

EPRSC Awards £48M Grant to UK Fusion Research

UKAEA Culham has just received the largest grant ever awarded by the Engineering and Physical Sciences Research Council (EPSRC). The grant of £48M will fund the UK fusion research programme for a period of four years, commencing 1 April 2004.

UKAEA Culham is one of the world's leading centres for research into fusion, a new source of energy that is safe and environmentally benign. The centre of the UK programme is MAST (Mega-Amp Spherical Tokamak). Also at Culham, UKAEA operates Europe's flagship fusion facility, JET, for teams of scientists from around Europe. With a decision expected soon on where to site its successor, the internationally funded project ITER, the fusion community is now poised to generate fusion power on a power plant scale. This grant will enable the UK to maintain its leading contributions to the development of fusion.



Installation of new MAST centre column

Commitment to Fusion

Prof Sir Chris Llewellyn Smith, Director of UKAEA Culham, commented: "This major grant is a measure of the UK Government's commitment to fusion research. It is essential that we have a wide range of energy options to meet the needs of our 21st century world with less reliance on fossil fuels. Fusion has a key role to play alongside renewable sources of energy. The UK government and EPSRC have recognised this and this grant is a great vote of confidence in the UK's own contribution to establishing fusion power."

Professor Sir David King, Chief Scientific Advisor to the Government and Head of the Office of Science and Technology said, "This grant will enable Culham to continue its excellent work in the development of fusion science leading to fusion power, and in doing so maintain the UK's position as one of the world leaders in fusion".



View of inside the JET Torus

STOP PRESS EXPERTS TO APPRAISE ITER KEY TOPICS

The ITER partners failed to reach consensus on whether ITER should be sited in Japan or France at a meeting in Washington on Saturday 20 December 2003. All agreed further technical analysis was necessary.

On February 21 2004 delegations from China, European Union, Japan, the Republic of Korea, the Russian Federation, and the United States met at the IAEA headquarters to advance the ITER negotiations and agreed to convene a meeting of experts from 12-13 March for a joint appreciation in common terms of a number of key topics, in order to bring the further technical analysis to completion.

This major grant is a measure of the UK Government's commitment to fusion research and is a great vote of confidence in the UK's own contribution to establishing fusion power.

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FUSION & INDUSTRY TEAM WELCOME NEW MANAGER

Dan Mistry has recently been appointed as UKAEA Fusion & Industry Manager. Based at the Culham Science Centre, Dan and his team will be at the forefront of ensuring UK industry makes the most of the business opportunities arising from the forthcoming ITER project. The €4.5 Bn project is the next step in fusion research.

"I am very pleased to take on the role of Fusion & Industry Manager at this important time for fusion," said Dan Mistry. "In recent years, UKAEA Culham has successfully implemented 'The Fusion and Industry' initiative to increase industry involvement in fusion projects and facilitate technology transfer from the fusion research programme. I am keen to play an active role in these initiatives, and I am particularly looking forward to helping UK industry win international supply contracts with the ITER project."

Professor Sir Chris Llewellyn Smith, Head of the UK's Fusion programme at Culham welcomed his appointment. He said, "Assisting UK companies to compete for ITER contracts is a high priority for both our Fusion and Industry team and research scientists here at Culham. Dan Mistry has the right mix of industry experience and technical know-how to ensure we are well placed to respond to the challenge."

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Pictured left to right:
Miriam Mason,
Deniese Willis and Dan Mistry

EXHIBITION SHOWCASE RETURNS TO CULHAM

The annual series of Technology exhibitions sees it return to UKAEA Culham for the third year running on May 6th 2004 in what is hoped will be the biggest of its kind on the site yet.

Promoting innovation and technology transfer between nuclear, aerospace and defence markets, the Technology Series of exhibitions give companies an opportunity to demonstrate their capabilities to defined and targeted audiences normally involved in the assessment, provision or purchasing of technology components and equipment.

Situated within a marquee, the Culham exhibition, one of 8 similar industrial exhibitions to be held around the UK during 2004, has been a major draw for site employees and regularly attracts a large number of the workforce during its one-day opening period.

Offering an added incentive this year to visitors and exhibitors alike, the Culham Technology Exhibition will also see a parallel seminar, hosted by UKAEA, which will address the issues of future human resources in science and engineering in the nuclear industry. Companies exhibiting at Culham currently include:

- Accles and Pollock
- Alcatel Vacuum Technology
- Alstec Systems
- BNFL Instruments Ltd
- Fischer Connectors
- Furness Controls Ltd
- Goodfellow Cambridge
- Heason Technologies
- IST (Imaging & Sensing Technology) Ltd
- Lemo (UK) Ltd

- Linos Photonics
- Mitsui Babcock
- NNC
- Nor-cal Ltd
- Roundsmen Ltd
- RWE Nukem
- Southern Scientific
- Thermo Electron
- Tuf Tools Ltd
- Weir Strachan & Henshaw

For more information about exhibiting, please contact the exhibition organisers, Nu-Tech Associates Tel: 01946-695554 or e-mail: sales@nu-techassociates.co.uk

PROGRAMME 2004

- BNFL Risley – March 31
- AWE Aldermaston – April 20
- MOD Abbey Wood – April 21
- BNFL Sellafield – April 27
- UKAEA Harwell – May 5
- UKAEA Culham – May 6
- BA Systems Warton – May 12
- UKAEA Dounreay – May 20



International Conference on Plasma Physics 2004

For the first time in nearly 10 years the European Physical Society (EPS) Conference on Plasma Physics will be held in the UK. The event is at Imperial College, London, from 28 June – 2 July with a parallel exhibition between 29 – 30 June.

