Job Related Information

This document includes information about the role for which you are applying and the information you will need to provide with your application.

1. Role Details

<table>
<thead>
<tr>
<th>Vacancy reference</th>
<th>15876</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job title:</td>
<td>StressMap Research Engineer</td>
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<tr>
<td>Reports to:</td>
<td>Professor of Materials Engineering</td>
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<tr>
<td>Salary:</td>
<td>£27,025 to £39,609 depending on qualifications and experience</td>
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<tr>
<td>Terms and conditions:</td>
<td>Research</td>
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<tr>
<td>Grade</td>
<td>Academic Grade AC1/AC2</td>
</tr>
<tr>
<td>Duration of post:</td>
<td>36 month temporary contract</td>
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<tr>
<td>Working hours:</td>
<td>Full time, 37 hours per week</td>
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<tr>
<td>Location:</td>
<td>Milton Keynes</td>
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<tr>
<td>Closing date:</td>
<td>12:00 noon on 17th May 2019</td>
</tr>
<tr>
<td>Type of application form accepted:</td>
<td>Application for Employment Form</td>
</tr>
<tr>
<td>Number of referees required:</td>
<td>3</td>
</tr>
<tr>
<td>Unit recruitment contact email:</td>
<td><a href="mailto:Resourcing-Hub@open.ac.uk">Resourcing-Hub@open.ac.uk</a></td>
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</tbody>
</table>
2. Summary of duties

The main purpose of this post is to support the Measurement Services Business Unit (StressMap) based within the School of Engineering & Innovation at The Open University. The workload of StressMap is expanding in scope and includes specialist residual stress measurements, structural integrity work and materials characterisation for industrial clients. Specifically the Research Engineer will be expected to:

- To support the Research Manager in growing the scale of services provided and meeting StressMap’s financial metrics targets.
- To plan, direct and undertake experiments to solve industrial research measurement challenges within budget and timescale.
- To apply appropriate modelling techniques to address stress engineering research objectives.
- To compile, analyse, assess and write up data from measurement and modelling studies.
- To summarise research findings in reports for industry, conference papers and journal articles.
- To provide residual stress engineering related technical advice and consultancy services to industry.
- To nurture collaborative residual stress related R&D with industrial sponsors.
- To take responsibility for developing/maintaining software and the computing platform required to support current and future growth of StressMap services.
- To collaborate with the StressMap Research Manager and Engineers to implement quality management processes (such as UKAS and/or ISO9001).
- Travel to meet clients, including overseas.

3. Person specification

Requirements (E = Essential/ D = Desirable)

Education, qualifications and training

- MSc (or equivalent level of education)

Knowledge, work and other relevant experience

**Essential:**

- A good understanding of residual stress, solid mechanics, fracture mechanics and structural integrity.
- Experience of measuring residual stress
- Ability to critically evaluate and improve the quality of measurement results achieved, sometimes within tight time-scales.
- High level computer skills including expertise in applying engineering software packages such as ABAQUS and MATLAB.
- An understanding of workshop practice coupled with a willingness to be trained in how to undertake wire Electrical Discharge Machine (EDM) and related practical work.
- The ability to network and communicate effectively with managers, scientists, engineers, technicians and support staff in academia and industry.
• Good presentation skills at meetings, seminars and conferences.
• Ability to write concisely in English, including preparation of technical specifications, technical reports and journal papers.
• Ability to deliver outcomes by taking initiatives, managing competing priorities and working with others effectively.

Desirable:
• PhD
• Experience in applying the following residual stress measurement techniques to engineering components: the contour method, X-ray diffraction and neutron diffraction.
• Microscopy experience and knowledge of metallurgy.
• Working knowledge of digital image correlation.
• Knowledge of high temperature materials behaviour.
• Experience of computer programming, for example in PYTHON

### Personal abilities and qualities

**Essential:**
• Good presentation skills at meetings, seminars and conferences.
• Good creativity and innovation skills.
• Evidence of working with others effectively.
• Ability to take the initiative to deliver outcomes.

