



**FUSION  
FOR  
ENERGY**

BRINGING THE ENERGY OF THE SUN TO EARTH

**ANNUAL REPORT**

**2008**

FUSION  
EUROPE  
ITER

ENERGY

RESEARCH AND DEVELOPMENT  
PROCUREMENT

# Part 1

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# Annual Activity Report 2008

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# Foreword by the Chair of the Governing Board

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It gives me great satisfaction to introduce the first Annual Activity Report of Fusion for Energy - the European Joint Undertaking for ITER and the Development of Fusion Energy - and to look back at the accomplishments of this new organisation since its establishment in April 2007 until the period ending 2008.

We have witnessed a defining period for Fusion for Energy. From modest beginnings, with a small preparatory workforce, it has gone from strength to strength by consolidating its organisational structure, recruiting staff with the necessary expertise, engaging in technical activities and achieving financial independence.

By the end of 2008 Fusion for Energy became the fully operational, yet ever expanding independent European organisation that it is today. For its part, I am proud that the Fusion for Energy Governing Board has taken many important decisions during the eight meetings that took place and I would like to express my appreciation for the continued support of the European Commission, EU Member States and Switzerland, in particular through their representatives to the Governing Board. I would like also to thank the dedicated members of the Fusion for Energy Executive Committee and Technical Committee chaired by Dr. Karl Tichmann and Professor Quang Tran respectively. Both committees have provided the Governing Board with valuable comments and recommendations which have allowed informed decisions to be taken.

Such a rapid establishment of a complex European organisation is unprecedented and as a result Fusion for Energy is now able to focus on its core business of providing the European in kind contributions to the ITER International Fusion Energy Project and the Broader Approach Agreement with Japan. Indeed, I am pleased to see that the first grants and procurements have been awarded.

Fusion for Energy stands at the forefront of one of the world's largest and most ambitious scientific endeavours. Fusion is recognised as arguably the most promising sustainable energy source for future generations and ITER is a crucial step in the worldwide effort to demonstrate its viability. As the main contributor and host to ITER, Europe's is demonstrating its ability to innovate on a global scale.

As the European Domestic Agency for ITER, Fusion for Energy, is the engine behind Europe's participation in ITER and is collaborating with industrial and research organisations in every corner of Europe. In addition, Fusion for Energy is implementing the Broader Approach Agreement with Japan and will, in the longer term, be preparing for the first demonstration fusion reactors.

I would like to conclude by expressing my deep appreciation to all who have contributed to the successful start-up of Fusion for Energy, in particular the first Director, Dr. Didier Gambier and his dedicated staff. Thanks to their hard work and determination, Fusion for Energy is able to move ahead and face the formidable challenges involved with the realisation of its objectives. It is with great pride that I look back on the first year and a half and look forward to a bright future for Fusion for Energy.

*Carlos Varandas*

*Prof. Carlos Varandas*

# **Executive Summary by the Director**

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Europe is the home of the world's greatest energy research project - ITER!

This is a project of unprecedented scale, complexity and ambition that brings together seven parties representing half of the world's population in the quest to realise the potential of fusion as a virtually limitless, environmentally responsible and competitive source of energy.

By providing almost one-half of ITER's components, Fusion for Energy (F4E) will play a key role in making the project a success. F4E is also implementing the Broader Approach activities with Japan which will help accelerate the development of fusion and, in the longer term, F4E will prepare a programme for the first fusion demonstration reactors.

With such a portfolio of responsibilities F4E is at the forefront of the international fusion research effort which implements a new model of S&T cooperation. We have been entrusted by the European Council with an immensely important task - the expectations are high and we must meet our obligations in an efficient and timely manner.

I consider myself privileged to have had the opportunity not only to be responsible, in the European Commission, for the negotiation of the agreement that established the ITER International Organisation but also now as the first Director of F4E, the European organisation responsible for providing the in kind contributions of Euratom to ITER.

Since the adoption of the decision establishing Fusion for Energy in April 2007 and my appointment as Director, a lot has been achieved and a lot has changed. This has been a challenging period since Fusion for Energy has been expected to deliver from day one while having to establish itself as a functional organisation.

In 2007 the activities at F4E focused on supporting ITER in its Design Review, setting up the organisational structure, appointing the management and increasing the level of staffing. At the same time, the Quality Assurance system was being established as well as the budget, finance and accounting framework.

In 2008 the first grants and procurements were launched and financial autonomy from the European Commission was achieved in April. An in-depth cost assessment of the Euratom contributions to ITER was also launched as well as the transfer of several hundred contracts from the European Fusion Development Agreement (EFDA).

During this period there have been many other achievements which are detailed in this report. Of these, the cost assessment exercise of the ITER in kind contributions is one that I am particularly proud of and which has far reaching implications. The re-baselining of the JT60-SA Satellite Tokamak of the Broader Approach was another.

In any event, the time is not to rest but to act and I appreciate that although F4E may be administratively and operationally independent, there is still much work to be done in order to consolidate its management systems, manage the inherent risks in its activities, deliver on time and to meet the high standards expected of European bodies.

Looking ahead the main challenge for the immediate future will be to contain the cost of the ITER in kind contributions to the greatest extent possible while working towards maintaining the target schedule of reaching a first plasma milestone in 2018. At the same time we have to forge out partnerships with European industries and research laboratories to mobilise the EU forces and place the EU in the best position to exert its leadership in ITER and the Broader Approach.

To conclude, I would like to thank the Chair of the Governing Board and the Chairs of the Governing Board advisory bodies, the Members of F4E including Switzerland and the European Commission for their continued guidance and support. I would also like to express my appreciation to the F4E staff members who have demonstrated great professionalism and dedication in the face of many challenges.

*Dr. Didier Gambier*





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FUSION FOR ENERGY

## Chapter 1

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# Introduction

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ANNUAL REPORT 2008

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# Fusion for Energy

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*“...shall record the implementation of the work programmes by the Joint Undertaking. It shall in particular outline the activities conducted by the Joint Undertaking and evaluate the results with respect to the objectives and the timetable set, the risks associated with the activities carried out, the use of resources and the general operation of the Joint Undertaking.”*

## The organisation

The European Joint Undertaking for ITER and the Development of Fusion Energy or Fusion for Energy (F4E) is a type of European organisation known as a Joint Undertaking created under the Euratom Treaty by a decision<sup>1</sup> of the Council of the European Union.

F4E was established for a period of 35 years from 19th April 2007 and its offices are situated in Barcelona, Spain. The objectives of F4E are to implement the obligations of the European Atomic Energy Community (Euratom) under two international agreements related to fusion energy research:

Agreement for the Establishment of the ITER International Fusion Energy Organization for the Joint Implementation of the ITER Project (Euratom, China, Korea, India, Japan, Russia and the USA);

Agreement between Euratom and the Government of Japan for the Joint Implementation of the Broader Approach Activities in the Field of Fusion Energy Research

In the longer term, F4E will prepare and coordinate a programme of activities in preparation for the construction of a demonstration fusion reactor (DEMO) and related facilities including the International Fusion Materials Irradiation Facility (IFMIF).

## Legal Basis of the Annual Report

The statutes establishing F4E include the requirement under Article 14 for an Annual Activity Report which:

*“...shall record the implementation of the work programmes by the Joint Undertaking. It shall in particular outline the activities conducted by the Joint Undertaking and evaluate the results with respect to the objectives and the timetable set, the risks associated with the activities carried out, the use of resources and the general operation of the Joint Undertaking. The annual activity report shall be prepared by the Director, approved by the Governing Board and sent to the Members, the Commission, the European Parliament and the Council of the European Union.”*

This Report (Part A) is intended to meet this requirement and provides an overview of the technical and administrative status of F4E. A more detailed and comprehensive description of the technical activities of F4E can be found in the Technical Progress Report (Part B). The reader should note that since F4E was established on 19th April 2007, it was only partially operational until the end of 2008 and the Work Programme for that year was not fully implemented. For that reason, this is the first Report for F4E and covers the period from 19th April 2007 until 31st December 2008.

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F4E Offices, Barcelona.



## Report Structure

The Report is essentially divided into four parts:  
A brief description of fusion energy research, the ITER and Broader Approach projects;

A summary of the main technical achievements as described in more detail in the Technical Progress Report;

The administration and organisation support services with emphasis on the work done to make F4E independent and operational;

A number of annexes providing information on its governing bodies, statistics on finances, staffing and contracts/grants.





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## Chapter 2

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# Fusion Energy Research, ITER and the Broader Approach

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# What is Fusion?

*Fusion is the process that powers the sun and other stars and makes life on earth possible. As the name suggests, the process involves fusing together light atoms to make heavier ones and occurs at the extreme pressures and temperatures caused by the gravity in the sun. During fusion reactions a small amount of mass is converted into energy, in accordance with Einstein's well-known  $E = mc^2$  equation.*

In face of the increasing global demand for energy and the economic, political and environmental risks of using fossil fuel, fusion energy has the potential to make a major contribution to a diverse, sustainable and secure energy supply system in a few decades from now.

To make fusion happen on earth, several approaches have been explored. One of these involves heating a gas to very high temperatures (100-150 million degrees centigrade) so that it becomes a plasma which can conduct electricity. Magnetic fields can then be used to contain this plasma long enough for fusion to occur.

In fusion experiments, this magnetic confinement is achieved using a doughnut-shaped vessel with magnetic coils. Since the 1950's scientists and engineers from all over the world have been carrying out research to assess the most promising approach and the tokamak configuration has emerged as a leading contender.

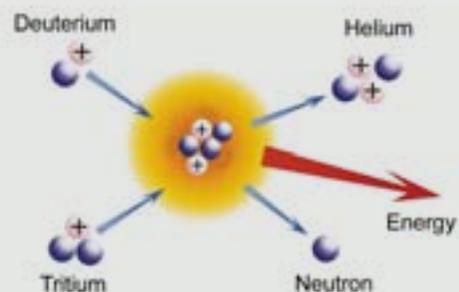
The merits of fusion are the large availability on earth of the basic fuels (deuterium and lithium), the lack of production of greenhouse gas emissions, a very low impact on the environment with no long-lasting radioactive waste and finally the inherent safety of the reactors, where no meltdown or runaway reactions are possible.

Europe has come to the forefront in fusion research, largely due to the integration of national fusion

programmes into a single co-ordinated Euratom fusion research programme, including the construction and operation of the Joint European Torus, JET, the world's leading fusion device now under the umbrella of the European Fusion Development Agreement.

