



Impact of power electronics on battery operation

Dirk Uwe Sauer, Prof. Dr.

Institute of Power Electronics and Electrical Drives (ISEA)
Institute for Power Generation and Storage Systems @ E.ON ERC
RWTH Aachen University

Abstract:

Lithium-ion batteries are nowadays offered in a large number of different cell designs and material combinations. This results in a wide range of performance parameters. However, in almost all cases batteries are used together with power electronic converters and a central question is the interaction between the converters and the batteries. This can for example be the influence of ripple currents or the implementation of impedance diagnostics. In the end, this is also the question of the need for smoothing elements of the power electronics on the battery side.

This presentation will give an overview of the influence of ripple currents on battery cells and their application for electrochemical impedance spectroscopy. For this purpose, the structure of the battery cell is used to show theoretically, which influences arise and results of experimental investigations are presented.

Curriculum Vitae:



Dirk Uwe Sauer is professor for Electrochemical Energy Conversion and Storage Systems at the Institute of Power Electronics and Electrical Drives (ISEA) at RWTH Aachen University since 19 years. He is a specialist for all aspects on system integration of batteries incl. testing, characterization, ageing, modeling, diagnostics, lifetime prediction and field integration into any type of mobile or stationary applications. His chair has about 75 full time employees and more than 60 students as student assistance, or in bachelor or master thesis. He is a member of the National Academy of Science and Engineering (acatech) and the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW). He is also the co-founder of 4 spin-off companies.

Contact Details:

Dirk Uwe Sauer, Prof. Dr.

Chair of Electrochemical Energy Conversion and Storage Systems
Institute of Power Electronics and Electrical Drives (ISEA)
Institute for Power Generation and Storage Systems @ E.ON ERC
RWTH Aachen University

Jägerstrasse 17/19, 52066 Aachen, Germany

Phone number: +49 241 80 969

E-Mail address: sr@isea.rwth-aachen.de

URL: www.isea.rwth-aachen.de