Vista

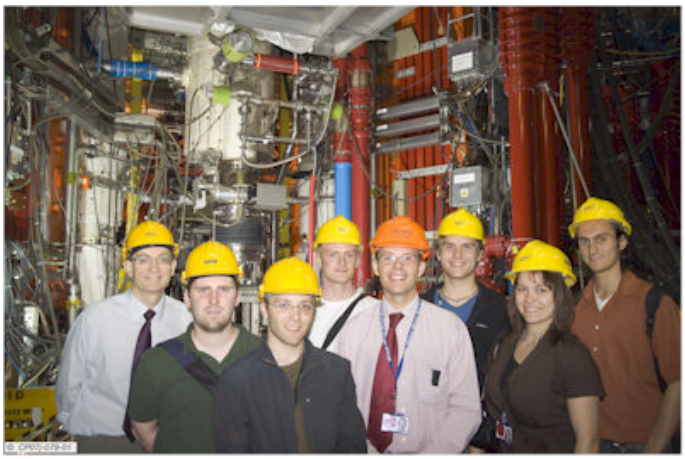
Summer 2007

Newsletter of Oxford Technologies Ltd

The first PREFIT Common School and Workshop

During June Oxford Technologies organised and hosted the first PREFIT Common School and Workshop.

The Common School was delivered over a 10 day period as a series of classroom lectures covering all aspects of the technologies, organisation and management of remote handling for fusion. The remote handling lectures, delivered by Oxford Technologies' staff, were complemented by talks from recognised experts in related areas:- 'Introduction to Tokamaks' was delivered by David Ward (UKAEA) and the 'Broader Approach' was delivered by Olivier David (CEA). The lectures were supported by a site visit to the Culham Science Centre where the PREFIT researchers were given tours of the MAST and JET facilities, including a visit to the JET Torus Hall (see photo). All six PREFIT PhD students attended the lectures and have delivered summary reports of the knowledge gained which will contribute towards their PhD assessments.



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The first PREFIT remote handling workshop was held on 5th and 6th June in the conference centre at the Culham Science Centre. The first day was dedicated to the delivery of presentations by the six PREFIT PhD students describing the status of their research projects. The second day comprised talks by invited experts from different remote handling application backgrounds. Areas covered were, the challenges for remote handling of ITER, experience from nuclear decommissioning (WAGR), nuclear plant remote maintenance (MAGNOX), space robotics (Dutch Space) and the US remote handling experience (ORNL).

The next Common School and Workshop will be convened and hosted by VTT and TUT in Tampere, Finland in June 2008.

More information on all of these, and other, events can be found at:-

www.prefit.net

News In Brief

- In August Stephen Sanders attended the International Space University's annual event this year held in the Chinese capital Beijing. The theme of the event was "The Prospect of Space Exploration : Cooperation and innovation Promotes Development". Oxford Technologies participated in one of the five main topics areas related to on-orbit remote servicing.
- Oxford Technologies has participated in HAZOP studies for the Dounreay D3200 Shaft and Silo waste processing facility.
- Oxford Technologies remote handling team at EFDA JET continues to expand (see page 4 for new opportunities).

Inside this issue

ITER Hot Cell study & Collaboration with Comex Nucléaire

In a collaboration with Comex Nucléaire, France, (CxN) Oxford Technologies have been awarded one of the first industrial contracts placed by the ITER Organisation at Cadarache. The consortium have been asked to review the remote handling systems and facilities presently specified in the baseline design for the ITER Hot Cell.

The objective of the study is to assess the current design and "Verify the impact of key parameters on the facility functionality, size and cost". The project work packages have been developed to ensure that the strengths of both Oxford Technologies and CxN are utilised to their maximum benefit for ITER. The project will be performed over a six month period and its outcome will be used by ITER to select and fix the Hot Cell design layout and there-from enable them to derive a full technical specification for its detail design and construction.

CxN have a strong pedigree in the French & International nuclear industry including the supply of systems for the ITER Divertor Test Platform.

Both parties bring complementary skills which will be able to make a significant contribution to the design of the ITER Hot Cell.

COMEX NUCLEAIRE
LA SOLUTION D'AVANCE

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Remote Handling of ITER Neutral Beam Cell

"A significant input from Oxford Technologies will be our experience from EFDA-JET in developing adaptable and standardised RH solutions."

Oxford Technologies have won a competitive tender, let by UKAEA Culham , to assist in a European Fusion Development Association (EFDA) contract to develop the remote maintenance system for the ITER Neutral Beam (NB) Cell.

