



AALBORG UNIVERSITY  
DENMARK

## PhD Position in Photovoltaic Systems

Within the Science without Borders programme, Aalborg University is offering a PhD position at the Department of Energy Technology, Pontoppidanstræde 101, DK-9220 Aalborg East.

The position is administrated by "Science without borders" and financed by stipends through CAPES. The overall theme is "Renewable Energy". Acceptance of employment is on condition of the grant from CAPES.

**Description:** The project will be run within the Photovoltaic Systems Research Programme ([www.pv-systems.et.aau.dk](http://www.pv-systems.et.aau.dk)) at the Department of Energy Technology ([www.et.aau.dk](http://www.et.aau.dk)), Aalborg University. The research group, beyond the support, guidance and supervision for the PhD candidate provides a stimulating research environment with fellow PhD students and professors, as well as access to world class laboratory facilities.

### Design and control of a high efficiency power converter for PV module integration - Project description

In the photovoltaic power converter industry today one of the most exciting trend is represented by PV module integrated power electronics, DC modules, AC modules, or generally called Power Optimizers, which have the prospect to determine the next generation PV systems. Module integrated converters today are still generally regarded as having lower efficiency and reliability when compared to string or central converters.

Nevertheless, module integrated converters open a large number of possibilities, not available for traditional PV plants. They offer individual maximum power point tracking (MPPT) for every panel in the plant, generating a significant yield improvement. Due to the fact that the power output of every panel can be monitored, fault detection and maintenance in the plant becomes very efficient and accurate.

The development of power electronics in the recent years allowed the compacting of the power converter, while keeping very high efficiency at high switching frequency, especially with the appearance of wide band-gap devices, which today can offer efficiency and power density unparalleled by silicon-based semiconductor devices, but at a higher cost.

The goal of the project is the design, construction and control of a converter for PV module integration with high efficiency and power density, and advanced fault detection capabilities.

**Requirements:** The PhD candidate should have an MSc degree in Electronic Engineering or Power Electronics, with solid background in converter topologies and design.

Experience with high frequency power electronics and circuit design is an advantage.

The candidate should have good written and oral communication skills in English.

**Contact person:** Associate Professor Dezso Sera, e-mail: [des@et.aau.dk](mailto:des@et.aau.dk)

**To apply please see the link below:**

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