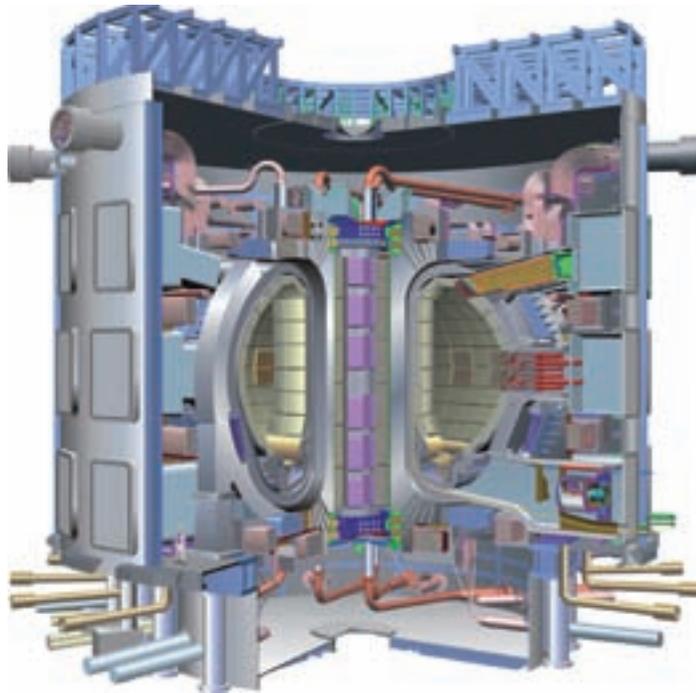
## FUSION REACTIONS

The easiest fusion reaction to achieve is between the two heavy isotopes of hydrogen (deuterium and tritium). Most of the energy released in this reaction is carried away by a high speed neutron. The remaining energy goes to the alpha particle (a helium nucleus) which is also produced in the reaction. In a fusion reactor, a blanket around the reactor would slow down the neutrons and convert their energy into heat. This heat can be extracted to generate steam for conventional electricity generation.



(Courtesy: EFDA)

A cutaway of the ITER machine (note the person shown at the bottom indicates the scale). (Courtesy: ITER)



## ITER

While JET and other tokamak experiments have succeeded in producing significant amounts of fusion power albeit for short periods, none so far are capable of demonstrating fusion on a scale that would be needed for a reactor and a number of technologies that are needed to allow it to generate part of its fuel and produce power on a more continuous.

### FUSION FUELS

Since deuterium is a common and readily separable component of water, there is a virtually inexhaustible supply in the oceans. In contrast, tritium does not occur naturally and must be manufactured. This can be achieved by using reactions that occur between neutrons formed in the fusion reaction and the light metal lithium. There are sufficient reserves of lithium available to meet world electricity demand for several hundreds of years.

ITER – “the way” in Latin is the next major step in tokamak fusion research and is about twice as large as any existing reactor today. Its objective is “to demonstrate the scientific and technological feasibility of fusion energy for peaceful purposes”.

With seven parties participating in the project (the European Union also including Switzerland represented by Euratom), Japan, China, the Republic of Korea, the Russian Federation, India, and the

USA). ITER is one of the largest international scientific projects of its kind and brings together countries representing over one-half of the world’s population.

ITER aims to produce a significant amount of fusion power (500MW) for about 7 minutes or 300MW for 50 minutes. It began in 1985 as collaboration between the then Soviet Union, the United States, the European Union and Japan and a detailed design was agreed in 2001.

On 24th October 2007, following ratification by all the parties, the ITER Agreement entered into force.

ITER is being constructed at Cadarache in the South of France. Europe, as the host party, and France, as the host state, have special responsibilities for the success of the project. In particular, Europe supports 45% of the construction cost and 34% of the cost of operation, deactivation and decommissioning of the facility as well as preparing the site.

### PROCUREMENT SHARING

To ensure a fair cost sharing of ITER by “value” around 90% of project built by in kind contributions. In kind contributions have been classified into 85 procurement “packages” which were divided among the seven parties to the ITER Agreement. Some procurement packages are divided among several parties which introduces additional complexity to manage interfaces.

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## ITER's objective is *“to demonstrate the scientific and technological feasibility of fusion energy for peaceful purposes”*

Most of the components that make up the ITER facility are to be manufactured by each of the ITER Parties and contributed in kind to ITER through Domestic Agencies. F4E, as the European Domestic Agency, will provide components to ITER that amount to about one third of the overall value of the facility.

As well as agreeing upon the procurement sharing of components, the level of completion of the packages to be handed over to the Domestic Agencies for their procurement by ITER was also agreed and categorised as “functional specifications”, “detailed design” or “build-to-print” level. Each case implied a different level of preparatory work for the Domestic Agencies.

### **Broader Approach**

In February 2007 Euratom and the Japanese government signed the Broader Approach agreement. This aims to complement the ITER Project and to accelerate the realisation of fusion energy by carrying out R&D and developing some advanced technologies for future demonstration fusion power reactors (DEMO). Within the Broader Approach three main projects are being implemented:

The first project will complete the detailed and fully integrated engineering design of the International Fusion Materials Irradiation Facility (IFMIF). Fusion as a major energy source will require materials which maintain their essential physical properties and which do not remain highly radioactive for extended periods of time after exposure to the harsh thermal and irradiation conditions inside a fusion reactor. IFMIF will allow testing and qualification of advanced materials in an environment similar to that of a future fusion power plant.

The second project is the Japan-EU Satellite Tokamak Programme (STP). During ITER construction, major experimental facilities will be required to develop operating scenarios and address key physics issues for an efficient start up of ITER

experimentation and for research towards DEMO. The STP in Japan has been identified as a device which could fulfil these objectives. It will therefore be upgraded to an advanced superconducting tokamak and used by Europe and Japan as a “satellite” facility to ITER.

The third project is the International Fusion Energy Research Centre (IFERC). The missions of the centre include the co-ordination of DEMO Design and R&D activities, large scale simulation activities of fusion plasmas by super-computer and remote experimentation activities to facilitate a broad participation of scientists into ITER experiments.

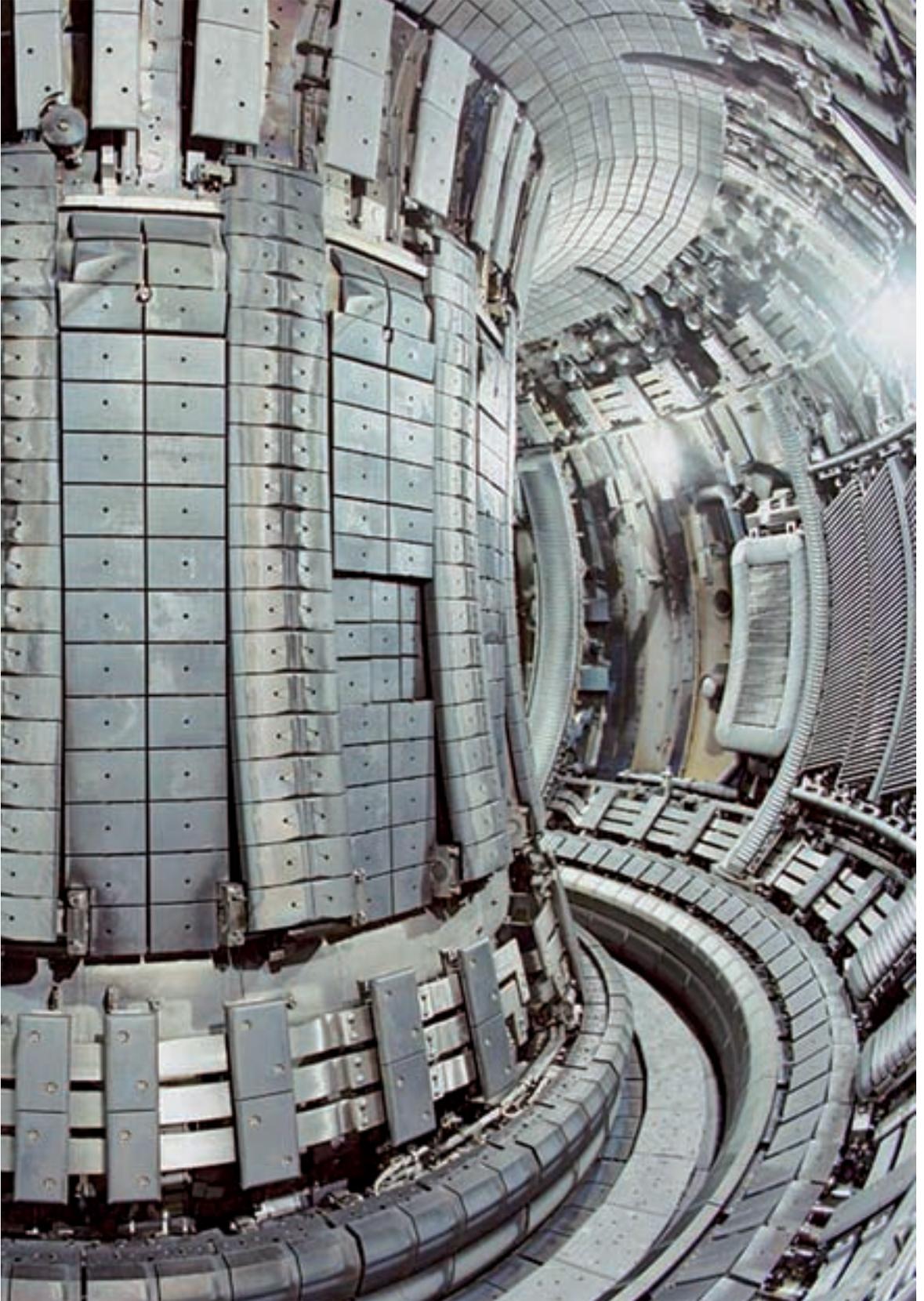
To develop synergy with its activities related to ITER, it was decided that F4E should also be the Implementing Agency of Euratom for the Broader Approach. The resources for the implementation of the Broader Approach will be largely provided on a voluntary basis from several participating European countries (Belgium, France, Germany, Italy, Spain and Switzerland).

