PhD Scholarships – 3 Year term

The University of Wollongong’s Institute for Superconducting and Electronic Materials at Faculty of Engineering are seeking two high calibre candidates to undertake PhDs in the area of superconducting coils for saturated core Fault Current Limiters. This research is part of a three-year project funded by the Australian Research Council and supported significantly by Zenergy Power Pty Ltd (who will be actively involved in setting project milestones and guiding project outcomes).

Saturated core superconducting Fault Current Limiters are designed to protect and improve the availability of electricity grids in an energy efficient manner. This project aims to design, build and test next generation superconducting coils (based on MgB$_2$ superconductor) for the fault current limiter application. The complete design of appropriate superconducting coils will necessarily include the design of an associated cryogenic cooling system, and will require significant thermal analysis and simulation work using Finite Element Analysis (FEA) software. The project will also involve close collaboration with Zenergy Power Pty Ltd.

The successful candidates will have bachelor degrees in Mechanical Engineering or related disciplines. Significant experience in Cryogenic Engineering and system integration will also be extremely beneficial in these positions and highly valued during the selection process. Although the simulation and analysis work forms a large part of the project (especially in the first year), the successful candidate will also be expected to design and build data acquisition systems, vacuum control systems, cryo-cooler control systems and integrate these individual components into a complete functioning system.

Candidates must address the Selection Criteria specified below. For further information about this project and scholarship, please contact Dr Jeff Moscrop: jeffm@uow.edu.au

Stipend (per annum – non-taxable): $26,669. Significant top-ups, supported by the University and the Industry Partner, will be available for exceptional candidates whom are either highly qualified or have significant experience.

Closing Date for Applications: 31st March, 2010
Applications should be sent to Dr Jeff Moscrop: jeffm@uow.edu.au or Prof Shixue Dou: shi@uow.edu.au

Selection Criteria:

Essential:

- Mechanical engineering background,
- Strong thermal analysis and simulation skills,
- Demonstrated experience in prototype and test-bed design,
- FEA simulation experience, particularly in thermal and mechanical studies,
- Experience in superconductors, cryogenics, or related discipline,
- Excellent communication skills in English, so as to communicate and report findings to senior industry personnel,
• Ability to work independently as well as in a team environment,

Highly Desirable:

• Proficiency in Comsol or ANSYS FEA software packages,
• Cryogenic experience,
• Vacuum systems experience,
• Materials engineering and materials properties,
• Experience with electro-magnetic applications,

Desirable:

• Proficiency in any FEA software package,
• Experience and competence with the following software packages: Matlab, LabView, Mathematica, Solidworks, ProE, AutoCAD (or other 2D or 3D drafting packages),
• Experience in developing high speed data acquisition systems,
• Experience with Industrial Control Systems, such as SCADA and PLCs.

Special Job Requirements:

Must adhere to safe work and laboratory practices.