

# 6<sup>th</sup> RESIDUAL STRESS WORKSHOP

4th – 7th April 2017  
University of Bristol & VEQTER



Lectures



Demonstrations



Visits



Networking

Learn about the latest developments and guidelines

**X-ray**

**FEA Modelling**

**Synchrotron  
Diffraction**

**Neutron  
Diffraction**

**Magnetic**

**Objective:**

**Ultrasonic**

**Centre-Hole  
Drilling**

Develop your understanding of the main residual stress measurement and modelling techniques through a series of lectures, laboratory demonstrations, facility visits and in-depth discussions.

**Deep-Hole  
Drilling**

**Ring Coring**

**Splitting**

**Slitting**

**Contour**

**Sachs Boring**

**Sectioning**

Fully updated and new content for 2017  
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“

*I liked most the practical demos, theory and example applications (e.g. aerospace)”*

“

*The lectures and practical workshops are excellent, with a chance to see the techniques in practice. I also enjoyed the visit to Oxford [ENGIN-X & JEEP]”*

“

*I liked having access to the facilities and equipment, as well as networking and learning from experienced people in a friendly environment”*

### **Aim and Scope:**

The importance of accurately accounting for residual stresses in component integrity assessments is well-known, and universally accepted. Equally, the need to validate numerical predictions of residual stress against high quality measurement data is now viewed as a necessity.

This four-day workshop will develop your understanding of the main residual stress measurement and modelling techniques enabling you to better define your test programmes, and interrogate and interpret the results as a well informed user. In facilitating this, acknowledged experts, leaders and pioneers in residual stress measurements and modelling will convey the basics, details and application “know how” of the most important and widely used techniques. The measurement and modelling aspects will then be brought together in a “case study” lecture to provide further insight.

The applicability and usefulness of the techniques in industrial problems will finally be considered, putting theory into practice and so helping you improve your project outcomes by learning from others.

### **Programme and Format:**

The workshop is restricted to 30 delegates to ensure that core technical material may be delivered in a stimulating and lively environment at a personal level. Starting at 9.30am on Tuesday 4th April 2017 and finishing at 2.30pm on Friday 7th April 2017, the workshop will be based around a series of 50 minute lectures and laboratory demonstrations, with no more than eight delegates in each lab group and will take place at the University of Bristol and VEQTER. Delegates will be provided with a full set of bound course notes to aid their learning. The event dinner, which takes place mid-week, provides the opportunity to network informally with other delegates and speakers alike, to further support your workshop experience.

### **Lecture Topics:**

- Principles of Residual Stresses
- Incremental Centre-Hole Drilling
- Ring Coring
- X-Ray Diffraction
- Synchrotron Diffraction
- Neutron Diffraction
- Contour
- Slitting
- Deep-Hole Drilling
- Overview of other techniques
- Residual stress modelling
- Impact of Residual Stresses
- Aerospace Applications
- Nuclear Power Applications
- Oil & Gas Applications

### **Laboratory Demonstrations:**

- Contour
- Deep-Hole Drilling
- Incremental Centre-Hole Drilling
- Ring Coring
- Ultrasonic
- Sachs Boring
- Slitting
- Ultrasonic
- X-ray Diffraction

### **Facility Visits:**

- ENGIN-X (Neutron Diffraction)
- JEEP (Synchrotron Diffraction)



ENGIN-X and JEEP are the UK's Neutron and Synchrotron Diffraction instruments located in Oxfordshire. The visits will provide a rare opportunity for delegates to view the facilities and appreciate the practicalities involved in carrying out these high energy diffraction techniques.



### Expert Speakers:

**Dr Ed Kingston**, VEQTER Ltd  
*Principles of Residual Stress and Overview*

**Dr Xavier Ficquet**, VEQTER Ltd  
*Centre-Hole Drilling and Ring Coring*

**Dr Jeremy Robinson**, University of Limerick  
*X-ray Diffraction*

**Dr Axel Steuwer**, University of Malta  
*Neutron and Synchrotron Diffraction*

**Prof John Bouchard**, Open University  
*Contour and Slitting*

**Dr Karim Serasli**, VEQTER Ltd  
*Deep-Hole Drilling*

**Prof Mike Smith**, University of Manchester  
*FEA Modelling*

**Prof Chris Truman**, University of Bristol  
*Impact of Residual Stresses*

**Prof Constantinos Soutis**, Aerospace Research Institute  
*Applications within the Aerospace Industry*

**Dr Miguel Yescas**, AREVA NP  
*Applications within the Nuclear Industry*

**Dr Lars Halderson**, Statoil ASA  
*Applications within the Oil & Gas Industry*

### For further information contact:

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To register, please visit:

[www.veqter.co.uk/events](http://www.veqter.co.uk/events)

### Venue and Accommodation:

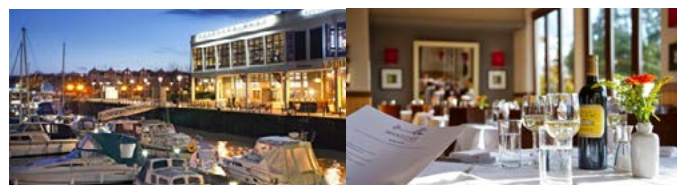
The lectures and lab demonstrations will primarily take place within the University of Bristol's Queen's Building. Further lab demonstrations will be provided at VEQTER's facilities (transport will be provided).

**Maps of the University and transport links can be found at:** [www.bristol.ac.uk/maps/directions](http://www.bristol.ac.uk/maps/directions)

The visits to [ENGIN-X](#) and [JEEP](#) at the Rutherford Appleton Laboratory in Oxfordshire will take place on Wednesday 5th April (transport will be provided).

### Fees and Registration Details:

- Registration before 31st December 2016  
£1,400+VAT (20%)
- Registration on/after 1st January 2017  
£1,640 +VAT (20%)



### Fees Include:

- Informal evening reception on Monday 3rd April at [Bordeaux Quay](#)
- Tuition and laboratory demonstrations
- A fully bound set of course notes
- All lunches and refreshments
- Transport to ENGIN-X, JEEP & VEQTER
- Event dinner at [The Avon Gorge Hotel](#)

Accommodation is not included in the registration fee, however a list of hotels close to the University can be sent to you upon request.