KTP research associate in thermal and fluid modelling and design

Reference: R220394

Salary: £30,000 to £32,000 per annum, depending on experience

Additional funding will be available for professional and personal development during the project

Contract Type: 30 months (fixed term)

Basis: Full Time

Job description

This 30-month project takes the form of a Knowledge Transfer Partnership (KTP) (https://www.ktp-uk.org/), which provides you with practical and formal training and the availability of support from experienced mentors from Mechatherm International Ltd, Aston University and Innovate UK-KTN.

Job Purpose:

This KTP project aims to develop state-of-the-art energy efficient aluminium recycling systems, which meet evolving environmental regulations to enable Mechatherm to develop robust optimisation strategies to generate a range of cost and energy-efficient aluminium recycling systems to take to market, supporting business growth in this growing market.

The key objectives of the KTP are to embed the required skills to model and design the 3 key stages to prepare scrap aluminium for furnace processing:

1. De-coating scrap: pre-treating the scrap to remove contaminants e.g., oils, paints, food residues to optimise aluminium yield
2. Heat recovery: mechanisms to harvest waste heat e.g., hot exhaust gases to optimise the energy-efficiency of the system
3. Exhaust gas filtration: treatment of low temperature exhaust gases filtration to meet emissions environmental regulations.

The proposed project is particularly novel and is expected to deliver the next generation of aluminium recycling technology to support the industry's growth via: new energy-efficient designs potentially offering 30-50% less energy consumption than current solutions. Controlled exhaust gas flow streams to reduce chemical pollutants and meet increasingly stringent global emissions targets higher quality aluminium yields through effective pre-treatment, which will also deliver additional energy savings for post-processing applications.

The role: This role is an exciting opportunity for candidates qualified to PhD or Master's level with industrial experience in the Mechanical Engineering or related field with a background in thermal, fluid flow, energy management, and process modelling. They will need to be able to demonstrate excellent mechanical or chemical engineering design skills, with experience of numerical modelling and ideally computational fluid dynamics (CFD).

Main duties and responsibilities:

- Current practice review, awareness development and market competitors' analysis
- Establishing Technical Repository (TR) to record, store and disseminate transferred knowledge as legacy capability.
- Define requirements, constraints and overall process the de-coating; exhaust gasses heat recovery; exhaust filtering.
- Data analysis and, thermal, CFD, and CAD modelling.
- Designs refinement and approval.
- System and process modelling and optimisation.

Additional responsibilities

- Engage in continuous personal and professional development in line with the demands of the role, including undertaking relevant training and development activities to develop themselves and support the development of others
- Ensure and promote the personal health, safety and wellbeing of staff.
- Carry out duties in a way which promotes fairness in all matters and which engenders trust.
- Promote equality of opportunity and support diversity and inclusion as well as working to support the University's environmental sustainability agenda and practices.
- The associate is expected to work on site for the most part of employment.

Person specification

	Essential	Method of assessment
Education and qualifications	Completed or completing PhD or Master's level with, preferably with industrial experience, in the Mechanical Engineering or related field with a background in thermal/energy management.	Application form
Experience	- Computational thermal modelling of systems (preferably using MATLAB and ASPEN) - Computational Fluid Dynamics (CFD) for component modelling (preferably using Ansys) - Ability to undertake 1D/3D coupled modelling - A solid foundation in CAD modelling (Preferably using Invertor software) - Ability of undertaking techno-economic analysis and modelling.	Application form and interview
Aptitude and skills	A methodical approach to problem solving and a willingness to learn new skills, software and extend capabilities through the project will be a key attribute.	Application form and interview

	Desirable	Method of assessment
Aptitude and skills	Excellent verbal and written communication skills. Work as part of a multifunctional team and be able to communicate and defend ideas to colleagues at all levels and functions of the business.	Application form and interview

