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<th>Research Opportunity In:</th>
<th>Department of Mechanical &amp; Automobile Engineering</th>
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<tr>
<td>Title of Proposed Research Degree Project:</td>
<td>Characterisation of Thermal Stratification in Thermal Energy Storage Tanks (M.Eng. by Research)</td>
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<td>Description:</td>
<td>Thermal Energy Storage (TES) is becoming increasingly popular as an energy management platform. A particular type of TES, known as Low Temperature Thermal Storage (LTTS) is currently being investigated for use in thermal power plants. Calculations from preliminary investigations indicate that the technology has both thermodynamic and economic merit, and can significantly improve the performance of current power plants. However, these preliminary calculations are predicated on assumptions related to the TES tank in the system. The main objective of this project is to investigate the thermal and fluidic behaviour of the tank, so that assumptions in the governing LTTS model can be relaxed, and/or modified as appropriate, resulting in more accurate calculations for the LTTS technology. In particular, the thermal stratification of the tank, which results from the mixing of cold and hot water in the tank, needs to be investigated. The project will examine how the thermocline develops within the tank, and determine the parameters which influence the development, and thickness, of the thermocline. Ultimately, the behaviour of the tank will be characterised, and its influence on the overall LTTS system will be established. In general, this project will provide valuable insight into TES tank behaviour – which is an ongoing research topic in the literature. More specifically, the project will have direct links to an industry-funded project, and the results will contribute to the development of operational strategies for the LTTS technology.</td>
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<td>Scholarships Condition:</td>
<td>Funded by the Graduate Research Office – <strong>Postgraduate Fees for a period up to two years full-time and a stipend</strong></td>
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| Requirements of Candidate:      | • Level 8 Honours Degree in an appropriate field of study is essential (Grade 1:1 degree preferable, applications considered with a Grade 2:2 or higher with relevant experience),  
• Experience of advanced research and relevant work experience  
• Commitment to a 24-month programme of study and research full-time  
• Self-motivated with an ability to be self-directed in much of their own work  
• Able to plan work over longer periods and have strong writing and analytical skills |
- Interest in pursuing a career in academia and/or research
- Interest in pursuing postgraduate studies in areas related to thermodynamics, heat transfer, fluid dynamics, and energy management

**Contact:**  
Informal Research Enquiries should be directed to Dr. Alan O’Donovan, Telephone: 087-1242670, Email (preferred): alan.odonovan@lit.ie

**Deadline for applications:**  
Friday, 27th September 2019

**Application Process:**  
Application forms to be emailed to the Graduate Studies and Research Office, LIT. Email: [graduatestudies@lit.ie](mailto:graduatestudies@lit.ie)

For queries on application process please contact: [graduatestudies@lit.ie](mailto:graduatestudies@lit.ie)