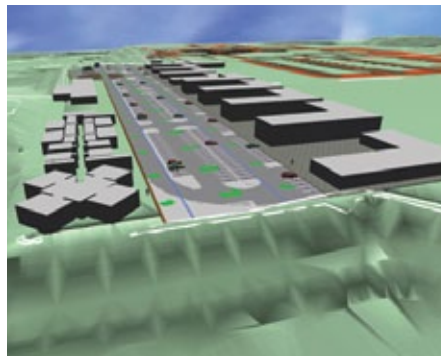




# F4E NEWS

FUSION FOR ENERGY QUARTERLY NEWSLETTER

No. 7 - October 2011



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## “MY OBJECTIVE IS TO BRING THE GOVERNING BOARD AND F4E CLOSER IN ORDER TO BUILD A SOLID PARTNERSHIP AND WORK AS ONE TEAM TOWARDS OUR COMMON OBJECTIVES”



Stuart Ward, Chair of the Governing Board

In July 2011 Stuart Ward was appointed Chair of the Governing Board (GB), the body whose main task is to supervise the implementation of F4E activities and offer strategic guidance. During his first address to F4E staff, he took the opportunity to introduce himself, thank colleagues for their strong commitment to the ITER project and promised to deepen the channel of communication between the members of staff and the Governing Board. We took the opportunity to speak to him and ask his opinion on a number of topics.

**F4E News:** In June 2006 you started as Delegate of the UK Government to F4E. In March 2010 you became Vice Chair of the Governing Board and in July 2011 you were appointed Chair of the Governing Board. How has F4E evolved during this period and what do you consider as some of its key milestones?

SW: When I first got involved in the discussions about F4E, our key priority was to find the right institutional arrangement for Europe to deliver its contribution to ITER. We started by developing the concept of an organisation that would be able to procure its share of components and engage with Europe's industry in a dynamic manner. This concept has today transformed into a fully fledged organisation,

with the right level of competence and expertise built up and fully operational. More than 300 people are now employed in F4E, contracts are being placed and work is being carried out on the construction site in Cadarache. The progress on the site speaks for itself and testifies that ITER is becoming a reality.

**F4E News:** What are some of the key challenges that F4E still faces?

SW: The distinguishing feature of ITER is its multiple complex interfaces. The unique way that this international project is devised teaches all parties to face and resolve challenges together through rigorous follow up, adaptability, precision and strong commitment. It is within this context that F4E has to operate. A major factor is F4E's dependence on ITER International Organization (IO), particularly in the area of designs and specifications which go through several revisions. Therefore, a clear challenge for F4E is to help ITER IO improve and finalise the designs and in parallel appoint suppliers who can comply with the tight schedules and deliver the components for an acceptable price.

This brings me to my next point which is linked to the way F4E engages with industry. We need to engage and lead the industrial community to see the benefits of investing in fusion. A forward looking industrial policy is needed more than ever if fusion is to become a driver for innovation.

**F4E News:** What is the main objective that you have set yourself as Chair of the GB?

SW: I am a firm believer that the success of F4E depends on its workforce and its capacity to deliver. This depends in part on the guidance and leadership it receives from the Governing Board. My objective is to bring the GB and F4E closer in order to build a solid partnership and work as one team towards our common objectives.

**F4E News:** During the last GB, it was agreed that a new committee would be established to improve the overall coordination in F4E

and its workflow in terms of decision-making. How do you expect this new configuration to work in practice?

SW: The configuration of the existing committees had to evolve in order to permit the Governing Board to address its oversight of F4E's strategic direction, its organisational purpose and its corporate accountability. The objective is to improve the potential of the committees to support the GB and take stock of their contribution in the most meaningful way. The Executive Committee will from now on focus its advice on procurement strategy, with the new Administrative and Finance Committee reviewing the budget, work plan and administration in preparation for the GB. The Audit Committee has had a useful start and the GB will be invited to renew its mandate at the next GB meeting. The Technical Advisory Panel will strengthen its duties of offering technical advice and expertise.

The chairs of the four committees together with the European Commission and France, the host country of the ITER project, come together in the Bureau, which will support the GB by ensuring that the work of the committees is properly integrated.

