Job Description

General Details	
Job title:	Post-doctoral Research Fellow (PDRA) in Renewable Energy Technology (CAE17/07)
Faculty/Service:	School of Creative Arts and Engineering
Normal Workbase:	Stoke Campus
Tenure:	Temporary Fixed Term to 31 March 2019
Hours/FTE:	Full Time (1.0fte)
Grade/Salary:	Grade 7
Date Prepared:	October 2017

Job Purpose

- The work will focus on state-of-the-art technologies in Micro Turbine Generators (MTG) systems.
- This industry/academic based project is funded by the Innovate UK and will lead to development of a 12 kWe biogas-fuelled MTG system as suitable for the UK and international market.
- The post holder will be responsible (with supervision) to deliver on the design of this biogas-fuelled micro-combustor and CFD and process modelling of the combustion system (WP2). This work package is strongly linked with the other work packages in the project.
- To make an active contribution to the research activities commensurate with the objectives of the School of Creative Art and Engineering.

Relationships	
Reporting to:	Dr Hamidreza Gohari Darabkhani
Responsible for:	None

Main Activities

- A critical review of biogas-fuelled micro-combustor design scenarios and characteristics.
- Receiving the initial combustion/turbomachinery/biogas requirements of the biogas 12kW micro gas turbine from Bladon Jets and Cranfield University.
- Conceptual and preliminary design of a biogas fired micro-combustor and the fuel system for integration with the 12 kW Bladon Jets MTG turbomachinery system.
- Preliminary design and CFD modelling of the micro-combustor.
- Produce a better understanding of the requirement and stablishes a methodology for developing suitable micro-combustors with low caloric value biogas fuels for integration in a micro gas turbine system.

- Investigate the performance and operational issues of the combustor and the Micro Turbine Generators (MTG) system.
- A full process simulation, performance analysis and operational flexibilities of the Micro 12 kW Turbine Generators (MTG) systems for residential.
- Perform the techno-economic evaluation and risk analysis of Micro Turbine Generators (MTG) technologies.
- Receiving input from Bladon Jets on performance analysis of the 12 kW MTG using GasTurb software with the designed combustor.
- Collaboration with Bladon Jets in the detail design and the test of the micro-combustor system.
- Efficiency improvement and emission control of the combustion system.
    - Attending the technical meetings and assist in analysis of the experimental work
    - Publishing the results in leading conference proceedings and high ranked journal papers and contribute in preparation of the required documents for the patent registrations.
    - Contribute in writing proposals for future funding in the low carbon and renewable systems.

Special Conditions

The role holder will be required to travel to the partners' places from time to time to attend technical and review meetings or for collaborate works about the project in a cost effective manner.

The jobholder will need to be committed to working with the University to help further resolving the carbon footprint/environmental issues.

The jobholder also need to contribute in writing proposals for further funding in the low carbon and renewable systems.

Variation to Job Description

Staffordshire University reserves the right to vary the duties and responsibilities of its employees within the general conditions of the Scheme of pay and conditions and employment related matters. Thus, it must be appreciated that the duties and responsibilities outlined above may be altered as the changing needs of the service may require.

Conditions of Service

The post is subject to such terms and conditions of employment as negotiated between the Board of Governors of the University and the recognised trade unions, and /or the employees of the University. In negotiating such terms and conditions the Board of Governors will consider any appropriate advice received from the Universities and Colleges Employers Association (UCEA).

Informal Discussion

Should you wish to discuss this vacancy informally before making an application please contact with Dr Hamidreza G. Darabkhani by email at h.g.darabkhani@staffs.ac.uk or over the phone +44 (0) 1782 292769.

Application Procedure

We encourage you to apply on-line at our website http://jobs.staffs.ac.uk as the system is user friendly and simple to complete.
Please note that the University will not consider a Curriculum Vitae attached in support of your application and will not use this document in the shortlisting process. Consequently, we would ask all applicants to ensure that they have provided comprehensive information under each criteria in the Supporting Statements section of the application form and, if necessary, add any relevant additional information in the Additional Information Section.

Person Specification

Job Title: **Post Doctoral Research Fellow in Renewable Energy Technology (CAE17/07)**

School/Service: **Creative Arts and Engineering**

The qualifications, experience, knowledge skills and personal qualities outlined below provide a summary of what is required to carry out this job effectively. They also form the selection criteria on which a decision to appoint will be made. Please ensure that you provide evidence of how you meet the criteria in your application.

No	**Selection Criteria Description**	**Essential [E] or Desirable [D]**	**Assessed by ***
1	PhD in Mechanical/Chemical Engineering, Energy, Power Engineering, or related discipline	E	A
2	Research/Industrial experience in engineering design and CFD modelling of energy systems.	E	A
3	Experience in CFD modelling (e.g., Fluent software)	E	A
4	Experience in engineering design methods and modelling software (e.g AutoCAD, Creo Parametric, Solid works)	E	A
5	Excellent technical writing skills in English for technical reports and publication in high quality journals and conference proceedings	E	A
6	Excellent project and time management skills, ensuring that milestones and deliverables are achieved to time and to high quality	E	I
7	Excellent team-working and inter-personal skills and ability to conduct research within a multidisciplinary and multicultural team	E	A
8	Proven ability to undertake original research	E	A
9	High degree of personal motivation and the ability to work with minimal supervision	E	I
10	Dedicated and flexible approach to work	E	I
11	Positive attitude to internal and external collaborations	E	I
12	The willingness and ability to travel	E	I
13	Degree in Mechanical, Chemical, or Power Engineering or related discipline / equivalent in qualification and experience	D	A
14	Experience in Micro Turbine Generators (MTG) and biofuel systems and understanding of the contemporary challenges facing the Energy and Power sector	D	A

15	Experience and demonstrated success of building a research team and delivering research results.	D	I
16	Experience in process modelling using commercial software (eg. Aspen Plus), GT performance analysis software (e.g., Gasturb)	D	A
17	Experience in delivery of training seminars, workshops, and presenting in project meetings and conferences	D	I

*<u>**Key**</u>	
[A] Application form	**To be assessed against the information provided in the relevant steps of the application form and the evidence required under Section 4, 'Supporting Statements'**
[I] Interview	**To be assessed during the interview process including selection tests or presentation, as appropriate**