

Newsletter of Oxford Technologies Ltd

News In Brief

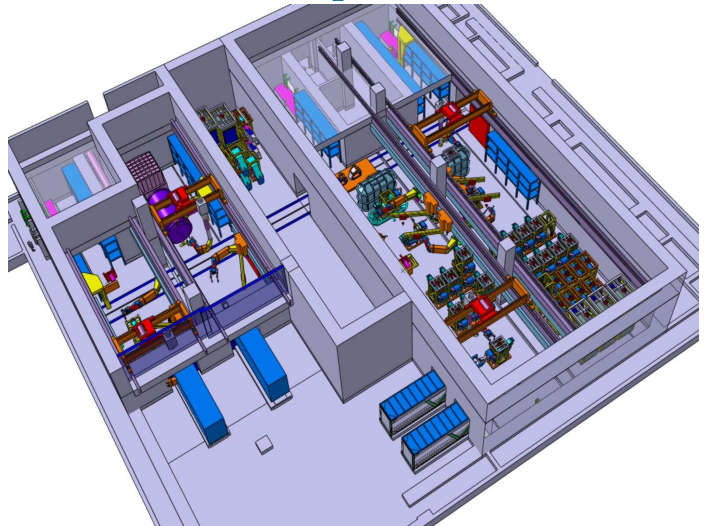
- The Oxford Technologies Ltd Management and Quality System has successfully passed its ISO 9001:2000 tri-annual audit. Our commitment to quality is a major strength of our company working culture.
- The bi-annual Symposium on Fusion Technology which this year will be hosted by IPP Griefswald at Rostock, Germany has accepted 6 papers by Oxford Technologies staff. The presentation of papers will be supported by our company stand in the Industrial Exhibition which runs in parallel with the conference.
- Our team at JET continue to develop major new remote handling systems for the forthcoming major shutdown which will install an ITER like configuration inside the JET torus... see article on page 2

Optimising the ITER Hot Cell concept

In June 2008 in collaboration with our Marseille based partner, COMEX Nucleaire, we delivered the results of a 6 month study to review the ITER Hot Cell baseline concept remote handling systems and facilities.

The objective of the study was to provide the ITER Organisation with alternative layouts optimised for different overall criteria:- Maximum ITER Tokamak availability, Minimum Hot Cell cost, Minimum Hot Cell size.

Each layout was derived as a result of a parametric sensitivity analysis using both quantitative metrics e.g time required to achieve a shutdown and qualitative metrics e.g robustness to unplanned events.



ITER Hot Cell 2005 Baseline Layout

The results of this work will be delivered to ITER in the form of reports and CATIA models and will be presented in a paper at the forthcoming 25th Symposium on Fusion Technology, Rostock.

The excellent working relationship between managers and staff of COMEX Nucleaire and Oxford Technologies Ltd has resulted in the successful outcome of this first joint project.

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Defining Manipulators for Dounreay Shaft & Silo Complex

Oxford Technologies has won a contract from Dounreay Site Restoration Ltd (DSRL) to optimise the layout and to produce a requirements specification for the remote manipulators to be deployed within the D3200 Shaft and Silo complex.

Discrete event simulation techniques will be used to study the process flows of waste as it is removed from the shaft and silo and then sorted, size reduced, drummed, assayed and

packaged. The process flow mapping and sensitivity analysis will be performed using the in-house SIMUL8 modelling package. The layout, size and optimum positioning of manipulators required within the facility to service the process and achieve the desired throughput will be identified.

This optimisation will be followed by the creation of a detailed requirements specification for the manipulators. The specifica-

tion will take account of the layout optimisation and will cover all requirements relevant to enable a subsequent engineering definition phase.

Oxford Technologies was selected for this work because of our extensive experience with design and operation of remote manipulators and our proven track record of delivering to time and budget previous work for Dounreay.