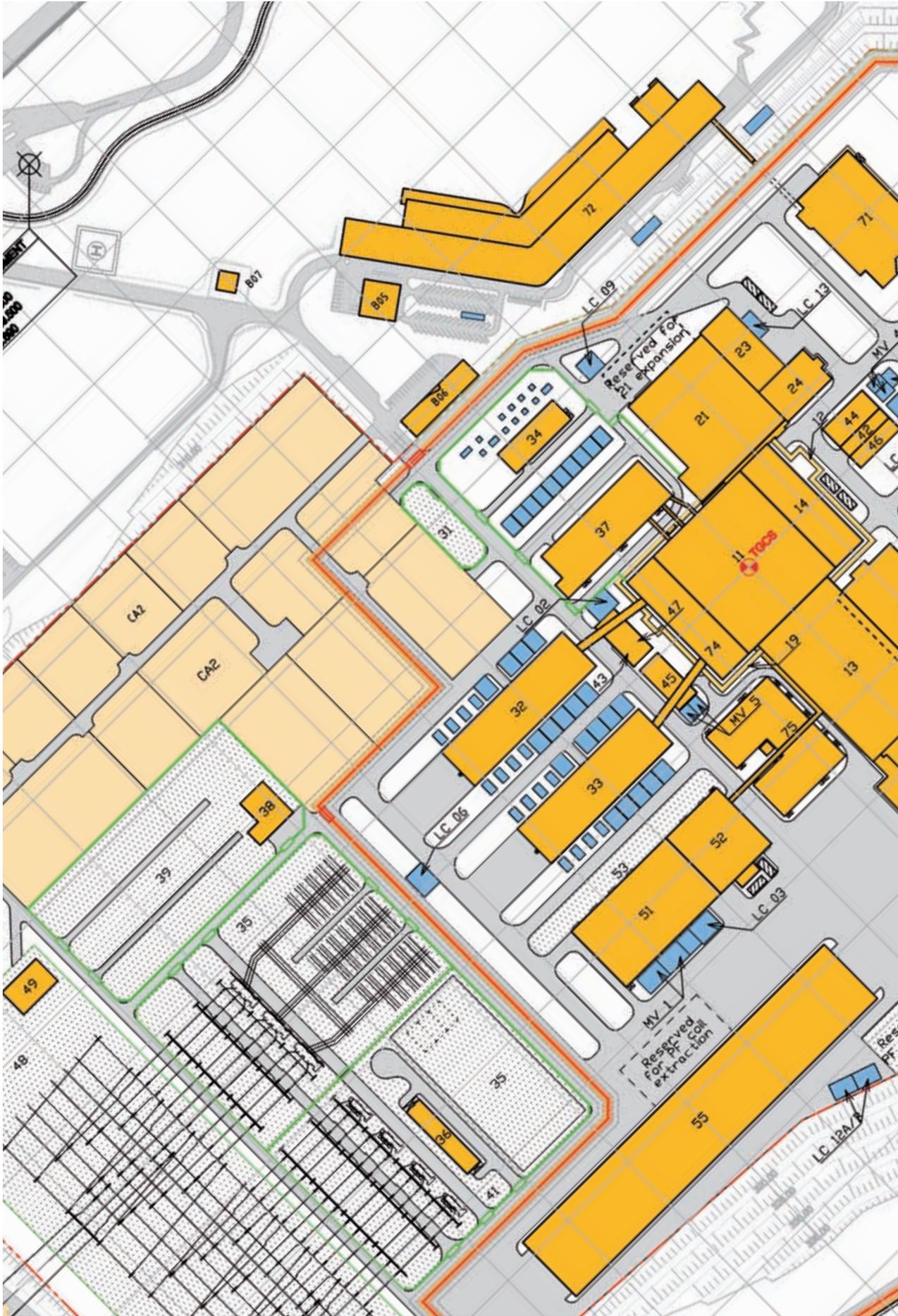
### **Demonstration Fusion Reactors**

Beyond ITER, it is envisaged that demonstration fusion reactors could be constructed that can produce electrical power and be commercialised. To achieve this in the shortest timescale (the “fast track”), studies have shown that aside from the operation of ITER, a parallel programme of materials testing would be needed.

While the final design of DEMO will depend to a large extent on the results obtained from the exploitation of ITER and other fusion experiments, it is envisaged that a programme of research and development activities in preparation for DEMO will be coordinated by F4E to perform studies, validate technologies, develop prototypes, etc.

The inside of the JET Fusion experiment (Courtesy: EFDA-JET)





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## Chapter 3

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# Main Technical Achievements in 2007 and 2008

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# ITER

In its role as the European Domestic Agency for ITER, F4E is responsible for the preparation and coordination of the design, research and development (R&D) and fabrication of most of the high-technology components that are required to construct ITER including:

- **Magnets** (nine Toroidal Field (TF) coils and most of the Poloidal Field (PF) coils);
- **Vacuum Vessel** (Seven sectors of the vessel and blanket coolant manifolds);
- **Blanket** (10% of shield modules and 30% of the first wall modules);
- **Divertor** (cassettes and inner vertical target);
- **Remote Handling (RH)** (divertor RH, part of cask transfer system, in vessel viewing and metrology system, and Neutral Beam RH);
- **Vacuum Pumping and Fuelling** (Eight torus and two cryostat cryopumps, some cryopumps for the Neutral Beam system and other systems);
- **Tritium Plant** (hydrogen isotope separation & water detritiation systems);
- **Cryoplant** (approximately one-half of the system);
- **Power Supplies** (pulsed power & steady state power supplies);
- **Ion Cyclotron Resonance Heating**

**System** (ICRH) System (equatorial port plug incorporating one ICRH antenna and spares);

- **Electron Cyclotron Heating System** (Four upper port plugs incorporating launchers, 32% of the sources and 14% of the power supplies);
- **Neutral Beam Heating System** (100% assembly and testing and active correction, compensation coils and ~50% of other components);
- **Diagnostics** (11 diagnostic-related systems and enabling of a further three);
- **Site and Buildings** (all the concrete and steel frame buildings);
- Waste Treatment and Storage;
- Radiological Protection.

Note that in the case of CODAC (Control and Data Acquisition) the system will be procured directly by the ITER Organisation but F4E is intending to provide support through specific Task Agreements. In addition to the above list, F4E supports a number of horizontal activities as laid down in the 2008 Work Programme:

- Materials Development;
- Test Blanket Modules;
- Plasma Engineering;
- Safety;

ITER construction site: site levelling completed. (AIF©)



- Engineering Support;
- Nuclear Data;
- Quality Assurance Activities.
- In some cases the required technologies are well established but in many others R&D and design activities are required before a document setting out scope of the procurement can be signed with ITER – a Procurement Arrangement (PA). Such R&D is normally carried out in collaboration with European national fusion laboratories under a cost-sharing arrangement with F4E.

While the specific requirements for each component will differ according to their complexity, F4E is also carrying out detailed risk assessments to identify any unresolved problems and risks with the design, manufacturing and assembly and to recommend actions to ameliorate them. This may be complemented by Design Reviews carried out jointly with the ITER Organisation.

## Highlights

During the period 2007-2008, F4E was not yet fully operational and only a partial implementation of the 2008 Work Programme, as adopted by the Governing Board, was possible. Nevertheless, building upon activities launched under EFDA, an extensive programme was completed with the following highlights:

### Buildings

At the Cadarache site, the area where the ITER buildings will be erected was leveled and the main platform was prepared for the forthcoming excavations and construction.

### ITER Design Review

Fusion for Energy actively contributed to the ITER Design Review that followed the signature of the ITER Agreement by helping identifying open design issues and proposing solutions.

### Cost assessment for the ITER in kind Contributions

A Task Force established by Fusion for Energy carried out an independent assessment of the costs of the ITER in kind contribution, clarifying the basis of the estimates and identifying uncertainties, risk budget areas and potential risk mitigation strategies.

### Magnets *(Image 1)*

The fabrication of Toroidal Field (TF) cables for the ITER qualification process was launched and is in progress;

Sub-scale pre-compression rings (a structural subcomponent of the TF coil system made by glass-epoxy composite) have been successfully tested beyond the values required by ITER.

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A TF coil mock-up has been successfully impregnated with the high radiation resistance resin.

A full-scale Poloidal Field (PF) conductor in NbTi was wound into the PF Conductor Insert (PFCI) and successfully tested in Japan. The coil met all the performance requirements and the test results qualified the PF conductors for ITER.

### **In-vessel Components** (*Images 2, 3*)

The qualification of the divertor vertical target was achieved after successful testing, in a Russian test facility, of mock-ups manufactured by two EU industries.

The manufacture of a full-scale shield prototype representative of the blanket module was successfully completed, demonstrating technical feasibility of the Hot Isostatic Pressing (HIP) technique for the manufacture of these components, thus minimising the number of seal welds and consequently the risk of water leakages.

The mock-ups of the wall facing directly the plasma (called "First Wall") were successfully tested under a high heat flux in a US test facility and also for thermal fatigue in a Czech test facility.

A test facility for the demonstration of the remote handling operations on the divertor was completed for the testing of the radial mover of a divertor cassette.

### **Tritium Plant**

At the Tritium Laboratory Karlsruhe, the ITER relevant scale test loop of the hydrogen Isotope Separation System (ISS) and the experimental loop of the Water Detritiation System (WDS) were operated extensively in isolated modes and are now ready for combined ITER relevant operation studies.

### **Vacuum and Fuelling**

A contract for design and extensive testing of the Pre-Production Torus Cryopump has been prepared and is being implemented. The conceptual design for the Diagnostic Neutral Beam Cryopump has been completed as well as the assessment of the impact of electromagnetic loads on the torus pump.

### **Cryoplant**

First proposals of the cryoplant conceptual design, its layout, integration, installation and operation were assessed. The final choices of the subsystems will depend on the outcome of the presently performed total heat load studies for the cryoplant by the various users.

### **Electron Cyclotron Heating System**

High power tests on the first industrial prototype of the 2 MW coaxial cavity gyrotron (the power source for one of the heating systems) showed stable operation with a maximum output power of 1.4 MW in the millisecond range. This is an important step in the development of these power sources.

### **Neutral Beam Heating System**

The Design for the Neutral Beam Test Facility has been essentially finalised.

Considerable progress has been made on the development of in-vessel, radiation hard diagnostic sensors, such as bolometers and pressure gauges.

### **Plasma Engineering**

Essential input has been provided to the ITER Organisation on position and shape control in order to finalise the design of the poloidal field system.

### **Test Blanket Modules**

Feasibility of fabrication of Test Blanket Module heat extraction panels made by the ferritic-martensitic steel (EUROFER) has been demonstrated.

### **Materials Development**

There is now enough evidence from irradiation campaigns up to 80 dpa that the DBTT (ductile to brittle transition) for EUROFER steel saturates below 150°C for irradiation at 330°C.

### **Safety**

Safety activities have provided complementary important information needed for the licensing code documentations, by defining R&D for computer code development and validation in the areas of combined hydrogen/dust explosions and by performing analyses of loss of coolant accidents and of fire accidents.

*Image 1 Magnets: Tests on sub-scale pre-compression ring (Courtesy ENEA)*



*Image 2 Integrated Divertor Cassette (Courtesy ENEA)*



*Image 3 RH: Cassette Multifunctional Mover Prototype (Courtesy Telstar)*

# Broader Approach

*Each of the Broader Approach (BA) projects is subdivided into several work packages, assigned to the Europe or Japan, and detailed, for technical and management aspects, in the so-called 'Procurement Arrangements' (PAs), to be agreed and signed by F4E and its counterpart "Implementing Agency" in Japan. The EU Voluntary Contributors (VCs) for BA, namely the Governments of Belgium, France, Italy, Germany, Switzerland, and Spain have pledged to contribute to one or more of the three BA projects, covering, with few exceptions, the Euratom commitments, in terms of personnel secondment, design, R&D, and the actual procurement of components, systems and services.*

## Satellite Tokamak Programme

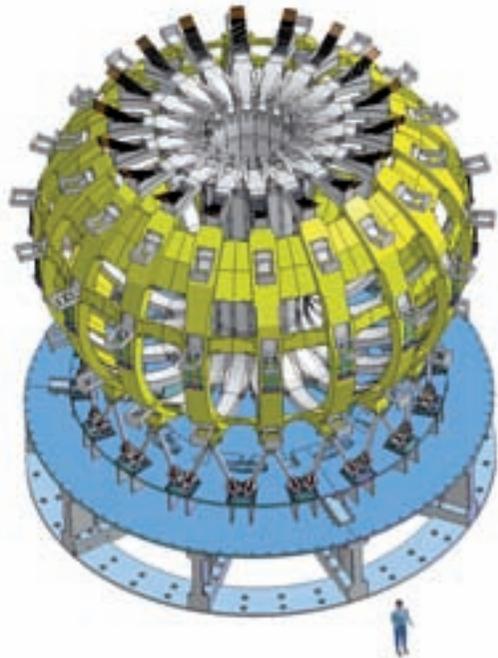
The main achievement of the Satellite Tokamak Programme (STP) has been a successful re-baselining effort whereby cost savings have been obtained while maintaining the device performance. This result was achieved through the coordinated effort of the two Implementing Agencies acting in a single albeit distributed "Integrated Project Team".