**Desirable:**

4. Role specific requirements e.g. Shift working

Working hours will initially coincide with standard practice. But as the business grows flexible working might be required to meet demand and make maximum use of OU workshop and associated specialist equipment. Some UK and international travel will be required to support the post objectives and to promote collaboration

5. About the unit/department

**School of Engineering & Innovation**

The School of Engineering and Innovation is one of the largest Schools in the STEM Faculty, with circa 80 academic staff and around 40 full-time PhD students. It is a broad-based multidisciplinary School that leads the OU’s teaching in the areas of Engineering, Technology and Innovation Management, Design, Systems Thinking and Environmental Management. We support qualifications including the IMechE, IET, IED and CIBSE accredited BEng/MEng, the IED accredited BA/BSc in Design and Innovation, the BSc in Environmental Management and Technology, the MSc in Engineering, the MSc in Technology Management, the MSc in Systems Thinking in Practice and the IEMA accredited MSc in Environmental Management.
The School is one of the most research-intensive in the University, hosting two submissions in REF2014 from Materials Engineering and Design. Other areas of active research within the School that have contributed to the university’s REF2014 submissions include Energy, Acoustics, Waste Management, and Systems Thinking.

**Materials Engineering**

The Materials Engineering community at the OU is one of the leading materials research groups in the UK with a focus on engineering application. The excellence of our research is attested by our REF2014 performance; Panel B13 judged 91% of materials engineering research at the OU to be ‘world leading’ or ‘internationally excellent’ placing us within the top 13 in the UK (based on outputs). The Materials Engineering group comprises 10 academic staff, 4 technical support staff, 3 post-doctoral researchers, 10 PhD students, and an extended community of interest embracing energy and transport themes within the School of Engineering & Innovation, as well as atomic/molecular science-based materials research elsewhere within the STEM Faculty. Materials Engineering academic staff drive the Faculty’s engineering teaching programme, contributing to the presentation of around 13 modules with a total of 3000 students.

The Materials Engineering laboratories are well equipped for diffusion bonding and brazing, for electropulse processing, for residual stress measurement using various mechanics-based methods (including our world-leading contour method research) and non-destructive X-ray diffraction, for mechanical testing at high temperatures using digital image correlation (DIC) strain monitoring, for metrology (CMMs, confocal microscope and AFM), for microstructural examination (SEM, FEGSEM, TEM, XPS, EDX, microprobe, nanoSIMS) and for hardness measurement (macro, micro and nano-indentation). In addition, we have a dedicated workshop with a wire electro-discharge machining facility (four machines including micro-EDM).

Materials Engineering staff have pioneered application of neutron and synchrotron X-ray methods to the study of residual and internal stresses in engineering materials since the early 1990s. The original £3.5m design and build of the ENGIN-X engineering instrument at the UK ISIS neutron facility was led by the OU and the software we developed for experimental design and execution (SScanSS) is licensed and used at many facilities worldwide. We have recently contributed to the design of the new £10m IMAT instrument that has been commissioned recently and have a programme of jointly funded PhD students with the facility. The Open University and the ISIS Facility currently have a joint plan to establish an International Stress Engineering Centre, I-SEC(UK), on the Harwell campus that will accelerate innovation through bringing together physics and mechanics-based stress measurement expertise and facilities at a global scale.

**StressMap**

StressMap is a Materials Engineering Measurement Services Business Unit dedicated to providing specialist stress/strain measurement services to clients worldwide. We specialise in the Contour Method of residual stress measurement and testing, which can give informative insights on how to improve design and manufacturing processes while enhancing the overall structural lifetime and safety. Our services have assisted a range of industries including aerospace, power (nuclear and non-nuclear), energy, automotive and transport in taking informed decisions, which led to reduced costs and increased reliability.

6. **How to obtain more information about the role or application process**

If you would like to discuss the particulars of this role before making an application, please contact Professor John Bouchard on +44 (0)1908 632950 or email: john.bouchard@open.ac.uk

If you have any questions regarding the application process, please email Resourcing-Hub@open.ac.uk
7. The application process and where to send completed applications

<table>
<thead>
<tr>
<th>Please ensure that your application reaches the University by:</th>
<th>12:00 noon on 17th May 2019</th>
</tr>
</thead>
</table>
| Your Application should include: | • A completed Application for Employment Form  
• Current Curriculum Vitae  
• A cover letter detailing why you are suitable for the position (no longer than 2 sides of A4) |

8. Selection process and date of interview

| The interview panel will be chaired by: | Professor John Bouchard, Professor in Materials for Energy, STEM, Engineering & Innovation. |
| The other members of the interview panel will be: | To be confirmed |
| The interviews will take place on: | To be confirmed |
| The selection process for this post will include | To be confirmed |

We will let you know as soon as possible after the closing date whether you have been shortlisted for interview. Further details on the selection process will also be sent to shortlisted candidates. Applications received after the closing date will not be accepted.