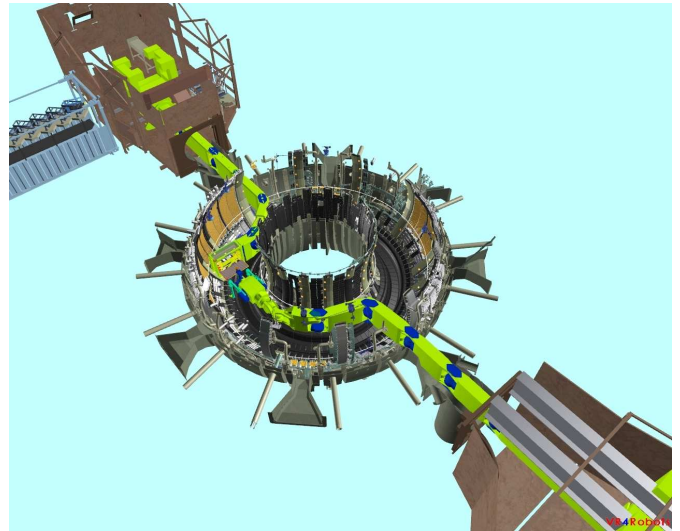
“...This new Boom will improve operational efficiency by eliminating the need for the existing Boom to frequently move long distances..”

A new (additional) Articulated Boom for JET

In 2009 the JET Tokamak will be shut down to allow for the upgrade of its plasma facing components to an ITER like “all metal” configuration. Operating with this type of configuration will help ITER in their design choices for plasma facing components in the divertor and plasma heating systems.

The modifications will include the removal of over 4000 CFC protective tiles and replacement with new beryllium and tungsten based tiles. In addition there will be a major upgrade of diagnostic equipment and replacement of divertor components.

All of this work will be performed fully remotely using the JET remote handling system designed by Oxford Technologies staff in liaison with the UKAEA operations team. This will be the most challenging remote operations campaign ever undertaken at JET and will its success will depend upon achieving a high productivity and availability of



The new dual-Boom remote handling scheme for work inside the JET torus

the remote handling system. In order to significantly improve the system operational efficiency beyond that progressively achieved in the past 10 years. We have designed and built a new transporter, an articulated boom to work in co-ordination with the main JET boom.

This new boom will improve operational efficiency by eliminating the need for the existing boom to frequently move long distances around the torus in order to fetch new tools and components. It also reduces the dependence on suited manned entries into the associated support facilities to load tools and components.

“...David will work closely with the ITER team to define the remote handling high-level control system”

An Oxford Technologies Control Systems Expert at the ITER organisation

Oxford Technologies has entered into a contract with the ITER Organization to provide the services of a remote handling control systems engineer for a period of 2 years at the ITER site in Cadarache.

David Hamilton, an OTL staff member with over 15 years of experience of design and development of remote handling control systems, has moved to Provence and is now working directly for the ITER remote handling section leader.

David will work closely with the ITER team to define the remote handling high-level control system integrating the diverse RH equipment systems together into a functional RH System.

David's current work has two main aims:- Firstly to develop the concept design and detailed requirements for the ITER remote handling high-level control system.

Secondly, to develop a common interface specification for the RH equipment systems to ensure that they integrate successfully with the high-level control system and create a homogenous RH System.



The PREFIT Training Scheme into its 2nd year

Over the Spring and Summer of 2008 various PREFIT activities have been ongoing.

In April the six PhD researchers completed the latest phase of research work in their home laboratory and then set off for a six month training period at one of the other partner sites. The two Oxford Technologies researchers moved to Tampere in Finland to work with VTT and Tampere University of Technology. The two CEA List researchers moved to the UK and have started a programme of project work at the JET site. The VTT and TUT

researchers have moved to Paris to train in the laboratories of CEA List.

At the end of May VTT and TUT hosted the second PREFIT Common School. All six researchers were provided with specialist lectures on a wide range of ITER remote handling relevant subjects delivered by Finnish experts. The highlight of the two weeks was a set of lectures delivered aboard the Helsinki-Stockholm cruise liner. This was arranged to coincide with the annual Fusion meeting organised by TEKES which was held this year on the liner.