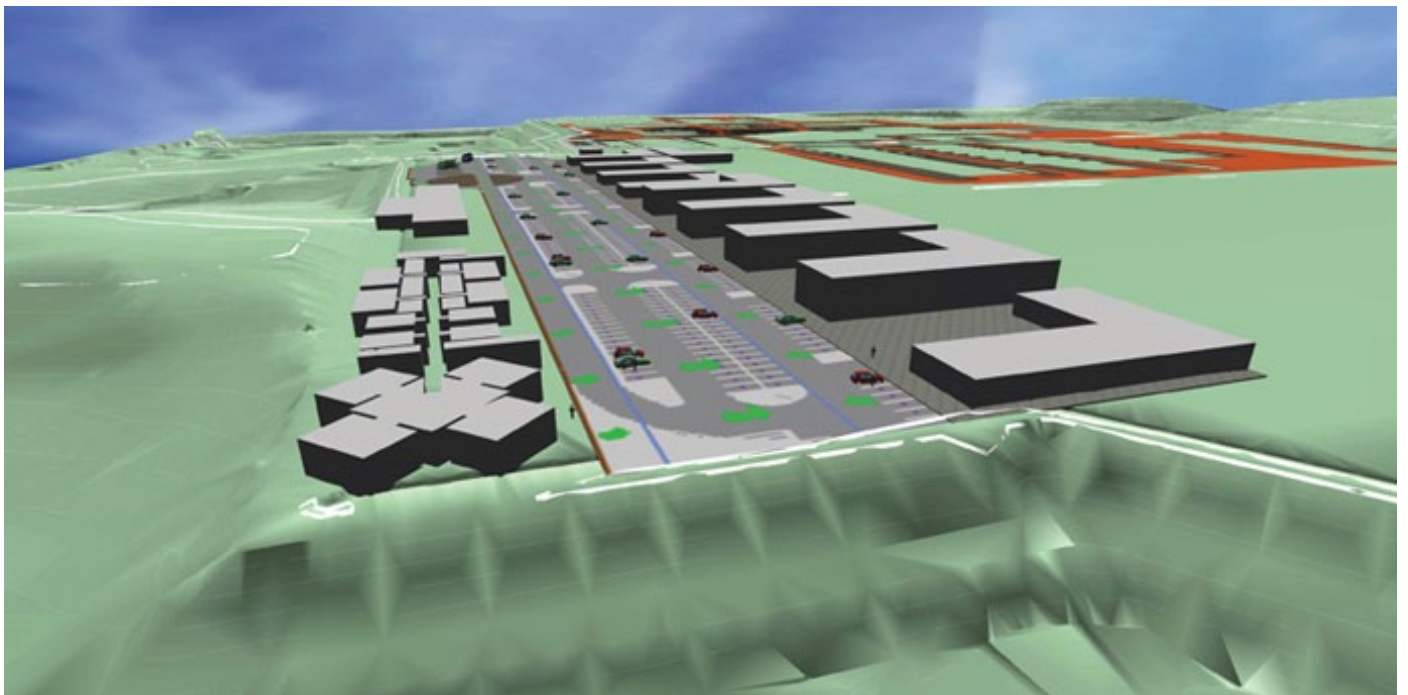
**F4E News:** You have been involved in the Management Advisory Committee (MAC) of ITER as an EU expert.

What are the merits of this unique collaboration and what still remain its stumbling blocks?

SW: I was asked to be part of Europe's delegation to MAC when I became Vice Chair of the GB. Unless you are prepared to get fully involved in the way this project is managed you cannot grasp its complexity. MAC takes a close interest in all aspects of ITER that are critical to its success. It has been valuable to understand the way the different contributions from the seven parties are managed and to appreciate how dependent we are on the quality of leadership of ITER IO. Europe, because of the size of its financial contribution and the location of ITER, is a major partner for ITER and thus plays a key role in MAC.

## THE ITER CONSTRUCTION SITE IS GETTING READY TO WELCOME A WORKFORCE OF 3,000 PEOPLE

The contract that will transform the ITER platform into one of Europe's biggest engineering sites has been signed between Fusion for Energy (F4E) and COMSA EMTE, a Spanish company with a proven track record in the field of construction.