In order to achieve the required savings, while maintaining the scientific goals, several design changes were made at system and component levels. The entire machine was first optimised as a whole which resulted in lowering the overall aspect ratio, while decreasing the toroidal field and retaining the plasma current. This was then followed by a number of detailed component-level design optimisations and component-to-component trade-off analyses.

The re-baselining exercise was achieved within the requested 12 month period and the Integrated Design Report, including the outcome of this design work, was then approved by the 4th STP Steering Committee. The table on the following page outlines the changes resulting in relevant cost savings.

Some organisational changes have also taken place in the STP in 2008, mainly aimed to improve the overall project efficiency by bringing in a single organisational frame, the "Integrated Project Team" (consisting of the Project Team, EU and JA Home

Team) all technical responsible persons working for the STP. In parallel a "Common Quality Management System" was also developed.



*JT-60SA - Toroidal Field Coils: 18 coils using 24 km of helium-cooled Niobium-Titanium superconducting cables, carrying 25.7 kA*

## IFMIF/EVEDA Programme

For the International Fusion Materials Irradiation Facility (IFMIF), the EU main contribution is concentrated in the Accelerator and the Test Facilities, whereas Japan is the major contributor to the Lithium Target. The key technical achievements in the IFMIF/EVEDA project in 2008 are:

### Accelerator

Following the decision of the Steering Committee to choose the half wave resonator superconducting drift tube linac as the new reference, all activities have been focused with this new objective. A dedicated team has been implemented in Saclay and in Madrid, and a Design Orientation Review was held in December, confirming the main choices made before. The Radio Frequency Quadrupole (RFQ) successfully passed a Preliminary Design Review in June. All major aspects (beam dynamics, technology) of this delicate system are now frozen. The Injector successfully passed its Preliminary Design Review and then its Detailed Design Review and is now ready for procurement, pending the PA signature. The radio-frequency power supply system has been simplified using now only two sets of amplifying chains (220 kW and 105 kW). The accelerator building in Rokkasho is progressing in line with the schedule.

### Lithium Target

The EVEDA lithium test loop is under definition. The corresponding Japanese PA has been signed and the contract for its manufacturing and installation has been awarded. In order to be in line with the most probable solution for IFMIF's target assembly, the choice was made to use low activation ferritic/martensitic (RAF/M) steels such as F82H and Eurofer. In Japan, the preparation of experiments to

check the capacity of traps to purify the lithium have been completed and other promising results have been obtained in Osaka using a high speed camera to monitor the lithium flow. First results of erosion/corrosion work were obtained in ENEA Brasimone, confirming the better behaviour of RAF/M steels with respect to 316L stainless steel.

### Test Facilities

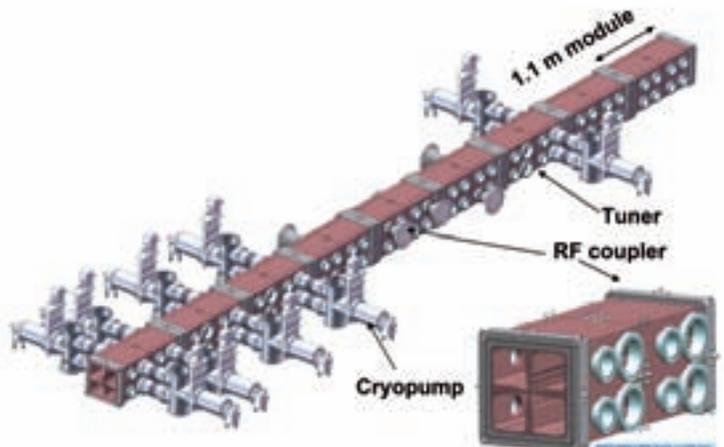
A major installation, called HELOKA LP (low pressure) has been assembled at FZK, in Karlsruhe, and is now under commissioning. This facility will be used to characterise the cooling capacity and all performances expected for the High Flux Test Module (HFTM), to be tested in the next years. Major modifications have been brought to this module, improving irradiation conditions and their mastering. Thanks to the expectation of Belgium as a voluntary contributor, an ambitious irradiation programme for the HFTM capsules is now under detailed definition. The Test Cell, core of the whole IFMIF plant, is under revision to improve the expected availability and maintainability of IFMIF. In Japan, the main effort has been concentrated on the preparation of procurement arrangements, most of them being now signed.

In spite of substantial technical progress, the project suffered an anticipated delay of 18 months for the installation, commissioning and testing of the prototype accelerator system. The major cause of this delay is the slow build-up of the design teams in most collaborating institutions and of the Project Team itself.

On the other hand, it should be noted that advantage is being taken of this delay, introducing in the engineering activities the fabrication of several additional mock-ups in support of design validation.



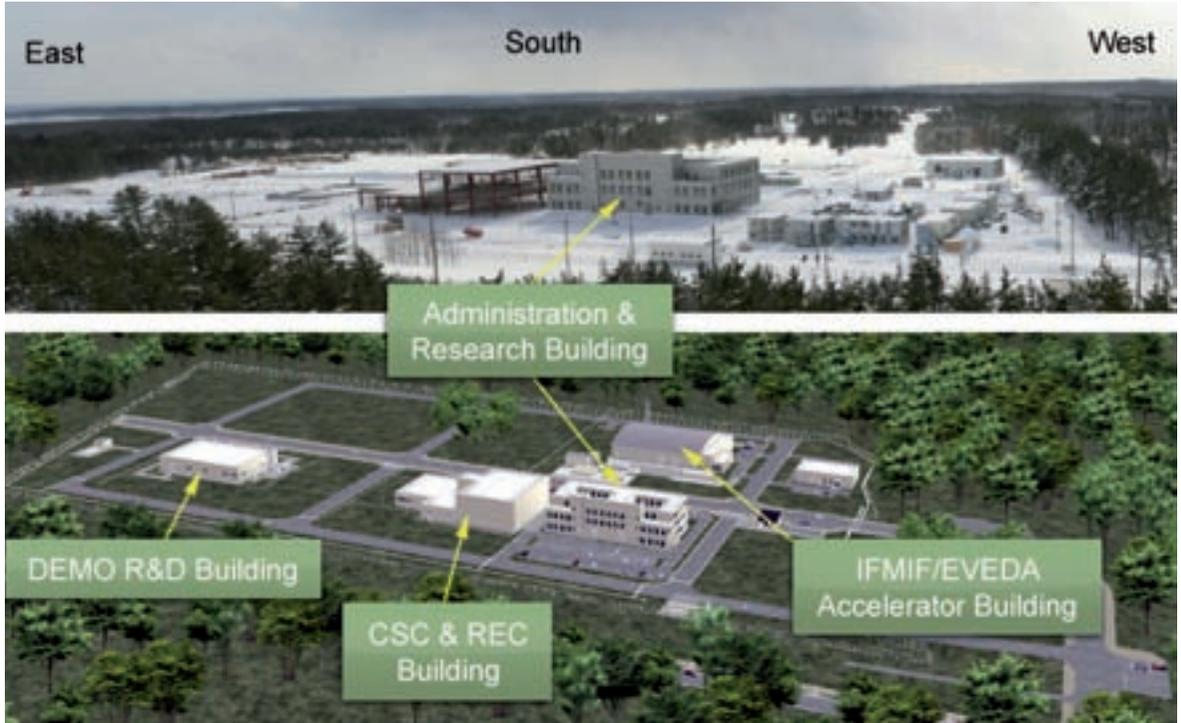
*IFMIF radiofrequency quadrupole (RFQ) unit forming the first accelerating element in the accelerator facility), full-scale aluminum mock-up (in insert) has been set up at INFN Legnaro to develop the tuning algorithms for optimising mode purity.*



## Changes with relevant cost saving resulting from Satellite Tokamak Programme Re-baselining

Component	Items	Changes
<b>TF magnet</b>	Amount of strand	Reduction by more than a factor of 2.
	Length of the conductor	Reduction from 30 km to 24.4 km.
	Number of turns	Reduction from 90 turns to 72 turns.
	Mass of the structure	Reduction from about 800 tonnes to about 300 tonnes.
	Amount of cooling channels in the casing	Drastically reduced.
	Nuclear heating as well as AC losses	Reduction by a factor of ~3.
<b>PF magnet</b>	Number of EF coils	Reduction from 7 to 6 coils.
	Total conductor length of EF system	Reduction by more than 10 km (from about 38 km to about 27 km).
<b>Vacuum Vessel</b>	Weight of vessel body including ports	Reduction from about 230 tonnes to about 150 tonnes.
	Thickness of inner/outer shell	Reduction from 24 mm to 18 mm.
	Vessel body shape	Simplification to a multi-arc shape in poloidal direction and a polygonal shape in toroidal direction (10 degree segments).
<b>Cryostat</b>	Vessel body shape	Simplification from spherical shape to a cylindrical shape with single curvature, faceted shape.
	Double wall structure filled with boron doped concrete	Simplification to single wall structure and elimination of the boron doped concrete and the outer shell.
<b>Cryogenic</b>	Refrigeration load	Reduction of total refrigeration load (4.5 K equivalent load) from 15 kW to about 10 kW, as well as simplification of the layout.
<b>ECRF</b>	Number of units and pulse duration in the Initial Research Phase	Deferral: the nine 100s-units foreseen in the CDR shall be actually installed in the Integrated Research Phase. In the Initial Research Phase, the ECRF system will start with two 5 seconds-units and two 100 second-units.
	Frequency of additional 5 units in the Integrated Research Phase	Frequency is presently considered as 110GHz.

Comparison of the current status (above at the end of 2008) and final site layout (below) of the BA Rokkasho Site



## IFERC Programme

Under the IFERC (International Fusion Energy Research Centre) project, the Computer Simulation Centre activities progress well in 2008. Following a detailed definition of the interfaces between building and supercomputer allowed reaching an agreement in principle which was endorsed by the IFERC Project Committee, and is now reflected in IFERC Project Plan. Only the cooling system and electrical interfaces are still to be agreed.

The Special Working Group I, created by the BA Steering Committee to select the suite of computer codes that will be used to benchmark the performance of the supercomputer, agreed on the

use of low level benchmark codes to be submitted to the vendors for the market survey. The planning for the activities was endorsed by the Project Committee, and was reflected in IFERC Project Plan.

