

NELL

Novel encapsulant for long lifetime high voltage PID-resistant PV modules

Project duration: from 01.2018 to 12.2019

Report submitted: 08.2018

Publishable Summary

Photovoltaic energy already plays a key role in the global energy market, and it is expected that it will meet 8% of the EU electricity demand in 2020. The PV industry in Europe has lost market share in the last years due to strong competition from Eastern producers. Europe has nevertheless maintained the scientific and technical leadership and should take advantage of this to further increase efficiency and reliability of PV systems, contributing thus to strengthen the competitiveness of the European PV industry and to accelerate PV deployment in Europe.

One solution to decrease system costs which is being demanded by the market is the transition to high voltage systems up to 1500 V and beyond. Higher voltage can yield to system cost savings between 3 and 10% by reducing BOS components and increasing DC yield.

High voltage, however, also implies a higher risk for potential induced degradation (PID) of PV modules. This, in turn, requires the development of new materials for PID-free PV module certification which ensure high reliability and do not increase significantly the module cost. The main goal of the NELL project is precisely to develop a highly PID-resistant encapsulant able to avoid PID even under harsh humidity and temperature conditions in high voltage systems up to 1500 V. The project will thus significantly contribute to the SET-plan goal of reducing the levelised cost of electricity by 20% in 2020, at the same time as ensuring 30 years lifetime with a guaranteed 90% power output.

The NELL consortium has a strong industry participation and is formed by entities with a very long trajectory in PV in Europe. It is led by STR, global leader in encapsulant development for the PV industry, who has strategically partnered with ZSW, technology center who has played a key role in the understanding and measurement of the PID phenomenon in recent years.

Project consortium

Coordinator and all contact details:

| | |
|---------------------------------------|---|
| Full name of organisation | Specialized Technology Resources España S.A. |
| First and family name of coordinator: | Roman Merino |
| Full address: | Parque Tecnológico de Asturias, Parcela 36, 33428 Llanera, Spain |
| E-mail: | Roman.merino@stresp.com |

Participating countries and financing:

| Country | Number of organisations involved | Project costs in EUR | Public funding in EUR |
|--------------|----------------------------------|----------------------|-----------------------|
| Spain | 1 | 231'739 | 115'869 |
| Germany | 1 | 301'995 | 301'995 |
| <i>Total</i> | <i>2</i> | <i>533'734</i> | <i>417'864</i> |

Funding agencies involved and contracts

| Funding Agency | Contract N° and Title |
|---|---|
| Centro para el Desarrollo Tecnológico Industrial (CDTI) | EXP-00108698 / SERA-20181016 |
| Bundesministerium für Wirtschaft und Energie (BMWi) | Förderkennzeichen 0324229 Neuartiges Verkapselungsmaterial für langzeitstabile, hochspannungs-beständige PV-Module - Teilvorhaben: „Untersuchungen zur Potentialinduzierten Degradation von PV- Modulen bei erhöhten Systemspannungen“ |