Artist's 3D impression of the adaptation works on the ITER site

The objective of the contract, which is expected to run for at least one year and with a budget of approximately 11 million EUR, is to make the necessary adaptations on the ITER site in order to develop roads for the transport of material and equipment, extend power supply and water distribution, deliver the required amenities for a workforce of 3,000 people and streamline all protocols for safety, security and access to the site.

It is envisaged that over the next eight years, 39 buildings and facilities will be built on the ITER site. Construction already started last year with the erection of the Poloidal Field coils building and the excavation of the Tokamak complex, bringing together a workforce of 275 people. By late 2012, the personnel directly involved in construction

is expected to grow by roughly four times exceeding 1,000 people and by mid-2014 it is expected to triple reaching its maximum capacity of 3,000. The ITER site will therefore have to be redeveloped to accommodate the needs of the rapidly growing workforce and guarantee an optimal use of space to the different companies operating on the ground in order to carry out the construction of all facilities in parallel and on time.

The planning and development of a road network connecting traffic lanes, bus routes, pedestrian ways and parking, is estimated to be in the range of 35,000m<sup>2</sup> and is expected to be one of the first noticeable changes on the site. A parking area reaching the capacity of 700 spaces in total together with brand new fencing, gates and external lighting will also be one

of the site's improvements. An integrated system managing access to the site, putting an end to different protocols, will be deployed together with a new safety and security system. The wider distribution of power supply, potable water and provisions for both surface and waste water drainage will be carried out.

In order to meet the requirements of different contractors in terms of provisional offices, amenities, dining rooms and storage for equipment and materials COMSA EMTE will be in charge for redeveloping these areas accordingly. In parallel, a central canteen catering up to 1,500 meals per day will operate together an infirmary. Also in line with the health and safety recommendations, a helipad will be available.

## CONCRETE RESULTS



The wait is over. On Tuesday 9 August at 5:00 am there was an unusual amount of activity on the ITER platform. There was noise coming from the concrete pumps, trucks were crossing the site in many directions and the contractors together with the F4E team were all dressed up in their uniforms ready to witness a turning point in the history of the ITER construction: 800m<sup>3</sup> of concrete were going to be poured in the Tokamak complex to form part of the basemat!

Two pumps were placed at the top of the Tokamak pit and for approximately ten hours concrete was being poured and levelled. This exercise will be repeated 21 times in order to cover the entire surface of the Tokamak pit which is 110 metres long and 80 metres wide, the equivalent to the footprint of a football stadium. The Tokamak pit will host the Diagnostics, Tokamak, and Tritium buildings.

It is calculated that a total of 110,000m<sup>3</sup> of concrete will be used for the construction of the entire Tokamak complex, which measures up to the concrete used for 3,000 houses of 120m<sup>2</sup>.

Following the pouring of concrete for the lower basemat of the Tokamak complex, the parallel activity of establishing the plinths which will act as a support for the upper basemat has begun. The foundation of each of these 493 plinths consists of a reinforcing steel structure which is then further strengthened by pouring 2.5 m<sup>3</sup> concrete per plinth, thus forming a column. When completed, each plinth will measure 1.3 metres in length and width respectively and 1.5 metres in height, while weighing an impressive 6.4 tonnes. Each day, on average 5 plinths are completed and placed in position on the completed part of the lower basemat. The area to fill with the 493 plinths

is the equivalent to the size of a football pitch, so work is set to carry on until the end of this year.

When the lower basemat and plinths are completed, anti-seismic bearings will be installed on top of each plinth in order to help the buildings that will rest on them maintain their structure in case of earthquakes. Measuring 1 x 1 x 0.20 m<sup>2</sup>, these isolator bearings aim to reduce the earthquake forces in the structure of the Tokamak Complex as "shock absorbers". The installation of the bearings on top of the plinths will start in mid-September and will take around nine months. After that, work will then commence on constructing the second basemat – the actual "lowest floor" of the Tokamak complex.