The DEMO activities are consisting in the coordination by the Project Team and actual R&D activities performed by EU and JA. In the EU, R&D is already being performed by the Voluntary Contributors. The status of activities on-going in 2008 was reported at a DEMO Workshop in Kyoto, on 3rd-5th February 2009.



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## Chapter 4

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# Establishment of the Organisation

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# Introduction

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*Taking into account that this is the first Annual Activity Report of Fusion for Energy, this section is devoted to the activities that were undertaken in order to set up the organisation and make it financially and operationally autonomous on the shortest possible timescale.*

## Preparing for the F4E Decision

During its 33rd meeting on 4th May 2006, the CCE-FU<sup>2</sup> agreed on a proposal of the European Commission to establish a preparatory group for the timely establishment of F4E (known as the European Legal Entity, or ELE at the time).

After meeting on seven occasions during 2006, the ELE preparatory group reported to the CCE-FU on the rules of procedure for the ELE committees, the Financial Regulation, procurement rules and staffing need.

## Barcelona as the F4E Seat

While F4E was formally established by a decision of the Council of the European Union of 27th March 2007 which entered into force on 19th April 2007, the decision to locate F4E in Spain had been made in November 2003.

The Spanish authorities subsequently decided that F4E would be located in Barcelona and once the international ITER negotiations had concluded the following preparatory measures were taken to prepare the technical capability and infrastructure in anticipation of the establishment of F4E:

## EFDA CSU Barcelona

A Close Support Unit (CSU) was established under

the umbrella of the European Fusion Development Agreement and hosted by the Spanish fusion laboratory CIEMAT with the main aim of coordinating the ITER site preparations;

## European Commission Unit

A unit of the European Commission from Directorate J “Euratom” of DG Research was relocated in order to establish the operational and administrative framework for F4E including the Commission’s proposal to establish F4E as well as the local office infrastructure and logistics. This team had, amongst other things, the responsibility for co-ordinating the subsequent European Personnel Selection Office procedures for staff, drafting and negotiating the F4E Financial Regulation and its Implementing Rules, as well as preparing and adopting by the Governing Board a total of 23 decisions in 3 successive Governing Board meetings in 2007 that formed the basis for the legal and operational framework of the organisation, and that allowed it to become operational.

## Establishing Reserve Lists

In 2006, three different calls for expression of interest (temporary agents, officials and contracts agents) were launched to be able to rapidly recruit staff for F4E from these reserve lists once F4E was formally

*Signature of the Host Agreement with Spain on 28th June 2007, Spain*



established. In the case of the temporary agents and officials 30 different profiles were published.

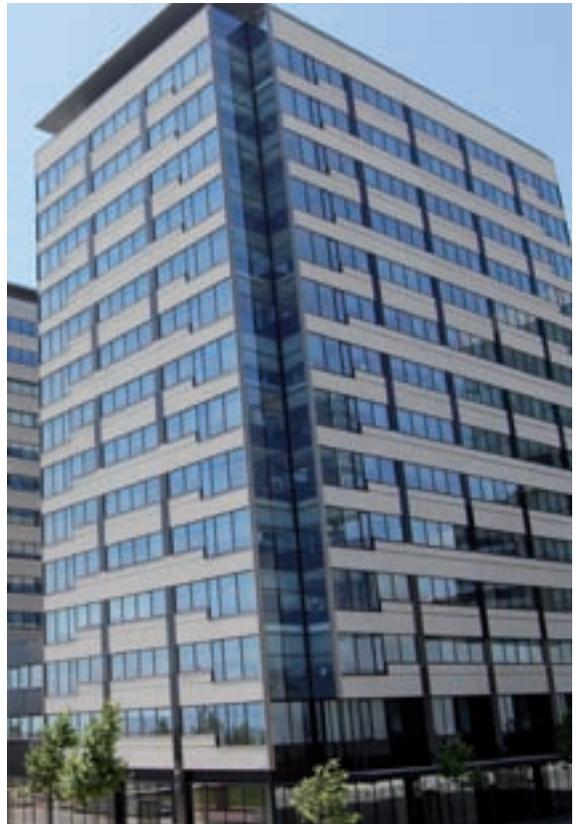
The above initiatives, with the support of the European Commission, European fusion community and CIEMAT in particular, have enabled F4E to become operational on a relatively short timescale.

## **Host Agreement**

One of the immediate tasks that was undertaken following the formal establishment of F4E by the Decision of the Council of the European Union was the conclusion of a Host Agreement with the Kingdom of Spain as foreseen in the statutes of F4E.

Negotiations on the host agreement were successfully concluded by the Commission on behalf of F4E and it was approved by the Governing Board and signed on the 28th June 2007 by the Spanish Minister for Science and Education, Ms. Mercedes Cabrera Calvo-Sotelo, and Commissioner Janez Potočnik on behalf of F4E.

The host agreement sets out the terms under which Spain agreed to provide office accommodation and other support to F4E as well as conferring privileges, immunities and other advantages on F4E and its staff in accordance with the F4E statutes.



*F4E office 22@ Innovation District in Barcelona, Spain in which five floors are occupied*

# Human Resources

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*The Staff Regulations and the Conditions of Employment of Other Servants of the European Communities apply to the staff of F4E. In addition, seconded experts are appointed under conditions that have been approved by the F4E Governing Board. This provides the Joint Undertaking with a stable set of personnel rules, adapted to international organisations and providing an attractive remuneration and employment package to allow scientific, technical and administrative personnel to relocate to Barcelona from all over Europe.*

## **Building the F4E Core Team**

Recruiting high quality staff in a transparent, impartial, objective and equitable manner is one of F4E's top priorities. From the appointment of the first staff members on 1st November 2007, 125 staff were in post by the end of 2008 constituting a core team of mostly engineers and administrative personnel. The rapid pace of recruitment was possible due to the reserve lists resulting from selections carried out by the European Personnel Selection Office under the co-ordination of the Commission on behalf of F4E earlier in 2007.

During 2008 F4E published a total of 55 different positions: 33 Temporary Agents profiles, 8 profiles destined to EU Officials and 14 Contract Agents profiles. Out of these, a total of 38 selection procedures were completed in 2008.

## **Putting the management in place**

The Governing Board appointed the F4E Director on 17th July 2007 and he took up his duties on 1st October 2007. The Heads of Department were appointed during the reporting period, the last appointment being the Head of the Broader Fusion Development Department took up his post on 1st October 2008.

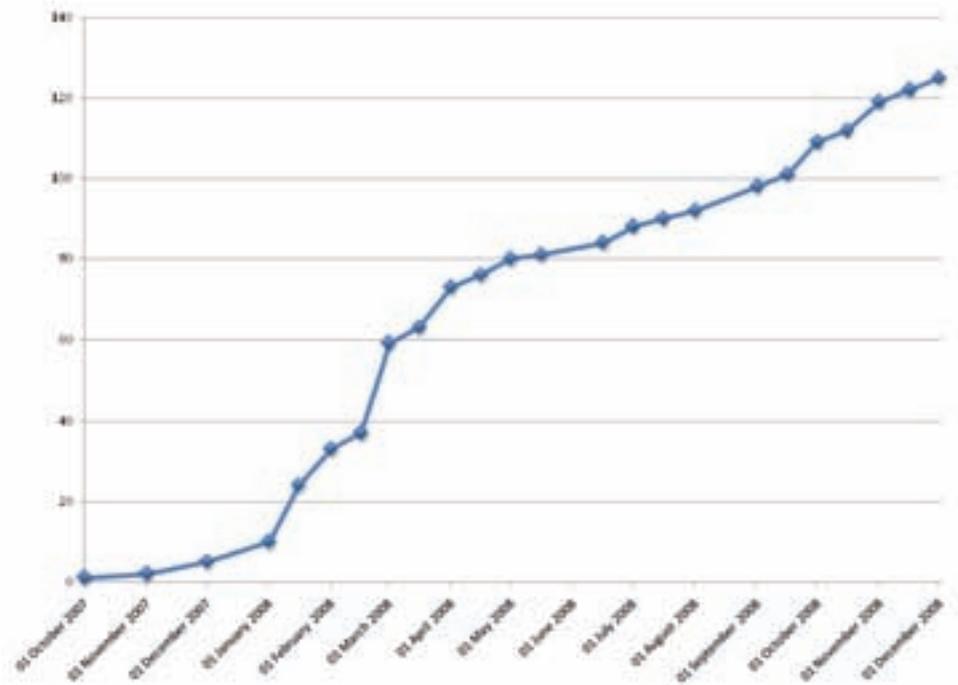
## **Selection and recruitment procedures**

The F4E selection and recruitment procedures were established for selections (e.g. vacancy criteria, vacancy notices, selection committees and other procedures) and recruitment (recruitment procedure, medical checks, establishment of rights and salaries, grading, etc). In this context, a Service Level Agreement was signed with the Commission for Medical Services and the Pay Masters Office (PMO) in order to assist with services related to salaries, sickness insurance and pensions. The above-mentioned procedures were also developed by F4E for Seconded Experts.

## **Legal framework for the personnel policy**

Activities have also focussed on the definition and implementation of a long term personnel policy through the adoption of implementing rules to the Staff Regulations. The first such rules were adopted by the Governing Board in summer 2008 (for the Staff Committee). The next batch of Implementing Rules has been prepared in 2008 taking into account the specific requirements of F4E.

Growth in the number of F4E staff during 2007 and 2008 (excluding interim staff and seconded experts)



### Policy documents and establishing staffing needs

The Multi-Annual Staff Policy Plan was approved by the Governing Board and preparations were made for the 2009 establishment plan and associated procedures of decision and adoption including hearings on staff allocation and the preparation of the report on F4E staffing needs requested by the Governing Board.

### ITER Personnel Selections

F4E has been playing an active role in the pre-selection of EU candidates (including Switzerland) having applied to vacant positions in the ITER Organisation. During 2008, a total of 141 different positions were published by ITER for which F4E carried out pre-selection procedures. As a result, some 1600 candidates were pre-selected and their data transmitted to ITER during 2008.

### Training

During 2008 three Service Level Agreements were concluded with the relevant units of the Commission and one with the European Administrative School

in order to provide for specialised training. Specific training courses offered to staff included financial aspects, intellectual property management, induction courses, IT training etc. The F4E 2008-2009 staff “learning a developing framework” was also prepared and a call for tender to provide languages courses was conducted.

### Schools for the children of staff

During 2008 F4E has been exploring means to assist staff with the provision of schooling in their own language as well as the long-term possibility of creating a European Associated School in Barcelona.

### Relocation Services

A call for tenders was launched and a contract signed with a relocation company in order to provide newly recruited staff with assistance in finding accommodation and with the installation in Barcelona.

# Contracts and Procurement

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## Grants

During 2008 a total of 18 grant award procedures (either as open calls for proposal or unique beneficiary invitations) were launched, of which six (see table in Annex V) were signed within the year. An additional five were awarded during 2008 but not yet signed by the end of the year.

