PhD research scholarships: Australian Postgraduate Awards (up to three positions)

Centre for Electrical Machines and Power Electronics
University of Technology, Sydney

The Centre for Electrical Machines and Power Electronics (CEMPE) at the University of Technology, Sydney (UTS) is seeking to appoint up to three PhD research students in the areas of magnetic material testing and modelling, optimum design of electrical machines, and power electronics. Highly qualified applicants with broad backgrounds in applied physics (magnetic materials), and electrical engineering, or a related field (e.g. applied mathematics) are encouraged to apply.

The UTS CEMPE is specialized in characterization, modelling, and application of new magnetic materials, and design, construction, and testing of novel high performance electrical machines and drive systems. The fields of application include artificial heart, electrical vehicle, and wind power generation, etc.

Description of the projects:

Project 1: “Characterisation and modelling of nanostructured soft magnetic material”

This project aims to test and model the magnetic properties of nanostructured soft magnetic materials and provide data for optimum design of advanced electromechanical devices using this type of materials. The magnetic properties, mainly B-H relationships and core losses, will be tested under 3D vectorial magnetizations. Magnetic domains under various type of magnetizations will be observed to assist the understanding of the magnetization mechanisms, and modelling of magnetic properties.

Project 2: “Application oriented optimum design of electrical drive systems”

The traditional electrical machine design is on component level and depends largely on experiences even when sophisticated numerical methods are employed. This project aims at a conceptual revolution to develop an application-oriented system level optimum design method for advanced drive systems. New and accurate system models that couple motors, converters/inverters and control schemes, and effective numerical methods for coupled field analysis and system design optimisation will be developed and implemented. The outcomes will enable effective development of innovative smart appliances by providing application-oriented low cost high performance drive systems and greatly strengthen the competitiveness of Australian industry in world market.

Project 3: “Matrix converter”

This project aims to develop high performance matrix converters for wind power generation systems. The project work involves both hardware and software development.

Applicants:

The Australian Postgraduate Awards (APA) are available to outstanding candidates seeking to commence full-time study towards a doctoral degree. Each scholarship has duration of three years and provides a tax-free stipend of up to $25,627 per annum. Travel funding to attend international conferences is also available.
Applicants must hold either a first class honours bachelor degree, or a master by research degree, and be an Australian citizen/resident. However, it is also possible to make an exception to award the scholarship to outstanding international applicants. Awards are generally for full-time study only.

For further information contact:

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