—  
Pouring concrete in the Tokamak complex

## FLASHBACK OF THE ITER CONSTRUCTION

To make sense of what has been achieved so far, we have decided to look back on some key moments of the ITER construction site in order to grasp the volume of progress.



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We are amazed to see how quickly the site has changed over the last months with works ongoing at the Poloidal Field (PF) coils building and the Tokamak complex.

The PF coils building measures approximately 250 metres long, 45 metres wide and 17 metres high.

It will include regular building services (HVAC, electrical, piping), two large cranes (one standard crane weighing 25 tonnes, and one special crane weighing 50 tonnes), a small set of offices, a parking and two docking areas for the unloading and temporary placement of coils.

The works started in autumn last year when the first walls were erected. It was in early January though that the PF coils building became increasingly visible. In February, the steel beams were put in place serving as the structural element support to bear the load of all roofing

and March found the F4E contractors dealing with the inner layer of the walls and cladding. Between April and May, the full volume of the building, where the biggest PF coils will be assembled, stood out on the ITER platform and works on antirust cladding took off together with metal sheeting and Rockwool insulation. In June, the 25 tonnes crane was installed and the cooling towers arrived on the roof top of the building. In October, the last part of the 80 tonnes crane which will be used to carry the Poloidal Field (PF) coils was delivered.

The excavation for the Tokamak complex started in autumn last year going 20 metres deep and excavating around 200,000 m<sup>3</sup> of rock, approximately the same volume as 43 of London's Big Ben tower. The construction of the reinforced concrete basemat and walls forming the seismic isolation pit structure involves the casting of approximately 35,000 m<sup>3</sup> of reinforced concrete. By February this year, the Tokamak

pit got a flat surface on which the construction of the base slab on which the construction of the Tokamak, Tritium and Diagnostics buildings would begin. By March, the Tokamak excavation was completed and a steel safety mesh was installed on the rock slopes to create a safe working environment for additional soil investigation and rock joint treatment. In June, the first layer of the blinding concrete was poured and the works of steel reinforcement began. In September the levelling of the 110,000m<sup>3</sup> of concrete, necessary for the Tokamak pit excavation to form part of the basemat, as well as the establishing of plinths which will act as a support for the upper basemat took place.

- 01 PF coils building, January 2011
- 02 PF coils building, September 2011
- 03 Tokamak complex, February 2011
- 04 Tokamak complex, June 2011

## TWO FULL SIZE RADIAL PLATE PROTOTYPES ARE READY!

Another F4E milestone is met. The news comes straight from the F4E contractors, CNIM and SIMIC, who have reported the successful completion of the machining of the two full size radial plate prototypes: one side and one regular.

Radial plates are “D” shaped special grade stainless steel plates in which the ITER conductor is embedded. The ITER Toroidal Field coils are “D” shaped coils whose core task is the confinement of plasma. They are composed of a winding pack and a stainless steel coil case.

The side radial plate has been manufactured by CNIM (Toulon, France) utilising seven 316LN stainless steel forged plates, butt welded between each other with Local Vacuum Electron Beam technology. Each section is fully machined to the final tolerances except the welded areas, machined individually with a local machine after the welding.

The regular radial plate has been manufactured by SIMIC (Camerana, Italy) utilizing 16 sections of hipped (Hot Isostatic Pressure) 316LN stainless steel butt welded by Narrow Gap TIG. Each section has been pre-machined before welding leaving extra material and then the whole radial plate has been machined with a large portal machine, now belonging to F4E.

On both radial plates the required tolerances have been achieved. This achievement on one side demonstrates for the first time the feasibility of the radial plate, and on the other side qualifies two different technologies to manufacture them.

F4E is planning to launch soon the tender procedure for the production of 70 radial plates needed to produce the ten EU ITER TF coils.



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01 The regular radial plate completed by SIMIC © SIMIC

02 The side radial plate completed by CNIM © CNIM

## F4E RELEASES A BRAND NEW SERIES OF FILMS EXPLAINING ITS MISSION AND THE PROGRESS OF THE ITER PROJECT

Discover the latest about the progress of the ITER project, the pace of construction, its challenges and the manufacturing of several impressive components in our new series of F4E clips.