Of the procurement procedures mentioned above, three were related to major procurements for which a staged approach (restricted competition) was selected: vacuum vessel sectors, toroidal field winding packs, civil engineering support.

Also, five of the procurements were negotiated with three or less candidates because of either low value or monopoly situations.

## Procurements

During 2008 a total of 12 procurement award procedures were launched, of which two (see table in Annex V) were signed within the year. An additional 3 were awarded during 2008 but not yet signed by the end of the year.

## Administrative procurement

The Administrative procurement aims at providing the necessary tools and working conditions to the staff of the Joint Undertaking to properly implement its tasks. This includes amongst others the purchase



*First Meeting of the F4E Industrial Liaison Officers (ILO) in November 2008*

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of software, hardware, office material, IT development support services, translations, interim support and travel agency services. In this context, Fusion for Energy launched 12 tender procedures resulting in the signature of 24 contracts between 2008 and beginning of 2009, participated in 11 Joint procurement tenders launched by the Commission and co-signed the resulting contracts and established the procedures necessary for small expenses by simplified tendering procedures (38 simplified low value contracts were signed in 2008).

### **Industrial Liaison Officers**

The first meeting launching the F4E Industrial Liaison Officer (ILO) network was organised in November 2008. During this event F4E procedures and procurement policies were presented for the first time to the ILOs nominated by the Members of the Governing Board.

### **Relations with Industry**

At least seven events were attended by the Contracts and Procurement Department with an aim to present the F4E organisation, procurement strategies and procedures and answer directly questions raised by Industry in relation with general conditions (liabilities in particular).

In addition to the above, some 80 bilateral meetings were organised with European industry during the first nine months of operation of the Contracts and Procurement Department.

### **Internal Training**

The Contracts and Procurement Department organised two internal trainings in 2008 on the presentation of the industry portal and on the procedures and procurement strategies which will be used for the implementation of the Work Programmes.

### **ITER Credit**

During the reporting period, the ITER Organisation allocated credit to Euratom/F4E amounting to just over 6800 IUA for the secondment of staff and the completion of a Task Agreement. A detailed breakdown of the allocations is provided in Annex IV.

## ITER Calls handled by F4E

During 2008, a total of 24 ITER calls were received and processed by F4E as shown in the table below.

**24**  
ITER CALLS

<b>Ref 001</b>	Cabling and Jacketing of TF Conductor Performance Samples
<b>Ref 002</b>	Tritium Transport Package
<b>Ref 003</b>	Reactive Power Compensation
<b>Ref 004/ITER/C4N/08/14/PB</b>	AC/DC Conversion Plant
<b>Ref 005/ITER/C4N/08/15/PB</b>	Switching Networks (SN), Fast Discharge Units (FDU) and DC busbars
<b>Ref 006/ITER/C4N/08/17/FF</b>	Software and Data-Bases Supports for the Design Office
<b>Ref 007/ITER/C4N/08/18/PB</b>	Human Factors Integration Plan Development
<b>Ref 008/ITER/C4N/08/23/O</b>	ITER Primary Survey
<b>Ref 009/ITER/C4N/08/20/PB</b>	Technical specification for option study for electrolysers of enhanced water detritiation system
<b>Ref 010/ITER/C4N/08/21/CDP</b>	Framework Contract for the Support to ITER in the area of System Engineering
<b>Ref 011/ITER/C4N/08/24/CD</b>	Framework Contracts for CAD Design and Associated Design Engineering Supports for ITER
<b>Ref 012/ITER/C4N/08/26/FDG</b>	Framework Contracts for the Engineering and Technical Support Installations
<b>Ref 012/ITER/C4N/08/26/FDG</b>	Framework Contracts for the Engineering and Technical Support Installations
<b>Ref 014/ITER/C4N/08/19/PB</b>	Experimental evaluation of pilot wet scrubber column for ITER air detritiation
<b>Ref 0015/ITER/C4N/08/25/CDP</b>	Central Safety and Interlock Assistance Contract
<b>Ref 0015/ITER/C4N/08/25/CDP</b>	Central Safety and Interlock Assistance Contract
<b>Ref 017/ ITER/CT/08/912</b>	Review of Safety Important Components (SIC) and Operating Limits and Conditions (OLC)
<b>Ref 018/ ITER/CT/08/1012</b>	Framework Service Contract for RH Engineering support to 3 years
<b>Ref 019/ ITER/C4N/08/37</b>	Standardisation of PLCS
<b>Ref 020/ ITER/C4N/08/42</b>	Engineering Support for Executing Electrical Engineering Analysis
<b>Ref 021/ ITER/C4N/08/44</b>	Insulation break design & prototype fabrication
<b>Ref 022/ ITER/C4N/08/48</b>	Engineering support for design of Atmosphere Detritiation System of the Hot Cell Facility
<b>Ref 023/ITER/C4N/08/46</b>	R&D Support for Water Detritiation System
<b>Ref 024/ITER/C4N/08/47</b>	R&D Support for Development of Atmosphere Detritiation System of the KTM Complex

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**102,54**

klUA

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## Procurement Arrangements

During 2008 two Procurement Arrangements were concluded with the ITER Organisation for a total credit of 102.54 klUA.

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Package group	Package	Activity	Credit (klUA)	Date of signature
<b>Magnets</b>	11 - 1A & 2A	Toroidal Field Magnet Windings (9+1) / Toroidal Field Magnet Structures (9+1) ('TF Coils')	89.74	20 June 2008
<b>Buildings</b>	62 - 1	Buildings (Concrete Buildings) Coils Fabrication Building (B55)	12.8	19 November 2008

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## EFDA Contracts transferred to F4E

**601**

CONTRACTS

During 2008, 601 contracts that were previously under the technical supervision of EFDA were transferred to F4E while the financial payments remained under the Commission's responsibility.

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	Contracts /tasks transferred to F4E	Contracts closed	Contracts ongoing	Invoices processed	
	Apr-08	31/12/2008	01/01/2009	Number	M€
<b>Art. 7.</b>	40	12	28		
<b>Art. 7. (ESC) *</b>				69	9.3
<b>Art. 5.1b</b>	331	13	318	14	2.1
<b>Art. 5.1a</b>	203	38	165	NA	NA
<b>Total</b>	601	74	527	83	11.4

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(\*) Specific contracts in relation with the 6 framework service contracts (ESC) transferred to F4E

# Budget, Finance and Accounting

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*F4E became financially autonomous on the 18<sup>th</sup> March 2008.*

## **Before the Financial autonomy**

In 2007 and beginning of 2008, the Budget of F4E was planned and implemented under the responsibility of the European Commission. In 2008, about M€ 3.0 was implemented by the European Commission under this regime, mainly used for the salaries of the first F4E staff members and for the preparation of the IT infrastructure.

The support and experience of the European Commission was provided to F4E to smoothly set up the financial environment of F4E and achieve the financial autonomy in a short period compared to other similar Community bodies.

## **Financial Information System (ABAC)**

F4E has chosen to introduce the ABAC system (Accrual Based Accounting) owned by the European Commission and used by most of the Community bodies.

Thanks to the ABAC/SAP full outsourcing scheme, F4E has benefited from a high standard financial system for a small fraction of its potential acquisition price. The ABAC Service Level Agreement between the European Commission and Fusion for Energy was signed in September 2007.

## **Financial autonomy**

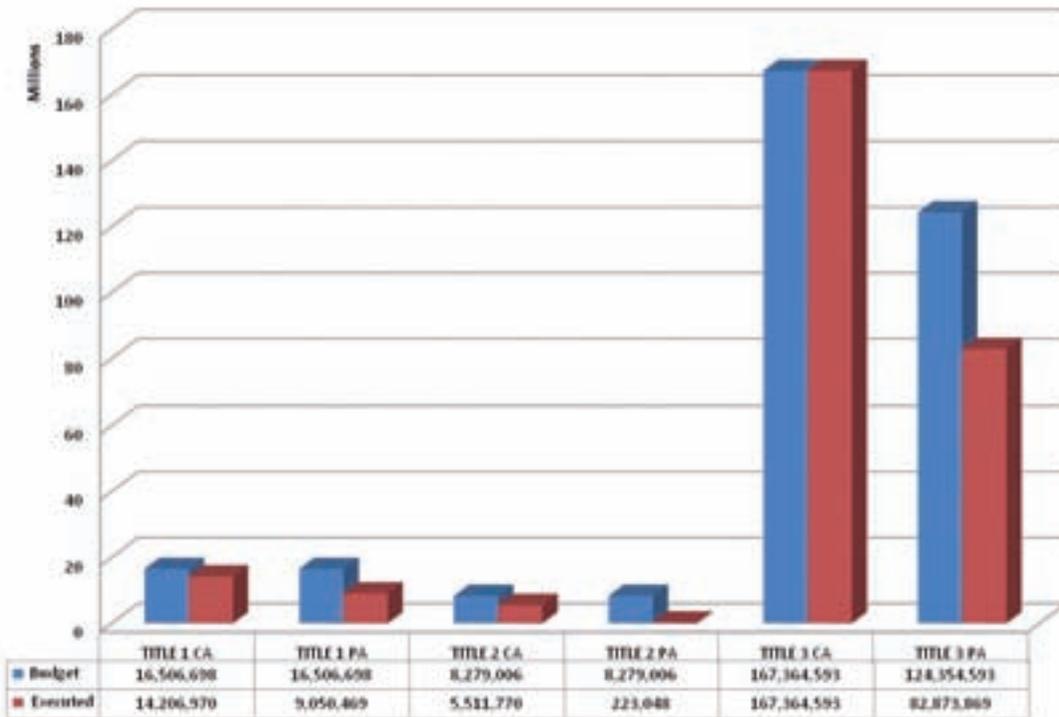
On the 18 March 2008, the F4E Accounting system was opened and Fusion for Energy became autonomous under the responsibility of its Director, acting as Authorising Officer.

## **Implementation of the 2008 Budget**

The 2008 Budget adopted by the Governing Board together with the Work Programme 2008 (financing decision) in its December 2007 meeting was therefore ready for implementation.

The results of the implementation of the first year's budget are very positive considering F4E was still in a building phase:

- 99.7% of the revenues foreseen in the budget were collected by 31/12/2008
- 97.4% of the overall budget in commitment appropriations was implemented, of which 100% of the operational budget appropriations and 79.6% of the administrative expenditure;
- 61.8% of the overall budget was implemented in payment appropriations, of which 66.6% of the operational budget appropriations and 37.4% of the administrative expenditure;



- M€ 8.3 was recovered from unused administrative expenditure, including the interests earned on the current bank accounts (in both commitment and payment appropriations), to be added as revenue in the following budgets.

