

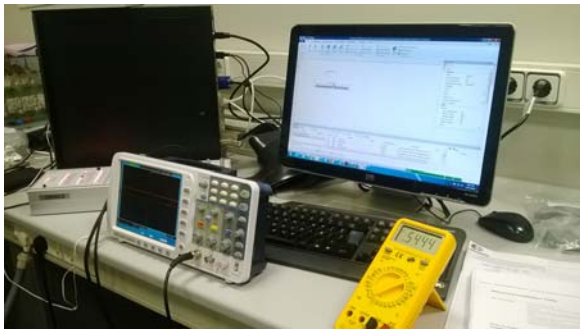


PERSONA CIENCIA EMPRESA  
UNIVERSITAT RAMON LLULL  
IQS SCHOOL OF ENGINEERING

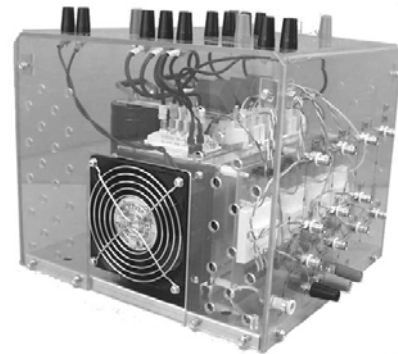
## RESEARCH PROJECT

### Control of a three-phase inverter by means of a dSPACE™ platform

The concept of electrical networks has changed for the last decades. Traditionally, a big power station fed several loads by means of a transmission line. However, there has been an increase in the number of power generation stations by means of renewable energy systems, such as wind or photovoltaic systems, which have been mainly connected to the distribution network (distributed generation). These renewable energy systems consist of a generator, a DC-bus and an inverter. The latter is the element that transforms the DC power into AC power that is transmitted into the main grid.



PC with MATLAB™-Simulink



3-phase inverter



dSPACE™

Two main issues have to be faced by means of inverters: the natural energy resources are intermittent (either sun or wind will not always be available) and the faults (short-circuits) that might appear in the electrical network. The question is: how can we transmit a constant power to the grid despite these two problems? For this reason, a proper control on a 3-phase inverter is extremely important.

The student will develop a control system by means of MATLAB™-Simulink and validate it through experimental results obtained from the dSPACE™ platform. This platform is used in the field of electrical engineering for the measurement of electrical magnitudes (such as voltages or currents) and for the sending of analogical outputs (such as the activation/deactivation of the switches of the inverter).

**Positions offered (2017-2018):** 1 Master research project (6-9 month).

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