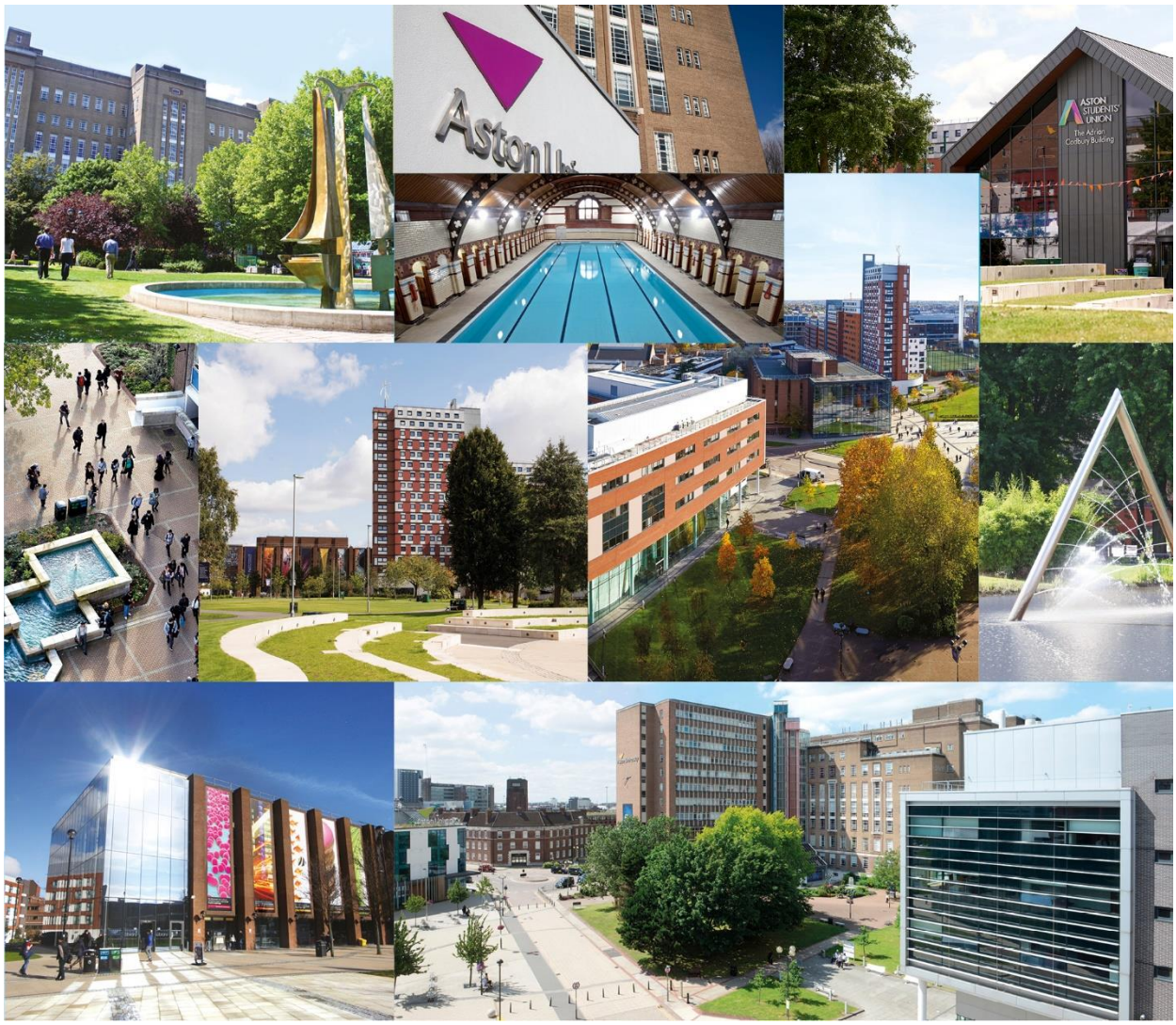
How to apply

You can apply for this role online via our website https://www2.aston.ac.uk/staff-public/hr/jobs.

Applications should be submitted by 23.59 BST on the advertised closing date.
All applicants must complete an application form, along with your CV.

Any CV sent direct to the Recruitment Team and Recruiting Manager will not be accepted.