The main stages of the project are to establish the base line NB cell design, evaluate the Remote Handling (RH) requirements for the main beam source and beam line component which require maintenance, propose design modifications to ITER to improve RH compatibility and to develop a 3D (CATIA V5) simulation of the proposed concept.

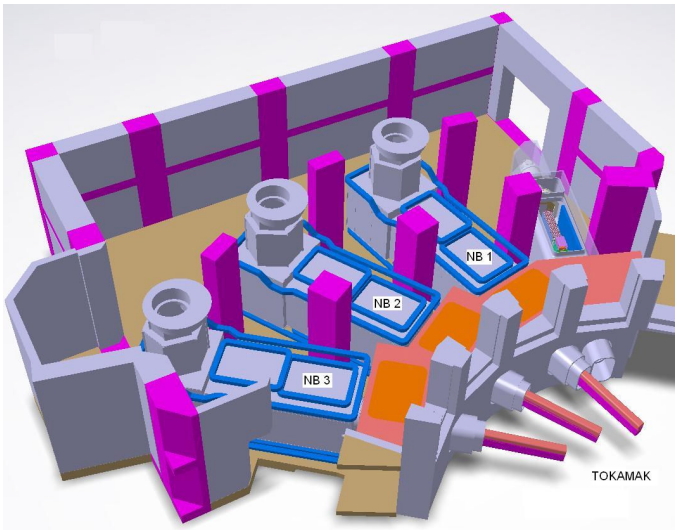
Due to the space constraints within the NB cell it is anticipated that some novel RH solutions will need to be developed in order to satisfy all of the complex and varied maintenance tasks.

The proposed concept will then be substantiated with assistance from a Virtual Reality (VR) simulation to ensure all necessary remote maintenance task are practicable and that recovery from all anticipated failure conditions can be achieved.

This work, as is the case with our on-going RH operations at EFDA-JET, will require an in-depth understanding of the ITER system components and involve detailed discussions with those responsible for the design of the NB components.

A critical interfaces for this project will therefore be Consorzio RFX (Padova, Italy) and UKAEA Culham who have the design responsibility for the ITER NB systems.

A significant input from Oxford Technologies will be our experience from EFDA-JET in developing adaptable and standardised RH solutions. This will be critical to ensure the NB RH system is consistent with other ITER RH facilities (e.g. the Hot Cell), satisfies all of the initial task requirement and is able to change and develop as maintenance requirements evolve over the life of ITER.



ORCHID - Supporting the UK Nuclear Waste Repository

"... the consortium's strengths lie in providing the complete range of technical and managerial disciplines required to deliver the repository..."

Oxford Technologies are partners in a newly formed group of companies which are collaborating to provide support to the Nuclear Decommissioning Authority's newly formed Radioactive Waste Management Directorate (RWMD) in development of the UK's national nuclear waste repository.

Named 'ORCHID' the consortium's strengths lie in providing the complete range of technical and managerial disciplines required to deliver the repository and in their previous work for UK Nirex in development of the existing repository concept.

The partners have a significant breadth and depth of knowledge of the current deep geological disposal design. The bringing together of their expertise provides significant benefits to the RWMD and to the contributing partners.

Remote operation of the repository will need to be based upon industry proven systems and devices. This is where Oxford Technologies bring to the partnership their considerable experience of design for, and implementation of, extended remote handling campaigns and their knowledge of a wide range of associated state-of-the-art technologies.

The NDA has recently taken responsibility for delivering the UK's national repository and ORCHID is uniquely placed to assist them in their objective.

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Galson SCIENCES LTD

Gardiner & Theobald

NUKEM

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PB

Wardell Armstrong
Engineering & Environmental Solutions

JET Remote Handling 'EPI' Shutdown

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Oxford Technologies staff based at the Culham Science Centre are presently supporting the EFDA-JET Machine Installation Group on implementation of the 2007 JET remote handling Shutdown. The shutdown is planned to last six months incorporating a wide range of remote tasks, including the fully remote installation of the ICRH Antenna Housing, TAE Antennas in octants 4 & 8 and new Upper Vessel Diagnostic Systems as well as the usual remote vessel inspections, photogrammetry surveys and diagnostic calibrations etc.

Simon Mills, our Engineering Director, and his team have developed a suite of new remote handling tools and complex robotic end-effectors to be used during this shutdown. Included in these are over 100 'Targets' to be remotely installed in preparation for extensive photogrammetry surveys which will form an important part of the JET Configuration Control Model.

