Challenges, Opportunities and Approaches for new Service Life Estimation Models for PV Modules- Results of IEA-PVPS-Task 13

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Abstract:

The economic success of photovoltaic (PV) power plants depends crucially on the lifetime energy yield. The degradation effect and the total lifetime directly influence the produced electricity and therefore the cash flow. In most cases, lifetimes and degradation rates, which are used for the estimation of plant behaviour, are nowadays still not system specific, but based instead on average values of evaluations of older systems or data sheets. So, these values unfortunately have no direct correlation with the specific components of the respective PV system. Also, the mathematical models used for calculated power output typically expect linear degradation rates which are not found in real degradation processes found in the field. Activity 1.4 of the IEA PVPS Task 13 developed an overview on service life prediction and degradation modelling of PV modules since they are the major component of PV systems causing degradation effects and for other components no comparable scientific data is available.

Biography:

Dr. Karl-Anders Weiß
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Education and experience
Diploma in physics and economics at the University of Ulm, Germany in 2005.
Diploma thesis at the BASF Polymer Physics lab in 2005.
Working at Fraunhofer Institute for Solar Energy Systems ISE since 2005, Head of Team Analytics 2009 -2012, Head of Group Service Life Analysis 2012-2018,
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Doctor of physics at the University of Ulm, Germany in 2014

Areas of interest
Degradation of materials in solar applications, accelerated testing of components and materials of solar systems, numerical simulations, methods to analyze degradation of polymers, non-destructive analytical methods, climatic loads, sustainability and circular economy.

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