#### **Implementation of the 2008 Budget.**

*Note: TITLE 1: Staff expenditure, TITLE 2: Buildings, equipment and miscellaneous operating expenditure, TITLE 3: Operational expenditure, CA: Commitment appropriation and PA: Payment appropriation*

## **Legal Framework – Accrual accounting standards in Fusion for Energy**

According to its Statutes, the annual accounts of F4E are fully consolidated with the European Communities. The 2008 F4E financial statements (covering the period 18/03/08 – 31/12/08) was established by using the consolidation package provided by the European Commission. The accounting rules and regulations used in the annual accounts are laid down by the European Commission, are on an accrual basis and are compliant with the International Public Sector Accounting Standards (IPSAS).

# Information Technology

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*Taking into account its importance for the functioning of F4E, a range of activities related to building the organisation's IT capability have been implemented in 2008. The thrust of this effort was devoted to setting up the basic services of F4E and in particular its infrastructure.*

## IT Team Procedures and Organisation

Initial activities in the IT area focussed upon launching calls for tender to provide the necessary support services, establishing the F4E IT policy and the procedures for the request of IT services.

## Infrastructure

Activities included the deployment of a dedicated firewall, printing/scanning services, backup systems, enhancement of messaging and file management services, enabling remote email access as well as implementation of Citrix for full remote access and secure lines to the European Commission.

F4E implemented a back up infrastructure for the ITER International Organisation to support its redundancy needs in anticipation of a similar level of support to F4E in the upcoming establishment of the Cadarache F4E Antenna.

## User management and Support

Over 170 user stations on the F4E network were deployed for staff with 4 versions of the basic standard desktop image and support for 7 different platforms. An incident tracking system was implemented which had already logged over 1.000 requests from F4E staff by the end of 2008.

## Management Systems

Several management systems were deployed including an initial version of the local document management system (F4Edocs) which is under continuous development via a special internal working group, a meeting room booking system, applications for handling missions and leave, and a pilot HR management system.

Specialist technical software to serve the needs of the ITER and Broader Fusion Development Departments was purchased and deployed including ANSYS MULTIPHYSICS™, CATIA™ and SMARTEAM™ (pilot).

On the administrative side, setup of access to the ABAC Data Warehouse was realised in order to provide reporting tools for generation of financial reports.

## F4E Internal and External Web sites

The F4E intranet site was improved in order to match the design of the public website and external sites were launched including the upgraded EIDI database and the expert database.

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# Infrastructure and Logistics

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## Offices and Support Services

The main activity in the area of infrastructure and logistics was the full installation of five floors of the building including meeting rooms, the telephony structure and network and the audio-visual equipment for the meetings. A system to centrally manage the mail was established and policies and guidelines put in place for services including office supplies, mail, receipt of tenders, catering, business cards, mobile phones and parking. An inventory of assets was conducted.

## Implementing the Host Agreement

A major activity concerned the implementation of the Host Agreement signed between the Spanish authorities and F4E. Formal contacts were made with the Spanish authorities and negotiations were conducted in order to ensure the appropriate privileges and immunities.

## Safety and Security

General safety rules were implemented including an evacuation plan and trained fire pickets. A video phone system was implemented on all the F4E floors.

## Permanent Offices

Negotiations were followed on the specifications for the permanent office building that is to be provided by Spain.

# Quality Management Framework

The development and establishment of a Quality System at F4E is part of an overall management roadmap strategy included in obligations as an ITER Project items provider (ITER Organisation and Host Country Authority Regulations requirements) and in conjunction with the Internal Control Standards.

## 2007/2008 Establishment roadmap

- Oct 2007 - System proposal from EFDA
- Feb 2008 - Implementation for Operational Activities
- April 2008 - Approval of the QA Program for the ITER Project
- Sep 2008 - Recruitment of F4E QA Responsible Officer (reporting to Director)
- Dec 2008 - System to cover all activities - Process Approach

## Implementation of QMS for Operational Activities

F4E implemented a lean and flexible Quality Management System (QMS) tailored to its specific activities and customers. The QMS is based on the implementation of project management good practices in order to comply with the customer requirements.

The F4E QMS implements, for safety relevant components and activities, the requirements of the ‘Order of August 10 – 1984’ (French Republic ‘Arrêté du 10 Août 1984’) and in general uses as basis the IAEA Safety Requirements GS-R-3 (2006) and ISO 9001 as applicable.

## Approval of the QA Program for the ITER Project

To act as a supplier to the ITER Organisation, F4E developed a specific QA Program. As an integral part of the QMS, F4E developed a “QA Program for items and services provided to the ITER project”.

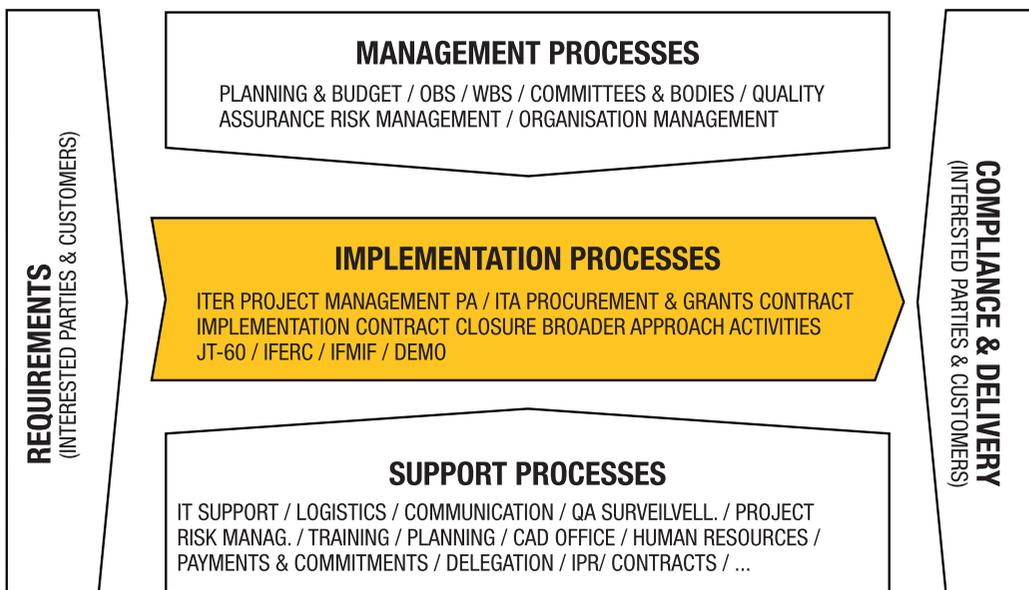
This document describes the F4E provisions from the Quality Management System to comply with the ITER project requirements and was approved by the ITER Organisation in April 2008.





**System to cover all activities - the Process Approach**

The quality and the management systems are being integrated into a single QMS covering all activities (operational and administrative) through a process approach to the system development:



# Information and Communication

## Development of a Strategy

In 2008, F4E adopted and implemented a Communications strategy that set the following priorities:

- Improve the public visibility of F4E in the media
- Raise awareness regarding fusion and the ITER project
- Communicate and collaborate with policy actors

An extensive database of media contacts predominantly from the fields of energy, environment, science, business and innovation was developed and F4E became affiliated to several media outlets that specialise in science communication.



TV3 Interview

## Public awareness about fusion and the ITER project

F4E has been proactive by participating in more than five events in 2008 that brought together science communicators, researchers and policy makers including:

- SERI, June 2008
- EuroScience Open Forum (ESOF), Barcelona, July 2008
- Seminar with the Catalan Authorities, September 2008
- SOFT 2008, Rostock, September 2008
- IAEA, Geneva, October 2008



Salon Europeen de la Recherche et de l'Innovation (SERI), June 2008



ESOF 2008



ESOF 2008



Seminar with the Catalan Authorities, September 2008

## Key Outputs

Over 20 key features were produced by different written and audiovisual media on F4E during the second half of 2008. 30 web stories were published reporting on F4E and the website received over 40,000 hits during the Q4 2008.

F4E Press releases fed into 16,825 media alerts and were covered by 45 science, innovation and business websites which flagged our news as top stories and consequently lead to further reporting, interviews and articles.



## Chapter 5

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# Statutory Bodies

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## Governing Board



*The F4E Governing Board (June 2007)*

*The Governing Board usually brings together representatives from all the Members of F4E twice per year and takes a number of important decisions and supervises its activities. The Governing Board is responsible for the overall supervision of F4E and takes decisions on a wide range of matters, in particular it:*

- *Appoints the Director;*
- *Adopts the financial regulation and its implementing rules;*
- *Adopts the annual work programmes and budgets;*
- *Adopts the project plan and resource estimates plan;*
- *Adopts the staff establishment plan and the staff policy plan.*

### **Representatives**

Each Member of F4E is represented in the Governing Board by two representatives, one of which has scientific and/or technical expertise in the areas related to its activities. The list of representatives on 31st December 2008 is provided in Annex I.

### **Chair and Vice-Chair**

The Governing Board elects its Chair and Vice-Chair from among its members upon a proposal by Euratom. Professor Carlos Varandas was appointed as the first Chair of the Governing Board at its second meeting on 17 July 2007 for a period of two years. The first Vice-Chair, Professor Niek Lopes Cardozo was elected at the same meeting also for a period of two years.

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## Summary of Decisions

The Governing Board met eight times in 2007 and 2008. The unusually large number of meetings reflected the fact that a number of decisions were necessary in order to make the organisation functional. The main decisions from each of these meetings is summarised as follows:

### 1<sup>st</sup> Governing Board Meeting, 28<sup>th</sup> June 2007, Barcelona

The Governing Board (Chaired by the European Commission, Mr Fernández Ruiz):

- Adopted unanimously its rules of procedure.
- Approved the host agreement between the Joint Undertaking and the Kingdom of Spain.
- Approved the rules of procedure for the Executive Committee.
- Approved the vacancy notice for the F4E Director.
- Adopted a decision on the terms and conditions for internal investigations in relation to the prevention of fraud, corruption and any illegal activity detrimental to the Communities' interests.
- Adopted a decision on confidentiality, independence and managing potential conflicts of interest.
- Adopted a decision appointing the members of the Executive Committee of the Joint Undertaking.

### 2<sup>nd</sup> Governing Board Meeting, 17<sup>th</sup> July 2007, Barcelona

The Governing Board (Chaired by Dr. Beatrix Vierkorn-Rudolph):

- Appointed Dr. Didier Gambier as the first Director of 'Fusion for Energy'.
- Appointed Professor Carlos Varandas as the Chair of the Governing Board and Professor Niek Lopes Cardozo as the Vice-Chair.
- Appointed Dr. Karl Tichmann as the Chair of the Executive Committee.
- Adopted a decision concerning the mandate and rules of procedure for the Scientific Programme Board ("Technical Advisory Panel (TAP)").
- Adopted a decision concerning transparency and public access to documents.

### 3<sup>rd</sup> Governing Board Meeting, 22<sup>nd</sup> October 2007, Barcelona

The Governing Board (Chaired by Professor Carlos Varandas):

- Approved the basic organisational structure of F4E.
- Appointed the members, Chair and Vice-Chair of the Technical Advisory Panel.
- Appointed the Vice-Chair of the Executive Committee.
- Adopted a decision on the accession of F4E to the Inter-Institutional Agreement of 25 May 1999 concerning internal investigations by the European Anti-Fraud Office (OLAF).
- Adopted a code of good administrative behaviour.
- Unanimously adopted the financial regulation of F4E and its implementing rules.
- Adopted unanimously a decision amending the 2007 provisional work programme.
- Adopted provisions for the secondment of experts to F4E.