Lisa Jones-Taylor, from exhibition organisers Nu-tech Associates, said "This event provides 2004's first large scale forum for fusion scientists

and will give potential suppliers an excellent opportunity to demonstrate their products and services to a wide-ranging audience responsible for fusion experiments all around the world. This prestigious conference will be opened by the Government's Chief Scientific Advisor and already almost 1,000 scientists have submitted papers."

Please read the enclosed EPS Conference Exhibition Brochure for further details on exhibiting or e-mail: sales@nu-techassociates.co.uk

The Fusion website is currently being updated.
More information in May – watch this space.

Putting the “T” back in JET

JET, the Joint European Torus, is the only fusion facility in the world that can operate with the tritium-deuterium fuel that would be used in a future fusion power station.



The Deuterium-Tritium gas introduction system

‘Trace Tritium Experiments’ (TTE) have just been carried out for the first time since 1997. This time tritium was only injected in trace amounts into the plasma. The amounts of tritium injected into the plasma during the month-long operations (involving some 500 pulses) were minute - up to 5 mg per pulse.

Derek Stork, TTE Campaign Task Force Leader explains, “The purpose of these experiments was to use the characteristics of tritium, a highly reactive fuel, to follow particle transport of a fuel ion in the plasma, by detection of the products from the tritium ions’ reactions. The use of tritium in this precise, diagnostic, manner will yield invaluable information on the way in which fuel will be confined and transported in a future reactor, and also the way in which high energy tritium can provide plasma heating.”

International Scientist ‘Taskforce’

The tritium experiments have been a significant scientific and technical success. Teams or “taskforces” of scientists from all over Europe have been leading and participating in experiments in the “TTE” campaign, the first time tritium has been used in JET under the EFDA organisation. This is also the first time that visiting teams of Russian scientists have worked alongside teams from the EU and Switzerland.



“This is essential work to prepare the way for the next generation of fusion reactors.”

UKSPA Endorses National Technical Support Network

Following on from the United Kingdom Since Parks Association (UKSPA) meeting held at Culham in September, plans to pilot a Technical Support Network are being considered.

This idea was well received by Science Park managers, and plans are now in

preparation to begin a pilot trial with one Science Park. “We are delighted at the level of interest shown by UKSPA members. Over the course of the next few months we hope to pilot the Technical Support Network concept within a single science park with a view to assessing the feasibility of extending the initiative more widely,” said Miriam Mason.

The Technical Support Network would be an integral part of the fusion technology transfer programme, giving UK companies access to the skills and technologies of the world class centre of engineering and scientific excellence devoted to research into fusion power at the Culham Science Centre.

Oxford Technologies and Ansaldo Ricerche collaboration gets off to a flying start by winning an ITER contract

Remote handling and robotics specialist Oxford Technologies Ltd has won its first contract resulting from the collaboration agreement with Ansaldo Ricerche s.r.l. The two companies, jointly with Framatome ANP, will produce a concept design for the remote handling system needed in the ITER Hot Cell.

The Hot Cell is where the components removed from the ITER Tokamak will be maintained and refurbished before being returned to the torus. The refurbishments will be performed using remote handling techniques and Oxford Technologies will use its extensive experience in this field, gained at JET, to address this important issue for ITER.

For Dr Alan Rolfe, Managing Director of Oxford Technologies Ltd, winning the ITER contract has got the collaboration with Ansaldo Ricerche s.r.l off to a flying start. He said, “We aim to demonstrate that the individual strengths of Oxford Technologies and Ansaldo can be effectively combined to satisfy this vital part of ITER’s remote handling requirements”.

Culham Supplies Activation code system to BNFL

A licence to use the world-leading FISPACT activation code developed at Culham by Fusion scientist, Robin Forrest has been negotiated with BNFL.

FISPACT is part of the European Activation System (EASY) which is used extensively in fusion applications to calculate the activation of materials following irradiation by neutrons. Robin explains, “EASY is very general, and a wide range of neutron energies, not just the ones found in fusion devices, can be used, and so it is relevant for other applications such as those in the nuclear industry. The current version, EASY-2003 was purchased during 2003 by BNFL for use at its Berkeley and Sellafield sites. I have already run a training course to familiarise users with the main features of the code.”