This year we took the decision to invest in audiovisual communication by trying to highlight two different facets of F4E's involvement in the ITER project: first, the construction of the ITER site through monthly short films focussing on the PF coils and the Tokamak buildings and second, through a series of clips taking a more interactive angle by interviewing F4E staff and contractors addressing specific themes such as the Europe's contribution to ITER, the progress of construction and safety, the technical challenges of key components and buildings.

We set from the beginning as target audience those with a healthy interest in science but with little knowledge about fusion and the ITER project. We therefore had to integrate in the storyboard of each film clear technical narratives and blend them with visual animations and footage from the site to give a sense of the overall context. Our films were shot in two locations: Barcelona, the seat of F4E where our technical experts are based, and Cadarache, where the ITER project

is being built under the supervision of the team responsible for construction.

We met with the crew in spring and completed the work in late summer combining indoor and outdoor shootings. "Bringing fusion energy closer" opens in Cadarache with Ben Slee explaining the construction challenges of the Tokamak building, the heart of the ITER machine. Glenn Counsell explains what fusion is and how it is achieved and hands over to Marcello Losasso who elaborates on the ways that plasma is magnetically confined in the vacuum vessel. In "Constructing the Poloidal Field Coils Building", Enrique Rodríguez presents the impressive size of the building and its specificities. The purpose of the PF coils and the extraordinary manner that they will be assembled is explained by Carlo Sborchia whose narrative is complemented by Philippe Martin commenting on the contribution of Spie Batignolles.

"Delivering Europe's contribution to ITER" begins with an analysis of the energy context and the expectations vested in the

ITER project offered by the F4E Director, Frank Briscoe, who elaborates on F4E's mission and delivery. Pierre-Yves Chaffard, unravels the international character of the project, the volume of different interfaces in the area of design and the databases being developed. The clip concludes with Laurent Schmiieder, who gives us a guided tour of the site and shares with us the critical construction turning points. The impressive volume of construction is captured in "ITER - building one of the world's biggest energy project" where Romaric Darbour discusses the key aspects of the Tokamak building and Gaston Hanna reports on its complexity. Didier Combescure, on the other hand, describes broadly the safety aspects that underpin the project and in particular the role of seismic pads.

All clips can be viewed on our media gallery and the F4E YouTube channel.

Some of the F4E staff contributing to the clips (left to right): C. Sborchia, D. Combescure, P.Y. Chaffard

## F4E AT MT-22

The 22<sup>nd</sup> International Conference on Magnet Technology (MT-22) took place between the 12-16 September in Marseille, France.



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Just like a magnet, the major biennial event attracted more than 950 scientists, engineers and companies working in this field with particular focus on accelerators, materials and conductors, fusion magnets, pulsed magnets and their measurement and instrumentation. This year's conference was an opportunity to celebrate the 100 year anniversary of the discovery of superconductivity and 50 years of know-how in the field of applied superconductivity.

Among the different subjects that were addressed, fusion emerged as one of the main topics of interest. Early on Monday morning the conference opened in a packed auditorium with a presentation from Professor Osamu Motojima, DG of the ITER International Organization, reporting on the status of the ITER project, its construction and the manufacturing of components together with the technical challenges that engineers and industry are currently trying to solve across the seven ITER parties. A guided tour on the ITER site was also organised in order to give conference participants the possibility to see for themselves the progress of the biggest international research collaboration in the field of energy.

F4E occupied one of the central stands of the exhibition in order to liaise with many different interested parties and communicate Europe's contribution to ITER through

bilateral meetings, publications, flyers specifically prepared for the conference and short films documenting the progress of construction. In parallel, the F4E task force attending the event, reported on a series of topics through presentations and poster sessions.

Hannu Rajainmaki co-chaired the session on ITER and the JT-60SA magnet procurement where Alessandro Bonito-Oliva, as invited speaker, presented the status of the F4E Toroidal Field (TF) coils procurement and Louis Zani offered an update on the manufacturing of the strand and conductor for JT-60SA. In the course of the week, Boris Bellesia explained the steps taken by F4E towards the procurement of cold test and case insertion of the ITER TF coils. Sam Davis summarised the design features and proposed procedure that will allow the JT-60SA TF coils to be accurately assembled on site. The presentations on the progress of the Broader Approach concluded with Tomarchio Valerio who offered an update on the status of the global structural and electromagnetic finite elements models of the JT-60SA magnet system.

