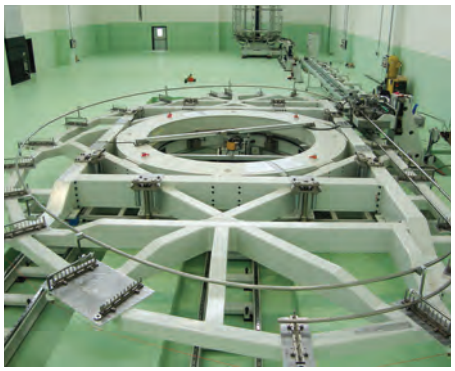
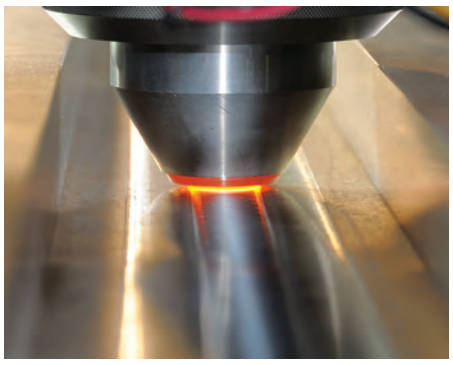
F4E NEWS

FUSION FOR ENERGY QUARTERLY NEWSLETTER

No. 9 - July 2012





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F4E LAUNCHES NEW INDUSTRY PORTAL

A one-stop shop where all F4E business Calls for Tender and announcements are published, the new Industry Portal has been especially developed to foster an interactive, dynamic relationship between European industry and F4E.

F4E's new Industry Portal is now available. This new portal, the entry point for companies and associations who want to answer F4E Calls for Tender, has undergone a complete refurbishment so that users have a quicker and more efficient way of sharing their information. The portal also offers increased networking opportunities among industry and the opportunity to search and find relevant business partners or sub-contractors whilst enjoying improved security.

A one-stop shop where all F4E business Calls for Tender and announcements are published, the new Industry Portal has been especially developed to foster an interactive, dynamic relationship between European industry and F4E. Users can create a profile and register their company using pre-existing online forms. This information is then checked as part of pre-qualification process in order to ensure that basic data needed to be identified by F4E or other industry as a potential partner are given. Pre-qualified suppliers can re-use the corporate information they have submitted, including financial data, when applying for future Calls for Tender.

In order to allow users to familiarise themselves with the new features of the Industry Portal as quickly as possible, five tutorials are available on the portal site.

Access the new F4E Industry Portal at this address: https://industryportal.f4e.europa.eu

F4E's new Industry Portal has been developed to foster an interactive, dynamic relationship between European industry and F4E

MANUFACTURING OF TOROIDAL FIELD COIL CONDUCTORS IS ON TRACK

After driving through the night the commissioned extra-large truck pulls up in the early May dawn at the ASG facilities in La Spezia, Italy. The special delivery, a wooden square box with 5 metre dimensions, contains a large spool around which the eagerly anticipated dummy of a 760 metre long copper conductor is wound.

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The dummy is a mock-up of the ITER conductors. These conductors will each be used in the magnets of the Toroidal Field (TF) coils to carry the electrical current of 68,000 amps in order to produce the magnetic field which confines and holds the plasma in place in the ITER tokamak. In total, 19 superconducting conductor lengths, each measuring 760 metres long, and 8 conductors, each measuring 415 metres long, will eventually be produced. Although the final components will consist of superconducting materials, for now the dummy is made only of copper strands which have been plaited together (cabled) and inserted into a jacket in order to form a round conductor which has a diameter of 44 mm. Nonetheless, the dummy package weighs an impressive 13 tonnes and it is because of its large dimensions that it is only allowed to be transported during certain hours of the night after other traffic has been cleared.

The dummy has been manufactured for F4E by ICAS, an Italian consortium consisting of the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), CRIOTEC Impianti S.r.l. and TRATOS Cavi S.p.A. The next steps of the process will be undertaken by ASG, part of the Iberdrola consortium (which also includes Iberdrola and Elytt), F4E's TF coil supplier and the company to which the dummy was delivered. The copper dummy length will be used for the commissioning of the TF coil winding line.

In recent months, two additional TF lengths made from superconducting strand have been manufactured, thus completing the Qualification phase (the testing phase which checks both tooling and procedures in manufacturing). These conductor lengths are expected to be shipped to La Spezia by the end of the summer.

On May 15, the fabrication of the first production TF conductor length was completed at CRIOTEC. This length is the first conductor which will be inserted into the ITER machine. In the coming two years, 26 additional TF lengths will be fabricated and supplied by ICAS.

