



Technical Specialist: Phased Array Ultrasonic Testing (KTP Associate)

Department	Electronic and Electrical Engineering (www.strath.ac.uk/engineering/electronicalelectricalengineering/)		
Faculty	Faculty of Engineering (www.strath.ac.uk/engineering/)		
Staff Category	Knowledge Transfer Partnership (KTP)	Reference No	619536
Reports To	Dr Ehsan Mohseni, (Knowledge Base Supervisor); Walker Murray (Company Supervisor)	Grade	RS79
Salary Range	Up to £40,000	Contract Type	30 months
FTE	1 (37 hours/week)	Closing Date	11/10/2024
Holidays	30 days + 4 statutory days As per the company holidays.	Company On Site Facilities	Free parking, Kitchen, close to food outlets.
Pensions	Contributory pension scheme available to all staff including generous employer contribution.		
Training	KTP Associates spend 10% of their time on training and personal development including attendance at 2 compulsory Residential Modules. Professional Development with Organisational and Staff Development Unit (OSDU) plus external training if required.		

Job Advert

The Department of Electronic and Electrical Engineering in partnership with National Oilwell Varco (NOV) UK Limited (<https://www.nov.com/>) are seeking to appoint a KTP Associate to develop and manage a calibration system for advanced Phased Array Ultrasonic Testing (PAUT) of complex geometry parts. The post will be predominantly based at NOV's site in Forfar, Angus with visits to the University of Strathclyde campus and NOV Montrose.

NOV is a worldwide provider of equipment and components used in oil and gas drilling and production operations, oilfield services, and supply chain integration services to the upstream oil and gas industry. The company operates in more than 500 locations across six continents through three reporting segments: Rig Technologies, Wellbore Technologies, and Completion & Production Solutions.

The NOV team in Forfar is responsible for the standardisation of non-destructive evaluation (NDE) procedures for the oilwell drilling equipment across the globe. Conventional calibration practiced by NOV can be unreliable, as the testing equipment may travel thousands of miles overseas after the initial calibration. The rigours of the journey can alter the characteristics of the calibration equipment and thus make comparison to equipment in the field unreliable. NOV's oilwell drilling components are often metres in span and extremely heavy, which makes it practically impossible to have standard reference blocks of the same size as the original equipment. Therefore, the company is seeking to recruit a candidate with background and expertise in PAUT NDE to develop permanent capacity to design, manufacture, and use calibration/sensitivity pieces for in-field inspection of equipment using PAUT equipment. Introducing portable, down-scaled sensitivity pieces for calibration use in the field will transform the reliability of NDE processes and safety of the components in operation, minimising the risks of failure and shutdown. The accuracy of manufactured sensitivity piece is critical: the defects/discontinuities must be reliable and consistent with the piece of equipment targeted for calibration.

The project is part of the Knowledge Transfer Partnership (KTP) programme that aims to help businesses to innovate and grow by working with UK universities. Successful Knowledge Transfer Partnership projects are funded by UK Research and Innovation through Innovate UK and are part of the government's Industrial Strategy. To find out how KTP works and the vital role you will play if you successfully secure a KTP Associate position please visit: www.ktpws.org.uk

The position offers the KTP Associate the following benefits:

- a challenging and rewarding job with real responsibility
- a planned programme of training courses, including a £5k personal development budget
- mentoring from experienced industrial and academic supervisors
- the support and resources of the University of Strathclyde
- the possibility of registering for a higher degree with the University
- the potential for good career development with the company at the end of the scheme
- developing and proving expertise in the prospering field of energy
- the opportunity to make important and tangible improvements in an ambitious and dynamic company
- the opportunity to apply your academic knowledge to a real-life challenge
- opportunity of a permanent position with the company; 70% of host companies make a permanent job offer to their Associate at the end of the project

The objective of this project is to conduct PAUT studies through modelling and experiments on a range of NOV's complex components to develop a phased array ultrasound testing procedure for such components. This will include the design, manufacturing and validation of bespoke sensitivity and calibration pieces. The main goal is to embed the knowledge and experience of inspection procedure design and development within the company. The associate will work with NOV and Strathclyde to develop a new PAUT inspection procedure and standardise it for selected components while training NOV team to develop this capability for future cases.

To be considered for the role you will be expected to have at least PhD/MSc degree in Electrical, Electronic, Mechanical or Materials Engineering, Physics or equivalent. The successful candidate must have experience in phased array ultrasonic testing and the related equipment. For a full list of role requirements please see the person specification below.

