UNI STUTTGART

Reliability
Department

Reliability analysis and Reliability assessment of inverters

Problem definition

In order to further drive the expansion of renewable energies, economic efficiency is of crucial importance. In the field of photovoltaic systems, the inverter, which converts the generated direct current into alternating current, is one of the key elements of the system.

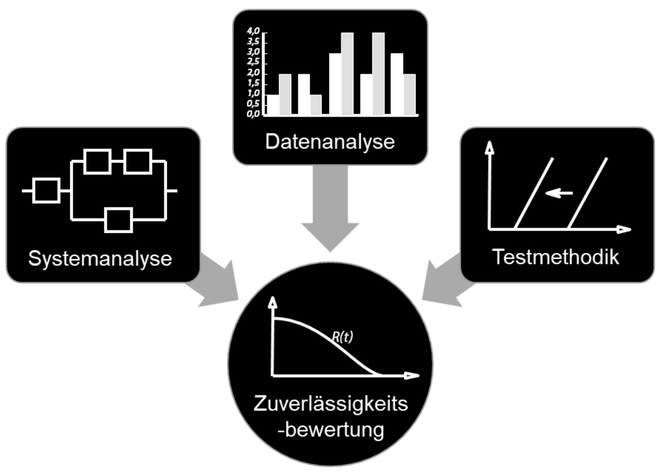
Ensuring the economic operation of the plant requires an inverter with a lifetime of more than 20 years. Securing the reliability of the inverter is therefore essential for the operation of the plant. However, the reliability assurance and optimization of the inverter is associated with significant challenges in the context of decreasing development times.

Aim

Development of a method to ensure the reliability of inverters with a lifetime >20 years.

Procedure

1. Analysis of the system and its components with regard to damage types and requirements
2. Identification of physical parameters affecting the critical damage mechanisms (physics of failure)
3. Planning and performing of tests to identify models for service life.
4. Development of a new method for planning and optimization of reliability testing and reliability proofing
5. Field data analysis and design of mission profiles
6. Evaluation of methods, test procedures and measurement techniques



Project partner:

SMA

ELECTRONICON always in charge

PCE MERZ switch to Quality!

Fraunhofer IMWS

University of Stuttgart
Institute of Machine Components
Head of Institute: Prof. Dr.-Ing. Bernd Bertsche
www.ima.uni-stuttgart.de

achim.benz@ima.uni-stuttgart.de
Institute of Machine Components
Pfaffenwaldring 9, D-70569 Stuttgart, Germany

Gefördert durch:
Bundesministerium für Wirtschaft und Energie