A paper on the magnetically based acceptance procedures for the ITER Toroidal Coils was presented by Pietro Testoni offering an assessment of the mathematical tools to perform the final evaluation. Alessandro Bonito-Oliva co-

chaired the fusion magnet fabrication posters session where Robert Harrison presented the progress of the ITER TF coil winding pack and Eva Boter together with Marc Cornelis reported on the status of the ITER TF coil radial plate prototypes. Alfredo Portone offered an updated on the state of play of the EDIPO project and presented an outlook.

F4E also participated in the MT-22 heavy components exhibition. In collaboration with SIMIC and CNIM, the two radial plate mock-ups were unveiled and offered an opportunity to learn more on how radial plates will operate in the ITER device and how they will be manufactured. Both exhibits attracted a lot of attention due to the buzz made in the different information sessions and their strategic position at the entrance of the conference centre.

01 The F4E taskforce at the MT-22

02 The CNIM and SIMIC radial plate mock-ups exhibited at the F4E stand



## SPREADING THE REALITY OF ITER



On the very day that the Spanish national statistics office released results from their survey showing that scientists are the professionals that Spaniards trust the most, F4E's own scientists Ferran Albajar and Jesus Izquierdo held a talk about fusion and the ITER project. Entitled "ITER: the biggest research experiment in the field of energy", the talk was part of the lecture series "Challenges of the 21<sup>st</sup> century - The Voice of Science" organised by the Residence for Researchers, an organisation of the Spanish Council for Scientific Research (CSIC) and the Generalitat, Government of Catalonia. The series aims to promote discussion and dialogue about the reality and prospects for some of the scientific and social challenges which have, in this century, become vitally important for the organisation and construction of a more intelligent and sustainable world.

In front of an audience consisting to large extent of engineering students as well as the Catalanian delegate from the Spanish National Research Council (CSIC), the biggest science research centre network in Spain, our F4E representatives spoke of the fusion process, the technical as well as managerial challenges of the ITER project, and linked projects such as those of the Broader Approach and DEMO. The relaxed, informal atmosphere helped a discussion develop about fusion energy's place in the future energy mix, the general impact of technology on society, specifics related to ITER components and safety issues. The point made is that ITER is no longer a challenge of the 21<sup>st</sup> century as many of the components and systems are to a great extent already complete; ITER is a reality that will be realised completely by the next generation of scientists.

F4E's own scientists Jesus Izquierdo and Ferran Albajar talk about fusion and the ITER project

## RAISING AWARENESS ON INTELLECTUAL PROPERTY



F4E hosted the second Intellectual Property (IP) Associations Network meeting in Barcelona on 23 September. The meeting gathered representatives from the areas of IP and Technology Transfer from F4E, the European Commission and the National Fusion Research Associations from different EU member states in order to discuss a number of IP issues relevant to the grant agreements and to share general information on the policy and practice of IP at F4E.

Various aspects on IP were discussed such as the different practices regarding "inventor awards" in Europe and F4E, the rules on access rights to IP established in the ITER Agreement and some best practices for IP protection. The meeting was also an occasion for Associations to see a presentation about the forthcoming IP database, deepen their knowledge vis à vis the F4E terms and conditions on IP and in return, communicate to F4E their needs in order to fine-tune where possible policy and practice.

During the meeting, the new section on the F4E website hosting all IP related information was presented, whose main objective is to provide potential contractors and beneficiaries with a better understanding on how IP management works in practice. F4E has also taken the initiative to establish a partnership with the European IPR-Helpdesk, a project funded by the European Commission under the management of the Executive Agency for the Competitiveness and Innovation (EACI) fulfilling the following main objectives: raising awareness in the field of IP, disseminate knowledge and best practices of IP; providing personalised support in tackling general or specific IP questions; empowering beneficiaries of their services to develop their own capacities to deal with IP in their daily business.