Job Description

Brief Outline of Job:

Working with colleagues at NOV and academics at the University of Strathclyde the associate will undertake a 2.5 year program of work that will look to study phased array inspection of complex NOV components and develop optimised inspection procedures for maximum inspection reliability. Areas to consider include:

- Improved phased array ultrasonic testing parameters to increase probability of detection for selected complex geometries.
- Design, manufacture and validation of portable (scaled down) PAUT sensitivity and calibration pieces through simulations and experiments for inspection of target NOV complex geometry parts and in accordance with industry code and practice.
- Developing know-how for PAUT procedures within NOV, lead standardising the procedures, and training NOV NDT team's personnel on PAUT inspection procedure development.

The associate will design, develop sensitivity/calibration prototypes, and test them using NOV/ Strathclyde's impressive suite of test facilities/equipment.

The Associate will also contribute to the knowledge base through training workshops and reports which will be the basis for journal publications. Consistent reference to literature and use of academic and industry expertise will ensure best practice and successful delivery.

Main Activities/Responsibilities:

1.	Establish and develop a working calibration system for large and complex geometry parts for advanced UT inspection, in accordance with industry code and practice, but also sustainable to the company.
2.	Lead and project manage the KTP
3.	Collate existing procedures and documentation to work within the new calibration system designed
4.	Develop methods and instructions for Advanced PAUT inspectors to follow.

5.	Engage in technical discussions for establishing most efficient methods of inspection
6.	Completion of all KTP Training and KTP Associate Final Report in a timely manner
7.	Work within NOV Document Management Systems and seek approval from relevant Engineering groups.
8.	Establish global network of personnel for retrieving critical information for duration of project.

Person Specification

Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

E1 PhD or a minimum of a MSc in Electronic, Mechanical, Materials Engineering, or Physics. For candidates with a MSc, a few years of relevant industrial experience will be required.

E2 Qualification for inspection using Advance UT or UT

Experience

E3 Understanding and experience of phased array ultrasound testing.

D1 Understanding and experience of industrial Ultrasonics inspection and NDE.

E4 Understanding of ultrasound and wave propagation theory.

D2 Modelling software packages - either semi-analytical NDE, such as CIVA, or numerical finite element wave propagation such as Comsol, OnScale, Pogo

D3 Signal processing -- through standard engineering languages, Matlab, Python, C to post-process the modelling and inspection results for further analysis

D4 Design, validation, testing - experience in developing products from design stage, using CAD software packages, to validation and testing.

D5 Experience of working with phased array ultrasound testing standards

D6 Experience of working with offshore oil and gas standards

Job Related Skills and Achievements

E5 Experience in technical writing, and presentation.

D7 Proficient in interpretation of Advanced UT Data

D8 UT Level II or III Certification (any of the following EN4179/PCN/SNT/ASNT/NAS410)

Personal Attributes

E6 Strong communication skills in English.

E7 Strong can do attitude

E8 Highly motivated and uses own initiative

E9 Strong interpersonal and collaboration skills

Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (<http://www.strath.ac.uk/hr/workforus>).

Informal enquiries about the post can be directed to Dr Ehsan Mohseni, Electronic & Electrical Engineering (ehsan.mohseni@strath.ac.uk).

Conditions of Employment

Conditions of employment relating to the KTP Associate staff category can be found at: [Conditions of Employment](#).

Rewards and Benefits

Our staff have access to a wide range of outstanding benefits that include financial rewards, family friendly and wellbeing benefits and career development opportunities, details of which can be found [here](#).

Probation

Where applicable, the successful applicant will be required to serve a 6 month probationary period.

Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from [Payroll and Pensions](#).

Relocation

Where applicable, the University offers a relocation package to support new employees who meet the eligibility criteria. The relocation package is offered as a contribution towards costs incurred, and is designed to be flexible, allowing staff to use the financial support available in the way that will be most helpful to them. Further details are outlined in the Relocation Policy.

Equality and Diversity

The University of Strathclyde is a socially progressive institution that strives to ensure equality of opportunity and celebrates the diversity of its student and staff community. Strathclyde is people-oriented and collaborative, offering a supportive and flexible working culture with a deep commitment to our equality, diversity and inclusion charters, initiatives, groups and networks.

We strongly encourage applications from Black, Asian and minority ethnicity, women, LGBT+, and disabled candidates and candidates from lower socio-economic groups and care-experienced backgrounds.

University Values

The University's Values capture what we're all about: who we are, what we believe in and what we stand for. [Our Values](#) have been derived from how we act and how we expect to be treated as part of Strathclyde.