If you require a manual application form then please contact the Recruitment Team via jobs@aston.ac.uk.



Contact information

Enquiries about the vacancy:
Name: Dr Ahmed Rezk
Job Title: Lecturer, EPS
Email: a.rezk@aston.ac.uk

Enquiries about the application process, shortlisting or interviews:
Recruitment Team via jobs@aston.ac.uk or 0121 204 4500.

Additional information

Visit our website https://www2.aston.ac.uk/staff-public/hr for full details of our salary scales and benefits Aston University staff enjoy

Salary scales: https://www2.aston.ac.uk/staff-public/hr/payroll-and-pensions/salary-scales/index

Benefits: https://www2.aston.ac.uk/staff-public/hr/Benefits-and-Rewards/index

Employment of Ex-Offenders: Under the Rehabilitation of Offenders Act 1974, a person with a criminal record is not required to disclose any spent convictions unless the positions they applying for is listed an exception under the act.

Eligibility to work in the UK:

Post-Brexit transition period / EU Settlement Scheme
The post-Brexit transition period ended on 31 December 2020. If you are an EU/EEA citizen and you were a resident in the UK before 31 December 2020, you and your family members (including non-EU citizens need to apply to the EU Settlement Scheme to continue to live, work and study in the UK beyond 30 June 2021. The deadline for applying to the EU settlement scheme is 30 June 2021. You can apply via the Government webpage https://www.gov.uk/settled-status-eu-citizens-families
Irish Nationals do not need to apply for settlement as they retain the right to work in the UK.

New immigration system for EU/EEA and Swiss Nationals who were not resident in the UK before 31 December 2020

A new immigration system has been introduced for people arriving in the UK from EEA countries with effect from 1 January 2021. In addition to those who have always required a visa, EU citizens moving to the UK to work will need to get a visa in advance. You can find more information on the following website. Candidates should check their eligibility to enter or remain in the UK in advance of making any job application via the UKVI website https://www.gov.uk/browse/visas-immigration/work-visas. Before applying you should ensure that you meet the requirements, including meeting the English Language requirements. If you do not meet the eligibility criteria, any application for a work visa would be unsuccessful. If you require a visa to work in the UK the most common types of visa are:
Skilled Worker Visa
https://www.gov.uk/skilled-worker-visa

Global Talent Visa
If you are a leader or potential leader in one of the following fields you may be eligible to apply for a Global Talent Visa:

- Academia or Research
- Arts and Culture
- Digital Technology

Please click the following link for further information and to check your eligibility for this visa.
https://www.gov.uk/global-talent

Equal Opportunities: Aston University promotes equality and diversity in all aspects of its work. We aim to ensure, through our admissions policies for students, and our staff recruitment and selection processes that we encourage applications from all groups represented in the wider community at a local, national and international level.

The University will endeavour not to discriminate unfairly or illegally, directly or indirectly, against student or potential students, staff or potential staff. This commitment applies to all functions of the University and to any stage of an individual's career.

An Equal Opportunities Monitoring Form is included within the application form. Data you provide on the Equal Opportunities Monitoring Form will be included in a general database, for statistical monitoring purposes, enabling the University to monitor the effectiveness of its Policy, Codes of Practice and Guidelines on Equal Opportunities in Employment. Individuals will not be identified by name.

Data Protection: Your personal data will be processed in compliance with the Data Protection Act 2018 and the General Data Protection Regulation ((EU) 2016/679) ("GDPR"). The University's Data Protection Policy and Privacy Notices, including the Job Applicant Privacy Notice can be found at https://www2.aston.ac.uk/data-protection. Your application will only be used to inform the selection process, unless you are successful, in which case it will form the basis of your personal record with the University which will be stored in manual and/or electronic files. Information in statistical form on present and former employees is given to appropriate outside bodies.

Full details of our terms and conditions of service and associated policies and procedures are available online at https://www2.aston.ac.uk/staff-public/hr/policies

Aston University
Birmingham
B4 7ET, UK.
+44 (0)121 204 3000
aston.ac.uk