For more information and to view the presentations of the second IP Associations Network meeting visit: <http://www.fusionforenergy.europa.eu/procurementsgrants/IPR.aspx>

The second Intellectual Property (IP) Associations Network meeting in Barcelona, 23 September

## INFORMATION DAY ON PROJECT MANAGEMENT ACTIVITIES IN THE F4E PROJECT OFFICE



On 18 July, around 40 companies from all over Europe attended F4E's Information Day on business opportunities in project management activities in Oracle Primavera for the F4E Project Office. As well as giving a general overview of the relevant technical requirements, the applicable F4E rules and relevant scheduling in relation to the forthcoming procurement actions for the provision of "Planning & Scheduling support services" and "Risk Analysis and Risk Management support", the event included presentations about F4E's role in the ITER project and the mission, objectives, role and structure of the Project Office. Question and answer sessions on both technical as administrative issues allowed participants to gain further knowledge and the event also allowed for networking.

F4E presented the business opportunities in project management activities in Oracle Primavera for the F4E Project Office.

## CZECH INDUSTRY CHECKS OUT F4E'S BUSINESS OPPORTUNITIES



Home to a picturesque historic centre and to numerous famous cultural attractions, Prague is traditionally one of the cultural centres of Europe. This September it was also the setting for a gathering of entrepreneurs and innovators during the annual Czech industry event, organised by F4E's Czech Industrial Liaison Officer (ILO), Karel Cervenka. In attendance at Prague's Technology Innovation Centre were 30 representatives from diverse engineering, robotic, welding and mechanical SMEs dealing in varied fields such as graphite components for high pressure vessels, particle separation and central control systems, all of whom were eager to learn more about F4E, the procurement processes and upcoming calls for tender. Associations were also represented as they are keen to know about possible F4E grants.

Several companies expressed their interest in potentially working as sub-contractors for companies that have been selected to deliver on calls for tender and therefore this event was a good opportunity for networking and discussions about potential synergies. All in all, it was a successful event which is expected to result in a heightened interest in future F4E calls for tender when procuring ITER components.

Following the Czech ILO meeting, a heightened interest in future F4E calls for tender is expected.

## INFORMATION DAY ON THE RADIAL PLATES FOR THE TOROIDAL FIELD COILS

An Information Day focusing on the technical aspects of the Toroidal Field (TF) coil radial plates was held in Barcelona on 8 September. Around 35 participants representing hi-tech mechanical companies predominantly from France, Italy, Germany, Spain, Finland, Switzerland and the United Kingdom, as well as F4E Industrial Liaison Officers from all over Europe, attended the event in order to be informed of the general technical and production rate requirements, as well as F4E's Quality Assurance, Intellectual Property rules and procurement system. The tendering procedure for the production of the 70 radial plates needed for the European TF coils (with possible spare units to be manufactured as well) will be launched shortly.

The meeting was an opportunity for companies to build contacts and discuss potential collaboration. The lively question and answer session organised during the meeting allowed for clarifications regarding technical aspects as well as legal and administrative issues.

To access the presentations from the meeting, visit the Industry and Associations portal.

## F4E ORGANISES INFORMATION DAY ON BUSINESS OPPORTUNITIES ON CODAC ACTIVITIES

In order to present the business opportunities in relation to Control, Data Access and Communication (CODAC) activities which fall under the European responsibility, F4E organised an Information Day in Cadarache, France, on 30 September.

Roughly 100 representatives from 70 interested companies from all over Europe attended in order to learn more about relevant technical requirements, applicable F4E rules and scheduling for the imminent call for tender. The presentations from the event are available on the Industry and Associations portal.

## F4E REACHES OUT TO FRENCH YOUTH



They are the future citizens and taxpayers. Professionally driven, curious to ask and challenge the status quo, willing to engage and play their part in solving Europe's challenges. A group of 15 students from different BRIO schools located in Nantes, France, participated in this year's BRIO programme and visited F4E to learn more about Europe's energy strategy, the way fusion energy fits within the EU's Strategic Energy Technology plan, the scope of the ITER project and its progress.