01 The ICAS and F4E teams in front of the first production TF conductor length

02 The 760 metre long copper dummy being loaded at CRIOTEC for delivery to the ASG premises in May

F4E SIGNS THE PROCUREMENT ARRANGEMENT ON DIVERTOR CASSETTE INTEGRATION

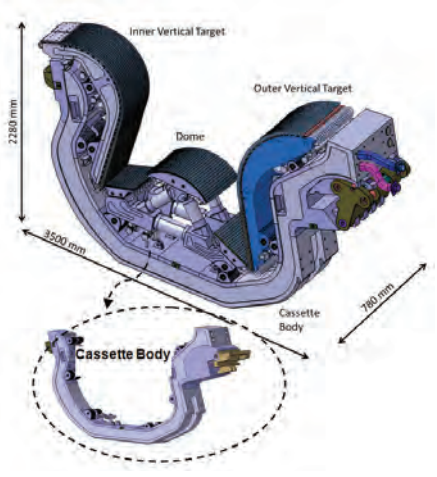
The signing of the PA is an important step in the procurement of the divertor, a crucial component of the ITER machine.The PA concerns the manufacturing of 60 cassette bodies, the mounting of the three Plasma-facing Components (PFCs) on them, and the installation of diagnostics and instrumentation on a certain number of them.

F4E and ITER IO have concluded the Procurement Arrangement (PA) for the divertor cassette body and integration. The PA, signed in May and worth 11.2 kIUA of ITER credits, concerns the manufacturing of 60 cassette bodies, the mounting of the three Plasma-facing Components (PFCs) on them, and the installation of diagnostics and instrumentation on a certain number of them. The signing of the PA is an important step in the procurement of the divertor, a crucial component of the ITER machine.

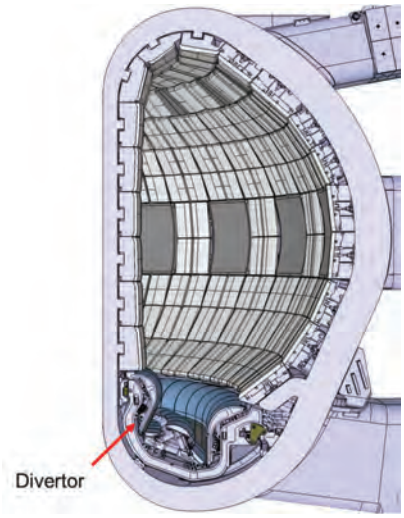
The implementation of the PA will follow four main phases: firstly, the fabrication and qualification of a cassette body prototype and the integration of Plasma-facing Component prototypes on it; secondly, the series production of the cassette bodies, factory acceptance tests and delivery to the integration site; thirdly, the assembly of the Plasma-facing Components and diagnostics (where applicable) on the divertor cassette bodies, thus producing a cassette assembly; and lastly final acceptance testing of the cassette assemblies and their delivery to the ITER site.

Located at the very bottom of the vacuum vessel, the ITER divertor is made up of 54 remotely-removable cassette bodies, each holding three Plasma-facing Components (namely, the inner and outer vertical targets and the dome – see figures 1 & 2). The cassette body, to be made of stainless steel 316 L(N) ITER grade, will have a total mass of 4.7 tonnes (7.9 tonnes if the PFCs are mounted on it). The technical design will enable the targets, in their lower part, to intercept the magnetic field lines, and therefore remove the high heat load coming from the plasma. The upper-curved part of the targets will provide a baffle which will limit the neutral particle flow, and prevent it from extinguishing the fusion reaction. The dome will also baffle neutral particles and protect the cassette body from direct contact with the plasma. The divertor cassette assemblies will be fixed to the vacuum vessel using attachments made out of aluminium bronze.

F4E foresees that the PA will generate two contract lines: one for the fabrication of cassette bodies for which a Call for Tender will be launched before the end of 2012; and another one for PFCs and diagnostics/instrumentation integration and the final acceptance tests, for which a Call for Tender will be launched during the course of 2014.



