



AALBORG UNIVERSITY  
DENMARK

## **PhD position in Reliable Power Electronics**

Within the programme Science without Borders, Aalborg University is offering a PhD position at the Department of Energy Technology

**Project(s)** Extensive research activities in achieving more reliable power electronics are going on at the Center of Reliable Power Electronics (CORPE), Aalborg University. The center is sponsored by The Danish Council for Strategic Research and hosted by Aalborg University. It also involves Aarhus University, Aachen University and ETH in Zürich and the following industrial partners: Vestas Wind Systems A/S, Grundfos A/S, Danfoss A/S and KK-Electronics A/S. The center will create a cooperative environment with a large number of Professors, Postdocs and PhD students and it will have world-class laboratory-facilities and software tools in the field of reliability and power electronics. The PhD students will have the unique possibility to develop a curriculum in an area where academia and companies will focus their interest in the next decade.

Two new PhD positions are planned on the statistical design tools for reliability analysis of power electronic systems and condition monitoring of capacitors for dc-link application in power electronic converters.

The positions are administrated by “Science without borders” and financed by stipends through CAPES. The overall theme is “Engineering and other technological areas”. Acceptance of employment is on condition of the grant from CAPES.

### **Statistical Design Tools for Reliability Analysis of Power Electronic Systems**

**Hypothesis:** The statistical methods can be used to make meaningful analysis of reliability aspects of power electronic systems in appropriate circumstances when the practical engineering problems and the causes of failure have been well understood.

**Description:** A state-of-the-art design platform with integration of multidisciplinary tools is essential to reliability prediction and reliability design of power electronic systems. The project will study the statistical methods for lifetime data analysis, field data analysis, variance and uncertainty analysis, and risk and robustness analysis. To obtain meaningful results, the methods should be applied by taking into account the failure causes and operation conditions of power electronic components, circuits and systems. The statistical tools should be applied and experimentally validated in typical power electronic systems. Moreover, they should be integrated into the multidisciplinary design for reliability platform.

**Results:** Practically applicable statistical tools for reliability prediction and reliability design of power electronic systems.

The two PhD's are scheduled to run for the period 2013-2016 and the PhD students will be member of a very strong (2012 app. 80 PhD students) research environment at AAU/ET, both in power systems and power electronics. AAU/ET has a strong cooperation with industry and academia and has a large research program in the area of efficient and reliable power electronics.

### **Requirements**

Master Degree in Electrical or Electronic Engineering, Physics, reliability engineering or Mathematics with a solid background in statistics and a basic knowledge of power electronics. Experience with reliability software tools will give a clear advantage respect to other candidates. Alternatively experience with experimental work will also be valued. Good skills in oral and written English are also required.

Contact person: Professor Frede Blaabjerg, e-mail: [fbl@et.aau.dk](mailto:fbl@et.aau.dk)

To apply please see the link below:

<http://www.en.tek-nat.aau.dk/vacant+positions/Science+without+Borders/>