Immediately following the Common School, VTT and TUT hosted the second PREFIT remote handling workshop. This year the guest speakers included experts from Scandinavian forestry, mining, space software and demolition industries and included the opportunity for all participants to experience remote handling logging style.....

“...the 2nd PREFIT workshop....included the opportunity for all participants to experience remote handling logging style.....”



Working with UKAEA to develop a remote handling compatible Neutral Beam Heating duct liner for ITER

Having previously defined the overall remote handling concept for the ITER Neutral Beam Heating (NBH) cell (see *Vista* Summer 2007) Oxford Technologies have been awarded a follow-on contract by UKAEA Culham to support them in their work to design a Duct Liner for the ITER NBH System.

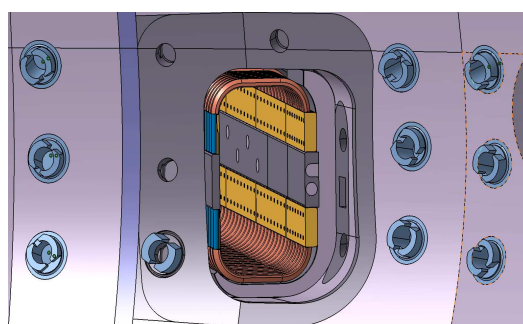
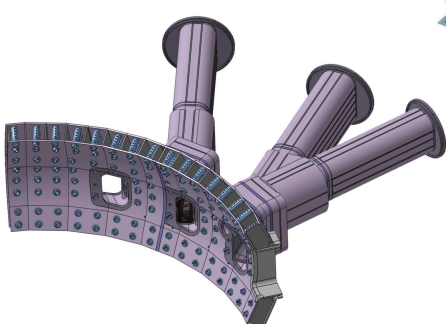
The ITER NBH system is used to inject 16.7MW beams into the

torus from sources over 20m away from the plasma. The beams are steered through 5m long rectangular ports (1m x 0.5m section) in the ITER vacuum vessel. The beams have the potential to do serious damage to these so called 'NBH ducts' which therefore need to be lined with protection. The duct liner has to be water cooled and fully remote handling compatible.

The aim of the study is to develop a concept design which is compatible with NBH, Vacuum, Thermal, Electromagnetic, Nuclear and remote handling requirements.

To satisfy remote handling compatibility the design needs to facilitate pipe cutting & welding, fastening, handling, connection of instrumentation, deflection and location of leaks and inspection.

“...The ITER NBH system is used to inject 15MW beams into the torus ...”



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“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

New Staff Profile - Hassan Omran



Hassan joined the company in November 2007 to work as a Senior Design Engineer in the remote handling team at EFDA-JET, Culham. He graduated with an Honours degree in Mechanical Engineering from the University of Cairo, Egypt in 1975. He brings to Oxford Technologies over 25 years experience of designing and building special purpose machinery and a wealth of real world experience and knowledge of making such systems work.

New Staff Profile - Eamonn Saunders



Eamonn joined the company in December 2007 to work as a Mechanical Development Engineer in the remote handling team at EFDA-JET, Culham. Eamonn comes to Oxford Technologies after almost 30 years working in a variety of roles for a local manufacturing company. He brings to Oxford Technologies extensive experience of organization and management of assembly operations for complex plant.

New Staff Profile - Paul Murcutt



Paul joined the company in December 2007 to work as a Software Engineer in the remote handling team at EFDA-JET, Culham. Paul gained a 1st class MEng Honours degree in Cybernetics from the University of Reading in 2006 with specialization in Control Engineering and Intelligent Systems. He worked for a year as a C & I engineer in the pharmaceutical industry before joining Oxford Technologies.

New Staff Profile - Nick Sykes



Nick joined the company in May 2008 to work as a Senior Mechanical Engineer in the remote handling team at EFDA-JET, Culham. He graduated with 2:1 grade BEng & MEng Honours degrees in Mechanical Engineering from Warwick University in 1993 & 94. Nick has worked as a project and development engineer in the packaging sector and brings to Oxford Technologies over 10 years experience in the assembly and commissioning of complex machinery.