Project description

Applications are invited for a research studentship in the field of development of advanced non-destructive evaluation (NDE) techniques leading to the award of an Engineering Doctorate (EngD) degree.

Throughout the world, vast quantities of petrochemicals are pumped through pipelines as they are the most efficient and safest means of transportation over large distances. There are over 3.5 million km of oil pipelines in the world and a typical pipeline such as SUMED (a pair of 320 km long, 42" diameter pipes connecting the Mediterranean with the Red Sea) has a capacity to transport around $100M worth of crude oil per day. The aim of this doctoral research is to develop new methods to characterise complex defects in pipelines using ultrasonic guided wave inspection.

The ultrasonic guided wave technique has been used in pipeline inspection in various forms for some time, usually for screening large sections of pipeline for relatively large defects. There is now potential to use the technique for more detailed characterization of the defects which could dramatically improve pipeline inspection accuracy. The project will involve the use of finite element simulation to model the interaction of ultrasonic waves with complex defects, together with development and evaluation of algorithms to characterize the defects.

The project is sponsored by Baker Hughes, a GE Company through its Process and Pipeline Services (PPS) business. PPS provides inspection services to pipeline operators using advanced inspection vehicles with a range of technologies. The company operates globally, with sites in 12 countries, including three technology centres, and has inspected in excess of 1 million kilometres of pipeline.

The student will work at Imperial College London before relocating to the Baker Hughes PPS business at Cramlington, Northumberland for a significant portion of their studies, with frequent trips to Imperial College. The student will work alongside engineers developing inspections and will have the opportunity to influence the programme.

The studentship is offered through the EPSRC Doctoral Training in Quantitative NDE which is a partnership between a select group of universities and companies offering a 4-year industrial doctorate designed to launch outstanding graduates into an engineering career. With close links to the related UK Research Centre in NDE, students are part of a vibrant community of more than 200 researchers and have access to a range of technical training courses delivered by world leading experts.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for a doctorate at Imperial College London. You will have a first class class honours degree (or equivalent) in mechanical or electrical engineering, physics or a related subject, and an enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. Good team-working, observational and communication skills are essential.

To find out more about research at Imperial College London in this area, go to:
For further details of the post contact Prof Keith Newton at k.newton@imperial.ac.uk. Interested applicants should send an up-to-date curriculum vitae to Nina Hancock n.hancock@imperial.ac.uk +44 (0)20 7594 7068. Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Funding notes

UK/EU applicants with 3 years residency in the UK are eligible to receive a tax-free EPSRC bursary of over £18k per annum while based in London (over £16k per annum while based in Northumberland), plus a generous top up via Baker Hughes so that overall stipend will be in excess of £21k per annum. EPSRC candidates should fulfil the eligibility criteria for the award. Please check your suitability at View Website

Closing date: (31 Jul 2018)

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Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people