01 3D view of the ITER divertor cassette body and PFCs



02 Location of the ITER divertor in vacuum vessel.

F4E SIGNS CONTRACTS FOR TBM EUROFER SUBCOMPONENT MANUFACTURING PROCEDURES

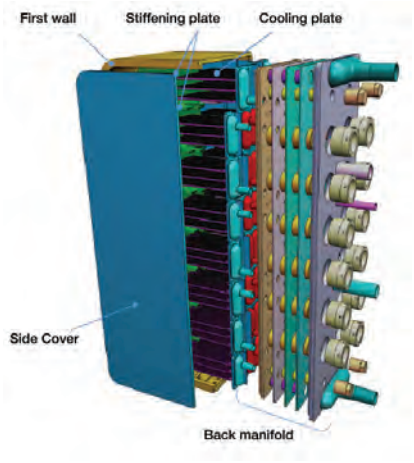
A significant milestone for F4E's TBM Project Team, this is the first step towards standardised manufacturing and qualification of the TBMs for installation and operation in the ITER machine.

F4E signed two contracts for the Test Blanket Module (TBM) EUROFER subcomponents manufacturing procedures (fabrication) during the month of March and April. The contracts, worth a total of approximately 5.2 million EUR, cover the establishment of detailed and standardised fabrication procedures for different kinds of TBM subcomponents (cooling plates, stiffening plates and TBM box). These procedures will be developed and formalised according to Nuclear/European Codes & Standards and validated through the manufacturing of 'feasibility mock-ups' (FMU) for these subcomponents.

The TBMs are test versions of the blanket modules and will be tested in ITER in order to assess their technical potential. The blanket module, an integral part of the future DEMO machine, will transform lithium into tritium, the fuel needed for the fusion process to occur. It will also transform the energy of the neutrons produced in the plasma into heat with the objective of ensuring that this heat can be recovered and transformed into electricity. For this purpose, the French Alternative Energies and Atomic Energy Commission (CEA) and Karlsruhe Institute of Technology (KIT) as well the TBM Consortium of Associates, together with the support of EFDA and F4E, have developed two reference blanket module concepts for ITER and DEMO: the Helium-Cooled Lead-Lithium (HCLL) concept which uses liquid lithium-lead metal to breed tritium and the Helium-Cooled Pebble-Bed (HCPB) concept using lithium in the form of ceramic pebbles.

Atmostat, a company based in France, is the recipient of the first contract of some 4 million EUR. The company will establish detailed and standardised manufacturing procedures and will fabricate several FMU for the HCLL TBM cooling plates (i.e. the subcomponent that, using pressurised helium, extracts the heat generated in the TBM), the TBM external box (the envelope that hosts the lithium-containing material) as well as the stiffening plate (which stabilises and strengthens the structure of the box). The Karlsruhe Institute of Technology (KIT) is the recipient of a 1.2 million EUR contract which will develop a manufacturing procedure and FMU for the other type of cooling plate used in the HCPB TBM. All of these TBM subcomponent FMUs as well as the future TBMs will be manufactured using EUROFER-97 material, a steel especially developed to withstand high temperatures and neutrons irradiation, while producing a lower amount of radioactive waste in comparison to conventional steels used in nuclear industry.

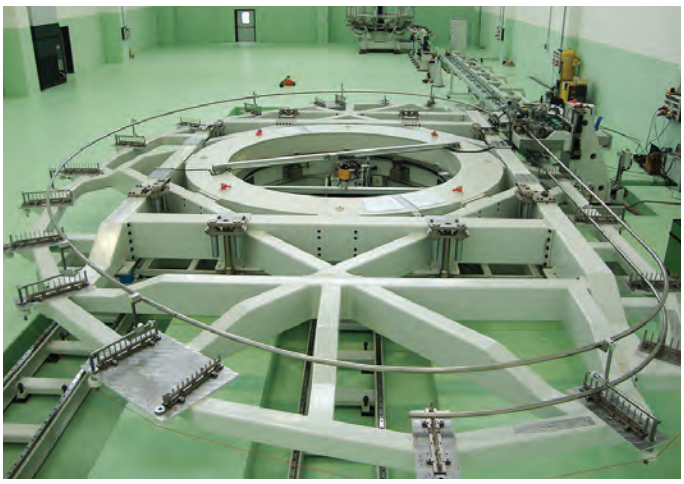
The signing of these contracts is a significant milestone for F4E's TBM Project Team as this is the first step towards standardised manufacturing and qualification of the TBMs for installation and operation in the ITER machine. It is a clear sign that the project has started a transition to the procurement phase where European industry, and not only laboratories, is involved.



Three-dimensional view of the Helium-Cooled Lithium-Lead (HCLL) Test Blanket Module (TBM) which will use liquid lithium-lead metal to produce tritium

THE WINDING LINE FOR THE SUPERCONDUCTING TF COILS IS READY

The most complex machinery for the production of the superconductors, the winding line and the oven, is now completed.