The BRIO programme, which received praise from France's Ministry of Education and Research, aims at fostering partnerships between public and private bodies in order to inspire students from modest backgrounds to pursue academic and business studies in France's universities and its prestigious Grandes Ecoles.

The ongoing debate about our global energy mix and the EU's objective to lead by example with the implementation of its 2020 Energy strategy, generated an interesting discussion between all students and offered them the possibility to find out how much the average European consumes, which sectors consume most and what kind of investment is required in modernising our energy grid.

Aris Apollonatos together with Jesus Izquierdo and Marc Simon presented the different energy scenarios for Europe, elaborated on the fusion breakthroughs, explained the mission of F4E and unveiled with the help of clips the latest progress from the ITER site.

Apart from declaring their enthusiasm for the fusion energy, the students expressed the wish to find out more about the ITER construction roadmap and the deployment of fusion technology in commerce.

Once the possibility of visiting the ITER site was also put on the table, a handful of them started considering the prospect of a career in the energy sector or in the field of research and development.

F4E staff and the students of the BRIO programme joining forces to bring fusion a step closer

## JEAN-MARC FILHOL JOINS F4E AS NEW HEAD OF THE ITER DEPARTMENT

Jean-Marc Filhol, a French national, took up his duties on 1 August as Head of the ITER Department. He brings onboard vast expertise in project management within large international scientific facilities and has a solid scientific and technical background.



As Head of the ITER Department, Jean-Marc Filhol will be responsible for managing the European contributions to the ITER project in line with the agreed baseline and annual ITER work plans.

"ITER is a major international scientific project and I am really looking forward to supporting F4E in its important mission,"

says Filhol. "I feel that my previous knowledge and experience will help F4E's ITER Department rise to the challenges ahead and I am very pleased to be part of the F4E team."

An engineer with a PhD in nuclear instrumentation, Jean-Marc Filhol has developed the major part of his career in the field of particle accelerators. He was most recently Director of the Accelerators and Sources Division as well as Deputy Director General at SOLEIL, a third generation synchrotron radiation facility built near Paris, France. During this time, he was in charge of the operation and development of the radiation source, but also handled the safety aspects, management plan and quality insurance policy in addition to dealing with the follow-up of the construction plan for the phase 2 beamlines. During 2001-2007, Filhol was Project Director at SOLEIL where he was responsible for the construction of the Accelerator and Infrastructure programmes.

During 1987-2001, Jean-Marc Filhol held several positions at the European Synchrotron Radiation Facility (ESRF in Grenoble, France), the world's first large

synchrotron radiation facility developed to enable observation of the structure of matter down to the level of atoms and molecules. In 1997-2001, he was Director for the Machine Division and before that, Operation Manager in the same division. From 1987-1993, he held the position of Accelerator Physicist responsible for the final design, construction and commissioning of the Booster synchrotron.

During 1981-1987, Jean-Marc Filhol conducted accelerator physics research and development at CEA, the French Alternative Energies and Atomic Energy Commission.

As well as participating in many international scientific and technical advisory committees (in particular the IFMIF EVEDA Project Committee within the framework of the Broader Approach agreement), Jean-Marc Filhol has contributed to numerous international conferences and workshops and has lectured in accelerator physics.

In addition to his mother tongue French, Jean-Marc Filhol is fluent in English and has an intermediate level of German. He is married and has three children.

### Fusion for Energy

The European Joint Undertaking for ITER and Development of Fusion Energy

C/ Josep Pla, 2  
Torres Diagonal Litoral, Edificio B3  
08019 Barcelona  
Spain

Tel: +34 93 320 18 00  
Fax: +34 93 320 18 51  
E-mail: [info@f4e.europa.eu](mailto:info@f4e.europa.eu)

[www.fusionforenergy.europa.eu](http://www.fusionforenergy.europa.eu)

F4E News is a newsletter published by Fusion for Energy (F4E)

**Editorial team:** S. Shamsie, A. Apollonatos

**Contributors:** A. Bonito-Oliva, E. Boter-Rebollo, M. Cornelis, M. Curtido Cutila, D. Kirkilaite, E. Noukou, C. Papachristodoulou, V. Saez Lopes-Barrantes, B. Slee

**Design:** M. Boulguy

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