical factor to be addressed is that the enhanced performance of the encapsulant has to be achieved without a significant cost increase to enable an overall reduction of the system cost taking the improved lifetime into account. A further focus is the development of accelerated reliability test procedures that refer to this enhanced lifetime and utilizing modelling approaches recognizing and predicting failures and degradation modes.

The transnational consortium is formed across the value chain of photovoltaics, ranging from PV module technology, polymer technology, degradation modelling and module testing. The enhancement of the service life of a PV module to 40 years is the key driver to reduce the LCOE for a PV system. Following a simplified metrics, this means that the module related share of LCOE drops by 37% compared to a module with 25 years lifetime. As additional environmental benefit, improving the service life of a PV module from 25 to 40 years saves about 130 GW/year of new modules, which not need to be produced and 7 million tons/year of PV panel waste, which not needs to be recycled.

Project consortium

Coordinator and all contact details:

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Participating countries and financing:

Country	**Number of organisations involved**	**Project costs in EUR**	**Public funding in EUR**
Austria	2	354 253	271 544
Germany	2	407 133	347 982
Turkey	1	74 845	74 845
Total	*5*	*836 231*	*694 371*

Funding agencies involved and contracts

Funding Agency	**Contract N° and Title**
FFG	Förderungsvertrag 881868
PTJ	Förderkennzeichen 03EE1072A Förderkennzeichen 03EE1072B
TÜBİTAK	Project number 120N520