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The winding line, to be used for winding the superconducting Toroidal Field (TF) coils which produce the magnetic field that confines the plasma in the ITER tokamak, is now ready. It is the first time a winding line with such impressive dimensions – 40 metres long, 20 metres wide, 5 metres high – has been built and it gives the opportunity to carry out winding trials which have never been undertaken before: it is the first time a full-size trial winding turn of a large dummy conductor has been carried out.

Located in F4E supplier ASG premises in Italy (ASG is part of a consortium which also includes Iberdrola and Elytt), the winding line will have the task of winding the superconducting coil cables into a D-shaped double spiral called a double pancake. The 7-tonne heavy superconductor coil will be delivered to ASG on spool in a single 760 metre length, so the first task of the winding line will be to unspool and straighten the cable, after which the cable will be cleaned and sandblasted. A continuous length of around 760 metres of superconductor cable will be used and shaped into the 12 metres long and 9 metres wide double pancake, which will then be heat treated at over 650 °C in a specially constructed inert atmosphere oven. After electrical insulation, the double pancake will finally be transferred into the grooves of the stainless steel radial plates, thus forming the double pancake module. As it is necessary that the double pancake fits precisely into the radial plate groove, it is vital to control that the trajectory of the conductor in the double pancakes is very accurate. This is why the winding line is required to achieve a precision on the bending of the conductor of a few tens of parts per million: a very demanding target considering its large dimensions (although the successful result during winding of the trial full size turn has demonstrated the capability of the winding line to achieve the required precisions). After insertion into the radial plates, each double pancake module will be impregnated with epoxy resin, stacked in groups of seven and jointed electrically to form the so-called winding packs. These winding packs will be inserted into stainless steel cases which will be welded in order to form the crucial TF coils.

For the moment, the winding line will however continue to be tested. In total, 70 superconductor lengths are needed to produce the ten TF coils to be procured by F4E (Japan will contribute an additional nine TF coils). They will be produced by five different suppliers, so each type of superconductor will have a slightly different mechanical behaviour and therefore, individual tests with prototypes of each superconductor type will have to be carried out in the winding line during the next few months before starting the real production. The final qualification, to take place in the Autumn, will consist of winding a real superconducting cable into a full-size double pancake prototype.

Another large machine, a large inert atmosphere oven, which measures 48x20x5 metres and which will be used to carry out the heat treatment of the double pancakes, is also in its final installation phase in ASG premises. The oven will be able to heat-treat up to three double pancakes at a time. After the successful completion of the leak test, carried out in order to verify the capability of the furnace to keep the concentration of impurities during the heat treatment below the required threshold of tens of parts per million, the oven is now in the final phase of the installation. The assembly of external components (electrical connections, sensors, piping, fans and vacuum pumps) is currently being completed and the final testing should start at the end of July.

With the winding line and the oven ready to be used, the main and most complex machinery for the production of the superconductors has been completed.

01 The TF coil winding line at the ASG facilities
02 The 48mx20mx5m oven which will heat-treat the double pancakes at over 650 °C

