Life Cycle Assessment (LCA) of AC and DC Infrastructures for Power Distribution in Microgrids

Tendering Institutes: Institute for Future Energy Consumer Needs and Behavior (FCN), Junior Professorship of Energy Resource (JERI) and Innovation Economics and Institute for Power Generation and Storage Systems (PGS)
Begin: immediately / by arrangement
Duration: 6 months
Keywords: AC/DC Infrastructure, Microgrids, Life Cycle Assessment

Topic

In order to supply consumers with electrical energy, mostly AC infrastructure is currently used. However, an increasing number of devices (such as batteries, charging stations for electric vehicles etc.) operates with DC voltages internally. For this reason, many distributed rectifiers are used, thus leading to high conversion losses.

In this context, AC and DC grid structures have been compared on a technical and economic basis to identify an optimal grid structure for the RWTH Campus West.

For a comprehensive assessment, the environmental impact of the different infrastructure designs should be taken into account as well. Therefore, the candidate should perform a life cycle assessment (LCA) in order to compare the AC infrastructure with the DC one from an ecological point of view.

Qualification

You are studying business administration and engineering, electrical engineering or mechanical engineering (or a similar course of study) with special focus on energy related topics. You are interested in an interdisciplinary challenge, consider yourself a quick learner, and dispose of good analytical skills. First experiences in conducting an LCA are advantageous but not necessary.

Our Offer

Our offer is to join a versatile, highly motivated working group with international character within one of the largest research institutions in Europe as well as the opportunity to shape the energy system of the future actively.

Contacts

Christina Kockel, M. Sc.
Junior Professorship of Energy Resource and Innovation Economics
Tel.: +49 241 80 49845
Mathieustr. 10
52074 Aachen
christina.kockel@eonerc.rwth-aachen.de

Katharina Hetzenecker, M. Sc.
Institute for Power Generation and Storage Systems (PGS)
Tel.: +49 241 80 49967
Mathieustr. 10
52074 Aachen
katharina.hetzenecker@eonerc.rwth-aachen.de

We are looking forward to your application!