FISPACT can be run on both Windows and UNIX operating systems, and for Windows users there is an additional application that enables the outputs to be viewed and summarised, graphs plotted and all the nuclear data (cross sections for over 12,500 reactions and decay data for almost 2000 nuclides) to be viewed interactively. FISPACT will complement BNFL’s existing suite of calculational tools. “BNFL were particularly interested in EASY because of its extensive documentation and the extensive ongoing validation studies carried out as part of the fusion materials programme,” added Robin.

Information about FISPACT and EASY can be found on the Culham web site (www.fusion.org.uk/easy2003) where it is possible to download the documentation and contact the author, Robin Forrest for further information.



Culham Innovation Centre

The Culham Innovation Centre continues to expand. In this issue we profile two organisations who have been attracted to the Centre.

C7 Solutions Ltd

C7 Solutions is a leading edge IT company providing innovative, integrated consulting and training solutions in the design, building, upgrade/migration and support of IT infrastructures in organisations as diverse as Microsoft, HP, Itex, Tattersalls and Kensington Mortgage Company.



From l to r: Julie Bayer, Operations Manager and Andi Sheeka, Director

IT affects businesses through new technology developments such as Windows Server 2003. It also offers more flexible ways of working reflected in the growing trends towards 'mobility' and home working. "We help companies make the most of their IT resources by developing infrastructures that support business growth

and reflect the constantly evolving nature of IT. We also encourage our clients to take control of their IT infrastructure by providing custom training tailored to their environment" says Andi Sheeka, Director, C7 Solutions Ltd.

The company is dedicated to providing quality; each employee has over seven years experience in the delivery of training and consulting services in Microsoft, Oracle and Check Point products.

C7 Solutions moved to the Culham Innovation Centre for the additional office space. "The Innovation Centre is in a good position for access to both the M40 and M4 motorways, as well as excellent rail links. It's also a secure site which companies find reassuring," says Peter Williams, Director, C7 Solutions Ltd.

factor in the understanding of cancer and many infectious diseases - Charles Pasternak established OIBC in 1992.



OIBC enables scientists and medical doctors from Asia, Africa, Latin America and Eastern Europe to gain better access to Western knowledge and its practitioners. It's a two-way relationship, encouraging the sharing of information on third world diseases that are now appearing in the West. Funding for OIBC comes from the EU, the Wellcome Trust, UNESCO and the leading pharmaceutical companies.

OIBC relocated from St. George's Hospital Medical School (University of London) to the Culham Innovation Centre. "The move to Culham is the first stepping stone towards establishing a purpose-built centre here in Oxfordshire. We were attracted by the concentration of biomedical expertise in this part of the country, the Innovation Centre location, easy access to the rail network linking Culham to London, and the opportunity to use the UKAEA's library facilities for research," notes Pasternak.

Oxford International Biomedical Centre (OIBC)

"Our mission is to improve health and the quality of life across the globe by promoting access to learning and research," enthuses Charles Pasternak, Director of the Oxford International Biomedical Centre (OIBC). Well known for his pioneering work on the surface membranes of animal cells - a key

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Living Innovation at Culham

In October the Department of Trade & Industry's (DTI) premier innovation event of the year designed to promote and encourage innovation in British business was broadcast live in the John Adams lecture theatre at Culham Science Centre.

Popular presenter Adam Hart-Davis set out to find what makes British industry tick when he hosted the event broadcast from the Vinopolis in London. He interviewed some of the UK's

most innovative entrepreneurs including Mark Constantine of Lush Cosmetics, Karan Bulimoria from Cobra beer, Mark Goble of Gyrus Group and Dr Peter Nelson from Glenmorangie - all famed for their innovative approach to business.

As part of the local event the audience heard from successful businesses and entrepreneurs in the Oxford area who were later joined by a panel of local advisors to spark open debate. Bruce Savage, Special Professor from the University of Nottingham's Institute for Enterprise and Innovation led the discussion.



The event was sponsored by SEEDA and organised by Oxford Innovation Ltd.

Culham Conference Centre

First Class Conference Facilities on Offer to Businesses

Culham Conference Centre offers businesses the right venue every time for any kind of meeting. Whether it's a Board meeting, Conference or Training Course the professionalism and attention to detail of the conference team means you can concentrate on your meeting and leave the rest to them.

The Conference Centre has a fully equipped 234 seat Lecture Theatre and 5 smaller meeting rooms that hold from 6 to 60 people. Competitive rates are available to all business users both on and off site. The Centre boasts a large selection of buffet menus, with luncheons available from the Courtyard Restaurant.

Managed by OCS Hospitality Services in partnership with UKAEA, the Culham Conference Centre benefits from good access to motorways and the rail network at Didcot Parkway. Set in the heart of the Oxfordshire countryside the 195 acres site is the perfect setting for corporate gatherings, conferences and events. The landscape gardens also offer scope for larger functions.

For further details and a brochure please ring Ann Henderson, Conference Co-ordinator on 01235 466494 or e-mail: ann.henderson@ukaea.org.uk



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