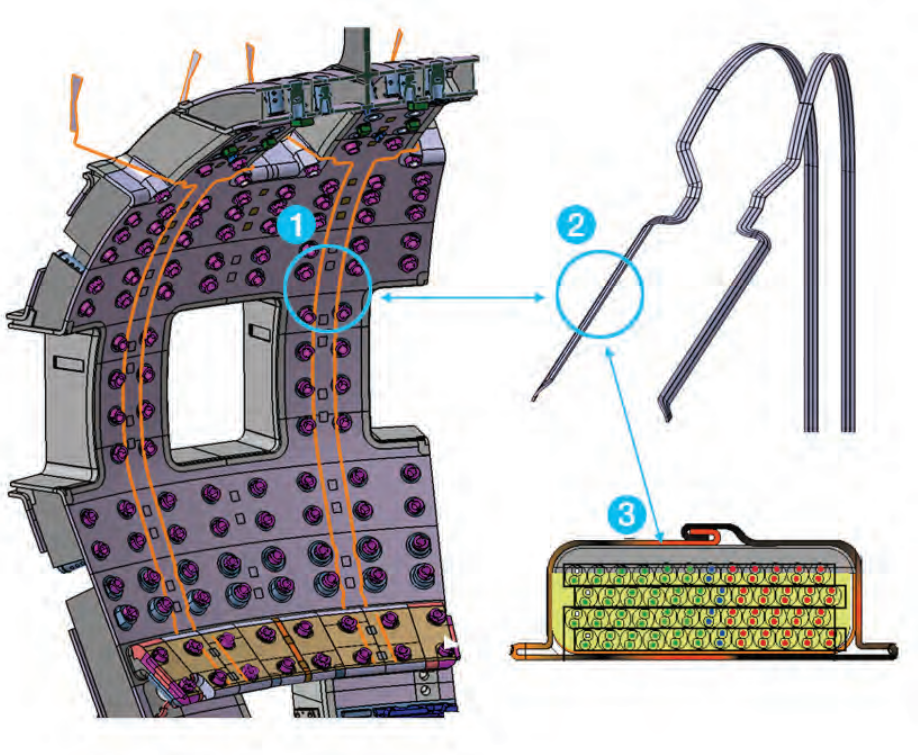
F4E'S FIRST DIAGNOSTICS FRAMEWORK PARTNERSHIP AGREEMENT IS SIGNED

As the components developed under this FPA are to be installed during the first stage of the ITER assembly, their development is a fundamental step towards reaching first plasma.

F4E's first Framework Partnership Agreement (FPA) for the design of diagnostic components for the ITER machine is signed. Amounting to 3.7 million EUR for a period of up to four years, the FPA has been awarded to a consortium consisting of three laboratories from the Hungarian Fusion association: Wigner RCP (formerly KFKI RMKI) and MTA EK (formerly KFKI AEKI) as well as Budapest University of Technology and Economics (BME). It concerns the infrastructure (cabling, conduits, feedthroughs, connectors) for the diagnostics systems, with a scope covering R&D, design, engineering, quality and testing from functional specifications. This is an important step in the drive for first plasma, as many of these components must be installed in the first stage of the ITER assembly.

So what exactly is a Framework Partnership Agreement (FPA)? It establishes a long-term collaboration (for up to 4 years) with a beneficiary or consortium (i.e. group of beneficiaries). The Agreement defines a set of rules (i.e. a framework) for conduct of the work; with the work itself performed under separate specific grants agreements. The FPA is well fitted to projects requiring mostly R&D and design and where the design is at its first stages. It is ideal for diagnostics, where designs are usually 'first-of-a-kind' and require a large, specialised design base; and need long continuity of the design team. A further advantage of the FPA is that it enables F4E to have stronger project management roll, to steer the work and to develop a better collaboration with the recipient of the Agreement.

This first FPA will bring together the work of some 30 people per year and F4E is expecting to award FPAs for most of the major diagnostic systems under its responsibility during 2012.



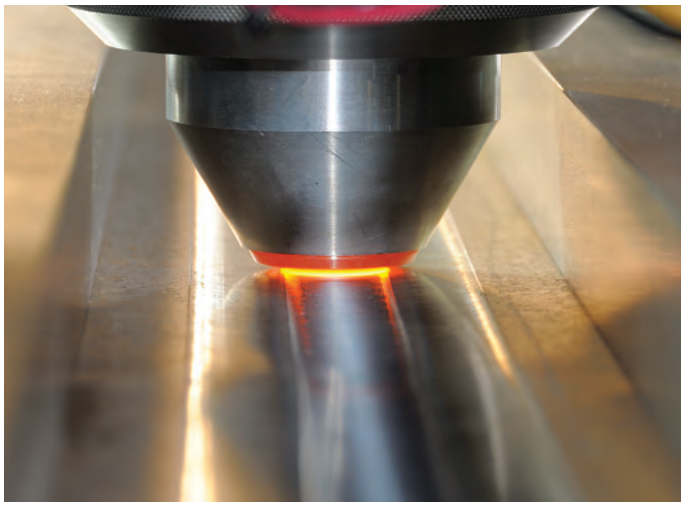
Conduits, in orange, running along the outboard surface of the vacuum vessel (1), cable looms, with a complicated 3D shape, before being fitted in the conduits (2) and a conduit cross-section (3) where cable looms and filler material, in yellow, can be seen.

Diagnostic sensors are located within the interior and the exterior of the vacuum vessel. Electrical cabling to the sensors is needed to supply electrical power and transfer signals for measurement.

The cabling is packed in specially constructed cable looms. These looms are fitted within the conduits in the vacuum vessel.

The conduits mechanically and thermally protect the cable looms and help keep them cool against heating by radiation from the plasma.

F4E SIGNS CONTRACT WITH TWI



F4E is to receive engineering support on joining and non-destructive testing activities of ITER components. Testing components in a rigorous manner and identifying possible improvements before assembling them, is a fundamental step in a project as technologically complex as ITER. The need for leading expertise and knowledge transfer is high on the agenda.

In line with above considerations, a framework contract has been signed with TWI Ltd, the World Centre for Materials Joining Technology, for a maximum value of 800,000 EUR over a period of four years to provide F4E with know-how through engineering studies, assessments, technical audits and qualification procedures in the area of joining of components and non-destructive testing technologies.