The images show the JET manipulator performing an in-vessel task and the Virtual Reality (VR) simulation which is used to support remote operations at JET.

"The shutdown is planned to last six months incorporating a wide range remote tasks..."

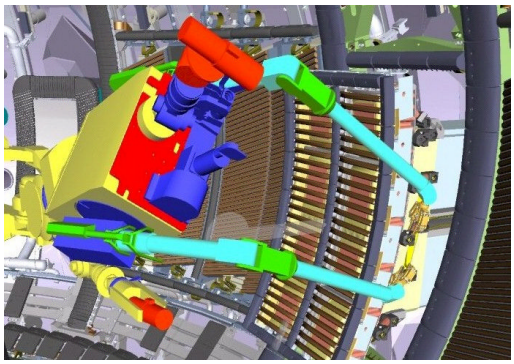

Image Courtesy of UKAEA, Culham Science Centre and /or EFDA JET

Industrial CASE Studentship

Oxford Technologies and the University of Oxford's Robotics Research Group have been awarded an Industrial CASE Studentship for the period 2008 – 2010.

The Mobile Robotics Group, part of the Department of Engineering Science at Oxford, are world leaders in the development of advanced software techniques for emerging Simultaneous Localisation and Mapping (SLAM) technologies. A PhD student will work under the supervision of Dr Paul Newman, leader of the Mobile Robotics Group and, in collaboration with our staff, will investigate the potential for applying SLAM to one of the key challenges for remote handling in fusion – viewing using Augmented Reality (AR).

The work will take place over a three year period and we anticipate will integrate well with the AR developments being carried out by Oxford Technologies' researchers under the PREFIT research programme.

Westlakes Exhibition

Oxford Technologies exhibited at the Technology & Innovation exhibition held at Westlakes Science & Technology Park, Cumbria in June this year. The event, held at the home of the Nuclear Decommissioning Authority (NDA), provided us an opportunity to showcase our competencies related to UK decommissioning.

Our stand focused on 'Delivering Targeted Studies with Tight Timescales'.

Case studies were presented related to consultancy work recently carried out for UKAEA Harwell, UK Nirex (as was), UKAEA Dounreay and in relation to Magnox waste retrieval at Wylfa. These examples demonstrated our expertise over a broad range of technologies appropriate to remote handling in the nuclear field.

Stephen Sanders our Marketing Manager, who represented Oxford Technologies at the show, commented "This event was well attended and helped us focus on key potential customers based within the Westlakes area. Based upon the very positive response we received we will certainly consider returning next year."

"This event was well attended and helped us focus on key potential customers ..."

OXFORD TECHNOLOGIES

Remote Handling Solutions

7 Nuffield Way
Abingdon
Oxon
OX14 1RJ

tel: +44 (0)1235 522 119
fax: +44 (0)1235 522 124
enquiry@oxfordtechnologies.co.uk

www.oxfordtechnologies.co.uk

"Oxford Technologies Ltd is dedicated to the development of technologies and expertise for the implementation of cost effective solutions to remote handling applications.

We operate in the interests of our customers, our staff and our stakeholders and we measure our success by the level of our reputation for operating with the highest of professional and ethical standards."

People & Places

Staff Profile - Mark Sargent

Mark recently joined Oxford Technologies Ltd to work as a Mechanical Design Engineer in the remote handling team at EFDA-JET, Culham. He brings to Oxford Technologies over 15 years experience in the design and manufacture of electro-mechanical equipment including bespoke positioning systems.
Mark gained a 1st Class Honours In Computer Aided Engineering from Liverpool John Moores University in 1993 as part of his Graduate apprenticeship with Nuclear Electric plc.

Virtual Reality on Discovery Channel

Oxford Technologies' 3D modelling and Virtual Reality skills have played a part in the production of a Discovery Channel TV program on future alternative sources of energy, produced by 'Wall to Wall'.
As the film crew were unable to obtain dynamic camera footage inside the JET Tokamak the task was given to an animation house based in Manchester who worked with Oxford Technologies' staff to develop a realistic virtual JET in-vessel simulation in which a plasma sequence was animated.

Recruiting New Staff

We have recently recruited four new engineers to join our team working at EFDA-JET in the area of mechanical design and development. The team is working on preparation of new equipment for future remote handling campaigns.

We are currently looking for additional new staff to work on the design and implementation of remote handling systems in the areas of:-

- Controls and Software engineering
- Mechanical development engineering

More information is available on our website (see above).