The results will feed into the manufacturing processes of key structural components like the vacuum vessel and magnets, in-vessel components and the remote handling systems. In addition, modelling activities will be carried out in the areas of heat transfer, prediction of distortions and residual stresses. The F4E has already identified that the vacuum vessel and the TF coils will be amongst the first components to perform engineering activities within the framework contract. In the case of the vacuum vessel, a task on friction coefficient testing is envisaged while in the case of the TF coils, the quality of the welding procedure will be assessed.

Friction stir welding.
Copyright TWI

MEP MONIKA HOHLMEIER RECEIVES AN UPDATE ON THE PROGRESS OF THE ITER PROJECT

Nearly one year after her first official visit with the European Parliament's delegation to the ITER construction site, Monika Hohlmeier, MEP of the European People's party and member of the Budgets Committee, visited the F4E headquarters to receive an update on the overall progress of the ITER project and in particular on Europe's contribution.

In a lively discussion, Frank Briscoe, the Director of F4E, took the opportunity to formally introduce the organisation's newly appointed top Management and elaborate on the organisational improvements in the areas of governance and processes. The next point of discussion was the progress in the fields of construction and manufacturing of components. The completion of the PF coils building, the erection of retaining walls of the tokamak complex and the installation of the plinths, were high on the agenda. The production of components and the potential technological transfers stemming from the project in order to boost Europe's growth and competitiveness were also discussed.

Monika Hohlmeier thanked the F4E Director and his staff for the frank discussion which allowed her to receive a fresh insight and confirmed her interest and support to the project. The F4E Director, in turn, expressed his gratitude to the MEP for her vivid interest and the support shown by the European Parliament to allow Europe honour its obligations vis-à-vis the other parties.

MEP Monika Hohlmeier and F4E Director, Frank Briscoe

HELIOS SUPERCOMPUTER FACILITY OFFICIALLY INAUGURATED

A new sun has risen over Rokkasho bringing new hope to fusion energy research and deepening the international collaboration between Europe and Japan.

"Helios", from the Greek word sun, the supercomputer facility at the International Fusion Energy Research Centre (IFERC) hosted by the Japanese Atomic Energy Authority (JAEA), has been officially inaugurated attracting the interest of 150 people from the circles of policy, science and technology. The facility stems from the Broader Approach (BA) Agreement between the two parties and complements the ITER project through various R&D activities in the field of nuclear fusion. The European participation to the BA is coordinated by F4E. The supercomputer was provided by France as a part of its voluntary contribution to the BA, through a contract between the French Alternative Energies and Atomic Energy Commission (CEA) and Bull.

Due to the great earthquake, Japan had to reorganise the supply of the supercomputer cooling system, and all teams had to work tightly together to achieve the assembly of the supercomputer on time despite difficulties. Therefore, the inauguration of Helios has been the occasion of a joyful celebration of the courage and resilience of the Broader Approach parties, and their commitment to advance fusion science. In a ceremony that brought together Tenzo Kumura, Deputy Minister of Education, Culture, Sports, Science and Technology, Shingo Mimura, Governor of Aomori and members of Japan's Diet, words of praise for the infrastructure were echoed and the need to invest in a sustainable energy mix. Similarly, Stuart Ward, Chair of the F4E Governing Board and Barbara Rhode, EU Science and Technology Counsellor, highlighted the merits of international collaboration and the determination of the shared objective to succeed. The local community has also welcomed "Helios" with open arms. In a competition that was launched in six schools in the area, students were asked to suggest a nickname for the supercomputer. "Rokkuchan" was the entry that was selected and the lucky student was invited to attend the inauguration ceremony. The ceremony was concluded with a scientific talk on the contribution of the supercomputer in plasma physics and a tour of the facility.

The first call for proposals, open to more than 1,000 fusion researchers from Europe and Japan, attracted a high number of submissions. Four high-visibility runs otherwise known as "light-house projects" have been selected from the areas of magnetohydrodynamics, transport of energy. Their findings will help us understand better local physics and predictability. Given the fact that "Helios" is high in demand, a series of seminars over the web will be carried out in autumn to train European fusion scientists.

The importance that F4E attaches to the BA has also been highlighted by the recent appointment of Juan Knaster as new IFMIF/EVEDA Project Leader, who will be moving to Rokkasho in order to take up his new position starting mid-June. The International Fusion Materials Irradiation Facility (IFMIF), currently in the Engineering Validation and Engineering Design Activities (EVEDA) phase, is one of the three pillars of the BA Agreement. IFMIF/EVEDA is to prepare for the construction of a materials test facility for future fusion reactors (DEMO). Juan Knaster will be leading the European-Japanese Integrated Project Team.

Senior officials congratulate the lucky student for submitting the best nickname entry for the Helios supercomputer

F4E WELCOMES EU CHIEF SCIENTIFIC ADVISER

Professor Anne Glover discusses the progress of the ITER project with F4E Director, Frank Briscoe

Professor Anne Glover was appointed on 1 January 2012 as the first EU Chief Scientific Adviser reporting directly to the European Commission's President, José Manuel Durão Barroso. An intense mandate has already started with high-level meetings and conferences presenting her with the opportunity to be the first to set a high benchmark in this new function, and based on her proven track record, Professor Anne Glover is no stranger to that. She previously served as Chief Scientific Advisor for Scotland from August 2006 to December 2011. She holds a Personal Chair of Molecular and Cell Biology at the University of Aberdeen, and has honorary positions at the Rowett and Macaulay Institutes. She is an elected Fellow of the Royal Society of Edinburgh, a member of the Natural Environment Research Council, and a Fellow of the American Academy of Microbiology. Her academic credentials are complemented by her hands-on experience when she successfully set up a company to commercialise the biosensor technology that she developed in order to diagnose environmental pollution. In 2008 she was named Woman of Outstanding Achievement by the UK Resource Centre for Women in Science, Engineering and Technology and made part of her mission to communicate science and improve women's representation and career development in the field.

The newly appointed Chief has been entrusted with the duty to offer independent expert advice on any aspect of science, technology and innovation. The European Commission will turn to her for the interpretation of scientific evidence in the presence of uncertainty and ask her for guidance in terms of strategic planning. Her skills in building bridges between high level scientific advisory committees, EU bodies and member states will be used in order to improve partnerships.

During her first visit at F4E we met with her to hear her views on ITER, science and Europe's role within the international R&D scene. The first thing that strikes you when you talk to her is how skilful she is in deconstructing complex ideas, the second is how incredibly humble she is.

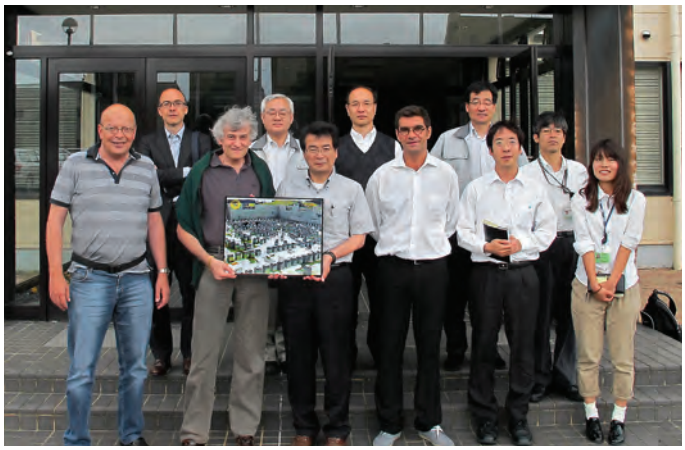
She confesses to know very little about fusion but after a meeting with Frank Briscoe, F4E Director, she expresses her enthusiasm about the project. "ITER is a clear demonstration of Europe acting with vision and taking the lead, especially in times of austerity, in order to build more than just a complex machine. This whole project is about proving a concept that could revolutionise our energy mix. The commitment and resilience of the people that have dedicated their professional career to this scientific project is admirable. The foresight of the European Commission and the support offered by the EU member states backing this project are impressive because contrary to the fast-track payback approach, a choice has been made to invest in long-term benefits".

The challenges posed by the multiple project interfaces enter our discussion and she explains that "the degree of sophistication in predetermining the location of components, assuring their compliance when their fabrication is carried out in different parts of the world and the degree of redundancy in the design of the machine brand this project as an absolutely astonishing intellectual exercise. These are the kind of projects in which Europe can really make a difference because they cannot be undertaken by one Member State alone. The composition of the ITER consortium is impressive because what underpins this collaboration is the objective to deliver through collaboration. We, Europeans, are good in collaborating and generating new ideas but we are terribly modest. We ought to be more confident and compete with other world regions not on the basis of being cheaper but on the basis of being smarter".

Europe's economic reality, however, is pointing to another direction. Severe cuts have been noticed in the areas of education and R&D. So how can we unleash Europe's potential? "We need to make the transition from knowledge to tangible economic benefits a priority. A lot of companies are poor at procuring knowledge and SMEs often claim that generating knowledge is a luxury. In my view it's not a luxury, it's a necessity. We need to unfold the best initiatives to build this collaboration. I understand that because of ITER a market is progressively developed, companies are learning how to manufacture components; they invest resources and develop know-how. They are fundamental to the success of this project and the future of fusion energy". Her last remark brings us to some concluding thoughts on the future challenges that the scientific community will have to respond to. "The global population growth and the need to satisfy our needs suggest that we will have to tackle the distribution of natural resources and sustainable energy. This is where ITER is expected to play a role".

Professor Anne Glover, EU Chief Scientific Adviser

F4E MEETS WITH JAPANESE DOMESTIC AGENCY



F4E and the Japanese Domestic Agency, JADA, held a bilateral meeting in mid-June during which current work and future collaboration projects were discussed.

JADA gave an update on the status of their ITER activities, in particular concerning the divertor, where the Agency is implementing its activities on divertor outer vertical target procurement as foreseen in its Procurement Arrangement. In parallel, the Japanese Domestic Agency is continuing its R&D efforts on tungsten Plasma Facing Components. During the meeting, the status of activities concerning the detritiation system, diagnostics and central solenoid conductors were also presented. Potential further collaborations between F4E and JADA on components such as the Toroidal Field coils and Neutral Beam systems were discussed, as well as Quality Assurance Management issues.

F4E presented the results of three market surveys which the organisation has carried out on behalf of JADA in order to assess the technical capabilities and prices for the manufacturing of certain equipments (SF6 gas coolers, fiber reinforced plastic rings, bushings) in Europe. The equipments are under JADA responsibility but the Domestic Agency is potentially seeking collaborations with European industry for the manufacturing.

During the meeting a common understanding was reached on how to manage the sending and testing of Toroidal Field coils sub-component samples between the two Domestic Agencies. The ensuing agreement, the first of its kind, will define the roles of the two Domestic Agencies in terms of logistics and Intellectual Property management. With the agreement now ready to be finalised, the ambition is to replicate this way of working to other activities of common interest.

The discussion also focused on potential Joint Procurement subjects where it is perhaps possible to lower future procurements costs.

Representatives from F4E's technical and financial teams met with the Japanese Domestic Agency to discuss current and future collaboration projects

NEW F4E FACT SHEETS AVAILABLE

Sporting a completely new look and feel, five new F4E fact sheets have just been published by the F4E Communications Team. Each is dedicated to a different F4E-related subject: a description of the organisation's mission, an account of the ITER project and what it entails, an explanation of the fusion process, details about the European contribution to the ITER project, and last but not least, background information about the current energy situation and the potential contribution of fusion.

The new fact sheets are in a smaller, more reader-friendly format with a design using the corporate colours and pictures from the ITER site. The idea behind the revamp has been to provide readers with concise but comprehensive up-to-date information in an easy to read, attractive format.

The fact sheets are in English and available in both printed and electronic format. To download the electronic version, visit the Publications section of our website. To receive paper copies, e-mail us at press@f4e.europa.eu

F4E INSPIRES CATALAN YOUTH TO FOLLOW A CAREER IN SCIENCE

In an attempt to raise awareness about the merits of a scientific career and bridge the gender gap, F4E responded favourably to the initiative of the Catalan authorities by putting in the driving seat a young, committed and promising member of staff: Francina Canadell Navarro.

She is nuclear engineer by training, currently working in the ITER Department's "Cryoplant and fuel cycle" project team, and firmly believes that science can offer a ticket to an international career full of potential.

The importance of learning foreign languages was highlighted in order to underline the fact that multilingual skills can broaden the professional horizons of the Catalan youth. It was therefore decided to carry out the interview in English. We also took the opportunity to break the 'glass ceiling' and challenge stereotypes regarding study fields, career choices and gender. On average in the EU-27, women represent 37% of all researchers in the higher education sector, 39% in the government sector and 19% in the business enterprise sector: in all three sectors, however, there is a move towards a more gender-balanced research population. There is a growing amount of literature suggesting that the participation of women in tertiary STEM (science, technology, engineering and mathematics) education increases as girls perform better in these topics during secondary education. Amongst the EU-27, Poland, Ireland, Spain, and Italy score percentages reaching 40% of women's participation.

The influence of role models to which young people can relate has been studied for years and carries significant value in the choices we make. The way these role models are portrayed through different media is equally important. We hope that Francina's enthusiasm and conviction make more students wonder: "what if...?"

Francina Canadell Navarro explaining the merits of a scientific career

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