### 4<sup>th</sup> Governing Board Meeting, 18<sup>th</sup> December 2007, Barcelona

The Governing Board (Chaired by Professor Carlos Varandas):

- Adopted unanimously amendments to the Financial Regulation following the opinion of the European Commission.
- Adopted the Project Plan and Resource Estimates Plan.
- Adopted the 2008 Work Programme and Budget.
- Adopted a decision to establish a F4E Office for the JT-60SA Project EU Home Team.

### 5<sup>th</sup> Governing Board Meeting, 18<sup>th</sup> March 2008, Barcelona

The Governing Board (Chaired by Professor Carlos Varandas):

- Adopted the amended 2008 Work Programme.
- Decided to create an Industrial Liaison Officers network.
- Appointed Mr. Michel Bedoucha as a member of the Executive Committee to replace Mr. Philippe Corr ea with effect from 1st April 2008.

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#### **6<sup>th</sup> Governing Board Meeting, 8th July 2008, Barcelona**

The Governing Board (Chaired by Professor Carlos Varandas):

- Established an ad hoc group to review the outcome of the internal cost assessment exercise being carried out by F4E.
- Established an ad-hoc group for the assessment for the needs and means of providing increased support for activities carried out in grants.
- Adopted an amendment to Article 169 of the Implementing Rules of the Fusion for Energy Financial Regulation.
- Adopted the amended 2008 Work Programme and Budget.
- Appointed Mr. Roberto Abad Villanueva as the F4E Accounting Officer.
- Endorsed a report on the staffing needs of F4E.

#### **7<sup>th</sup> Governing Board Meeting, 31st October 2008, Barcelona**

The Governing Board (Chaired by Professor Carlos Varandas):

- Adopted the amended 2008 Work Programme and Budget.
- Endorsed the report of the Ad-Hoc Group on F4E funding schemes.
- Adopted a decision to prepare for the establishment of an F4E Office for Site and Buildings in Cadarache.

#### **8<sup>th</sup> Governing Board Meeting, 4<sup>th</sup> December 2008, Barcelona**

The Governing Board (Chaired by Professor Carlos Varandas):

- Endorsed a progress report from the Ad Hoc Group on the Cost of the EU In-kind Contributions to ITER.
- Adopted the final amended 2008 Budget.
- Adopted the 2009 Budget and Work Programme.
- Adopted the Resource Estimates Plan and took note of the Project Plan.
- Adopted the Staff Policy Plan.

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# Executive Committee

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*The Executive Committee brings together 13 persons appointed by the Governing Board from among persons of recognised standing and professional experience in scientific, technical and financial matters (see Annex I). The Committee meets about six times per year and is responsible for approving the award of contracts, providing comments upon the documents related to the work programme and budgets as well as other tasks delegated by the Governing Board.*

## Chair and Vice-Chair

The Chair and Vice-Chair of the Executive Committee are appointed by the Governing Board for a period of two years, renewable once. Dr. Karl Tichmann was appointed as the first Chair of the Executive Committee by the Governing Board at its second meeting on 17 July 2007. Mrs Lisbeth Skovsgaard Grønberg was appointed as the Executive Committee's first Vice-Chair at the Governing Board's meeting of 22 October 2007.

- Providing comments and recommendations to the Governing Board on the draft 2008 and 2009 Project Plan, Resources Estimates Plan, Work Programme and Budget as well as subsequent amendments thereto.
- Providing comments and recommendations to the Governing Board on the draft Implementing Rules of the Financial Regulation;
- Approving the model grant agreement and its general conditions.

## Summary of Decisions

The Executive Committee met on 11 occasions during 2007 and 2008 and the main activities included:

- Approving the information and certifying the correctness of the procedural aspects followed to award ten grants.
- Approving the adjudication dossier file and certifying the correctness of the procedural aspects following to the award of one operational procurement contract.
- Approving the adjudication dossier file and certifying the correctness of the procedural aspects following to the award of three administrative procurement contracts.



*The F4E Executive Committee*

# The Technical Advisory Panel

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*The Technical Advisory Panel (TAP) assists the Governing Board and Director in engineering, scientific and technological matters in particular, the adoption of the project plan and work programmes. The TAP is composed of 13 members appointed by the Governing Board (see Annex I).*

## Chair and Vice Chair

The first Chair of the Technical Advisory Panel, Professor Minh Quang Tran, was appointed by the Governing Board at its third meeting on 22nd of October for a period of two years. The first Vice-Chair, Dr. Derek Stork, was elected at the same meeting also for a period of two years.

## Summary of Discussions

The TAP met on 4 occasions during 2007 and 2008 and the main activities included:

- Collaborating with the EFDA Leader and the Heads of Associations to evaluate the needs professional personnel in the EFDA Associates to complete the F4E Workplan during the ITER construction, and in particular the Work Programme 2009.
- Providing comments and recommendations to the Governing Board on the draft 2008 and 2009 Project Plan and Work Programmes as well as subsequent amendments thereto.
- Monitoring the progress of the implementation of F4E technical activities and reporting to the Governing Board.
- Participating in the evaluation of the re-baselining of the JT60-SA machine in the Satellite Tokamak Project of Broader Approach and providing recommendations on this matter to the Governing Board.
- Conducting an assessment on the current ITER Heating and Current Drive (H&CD) baseline design, and the possible consequences for the achievement of the ITER scientific goals of suppressing one (or more) heating method(s) from the current ITER reference H&CD mix (report in 2009).

# Annex I

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## Composition of the Bodies and Committees

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## COMPOSITION

THE GOVERNING BOARD<sup>1</sup>

CHAIR

PROF. CARLOS VARANDAS<sup>2</sup>

## MEMBERS

<b>Austria</b>	Harald	Weber	Daniel	Weselka
<b>Belgium</b>	Theofiel	Van Rentergem	Eric	Van Walle
<b>Bulgaria</b>	Tzvete	Delcheva	Nilkola	Sabatinov
<b>Cyprus</b>	Panicos	Demetriades	Leandros	Nicolaides
<b>Czech Republic</b>	Pavel	Pavlo	Jan	Kysela <sup>3</sup>
<b>Denmark</b>	Henrik	Bindsev	Gorm	Bramsnaes
<b>Estonia</b>	Rein	Kaarli	Ergo	Nõmmiste
<b>Euratom</b>	The Director General for Research of the European Commission		The Director of Energy (Euratom) of the Research Directorate General of the European Commission	
<b>Finland</b>	Seppo	Karttunen	Reijo	Munther
<b>France</b>	Bernard	Bigot	Cavata	Christian <sup>4</sup>
<b>Germany</b>	Harald	Bolt	Beatrix	Vierkorn-Rudolph
<b>Greece</b>	Christos	Vasilakos	Anastasios. G.	Youtsos
<b>Hungary</b>	Ilona	Vass	Sándor	Zoletnik
<b>Ireland</b>		<sup>5</sup>	Barry	McSweeney
<b>Italy</b>	Aldo	Pizzuto	Romano	Toschi
<b>Latvia</b>	Maija	Bundule	Andris	Šternbergs
<b>Lithuania</b>	Sigitas	Rimkevičius	Stanislovas	Žurauskas
		Stanislovas	Žurauskas	
<b>Luxembourg</b>	Pierre	Decker	Léon	Diederich
<b>Malta</b>				
<b>Netherlands</b>	Leo L.	le Duc	<b>(Vice Chair)</b> Niek J.	Lopes Cardozo
<b>Poland</b>	Łukasz	Ciupiński <sup>6</sup>	Leszek	Grabarczyk
<b>Portugal</b>	Fernando	Serra	Francisco	Sepúlveda Teixeira <sup>7</sup>
<b>Romania</b>	Florin Dorian	Buzatu <sup>8</sup>	Gheorghe	Popa
<b>Slovakia</b>	Stefan	Matejčík	Jozef	Pitel
<b>Slovenia</b>	Jože	Duhovnik	Bojan	Jenko
<b>Spain</b>	Montserrat	Torné <sup>9</sup>	Joaquín	Sánchez Sanz
<b>Sweden</b>	James R.	Drake	Sven Anders	Flodström
<b>Switzerland</b>	Bruno	Moor	Minh Quang	Tran
<b>United Kingdom</b>	Steve	Cowley <sup>10</sup>	Stuart	Ward

<sup>1</sup> On 31st December 2008<sup>2</sup> Previously Representative of Portugal until 17/07/2007 when he became Chair of the Governing Board<sup>3</sup> Replaced Milan Zmitko in May 20082<sup>4</sup> Replaced Michel Chatelier on 4/12/2008<sup>5</sup> Mr Peter Brazel until 18/03/2008<sup>6</sup> Replaced Mr Andrzej Galowski on 18/03/2008<sup>7</sup> Replaced Prof Carlos Varandas on 18/12/2007<sup>8</sup> Replaced Theodor Ionescu Bujor on 4/12/2008<sup>9</sup> From 31/10/2008. Previously Ms Carmen Andrade who

replaced Jose Doncel on 22/10/2007

<sup>10</sup> From 31/10/2008

## COMPOSITION

**THE EXECUTIVE COMMITTEE**

## FUNCTION

MEMBERS	<b>The Head of Unit of J.3 of the Research Directorate General of the European Commission</b>	
<b>Member</b>	Michel	Bedoucha <sup>11</sup>
<b>Member</b>	Alberto	Coletti
<b>Member</b>	William	D'Haeseleer
<b>Member</b>	Jose	Doncel
<b>Member</b>	Robert	Freeman
<b>Member</b>	Adelbert	Goede
<b>Vice Chair</b>	Lisbeth	Grønberg
<b>Member</b>	Reinhard	Maix
<b>Member</b>	Antonio	Serra
<b>Chair</b>	Karl	Tichmann
<b>Member</b>	Kari	Törrönen
<b>Member</b>	Andreas	Werthmüller

*Note that Philippe Corrêa was a member of the Committee until 1st April 2008*

*11 Replaced Philippe Corrêa on 01/04/2008*

## COMPOSITION

**TECHNICAL ADVISORY PANEL**

## FUNCTION

<b>Member</b>	Enrique	Ascasibar
<b>Member</b>	Paloa	Batistoni
<b>Member</b>	Horácio	Fernandes
<b>Member</b>	Fedor	Gömöry
<b>Member</b>	Remmelt	Haange
<b>Member</b>	Thomas	Ihli
<b>Member</b>	Gabriel	Marbach
<b>Member</b>	Vincent	Massaut
<b>Member</b>	Jaroslav	Mizera
<b>Member</b>	Olaf	Naubauer
<b>Member</b>	Marek	Rubel
<b>Member</b>	Derek	Stork
<b>Member</b>	Minh Quang	Tran

## **Annex II**

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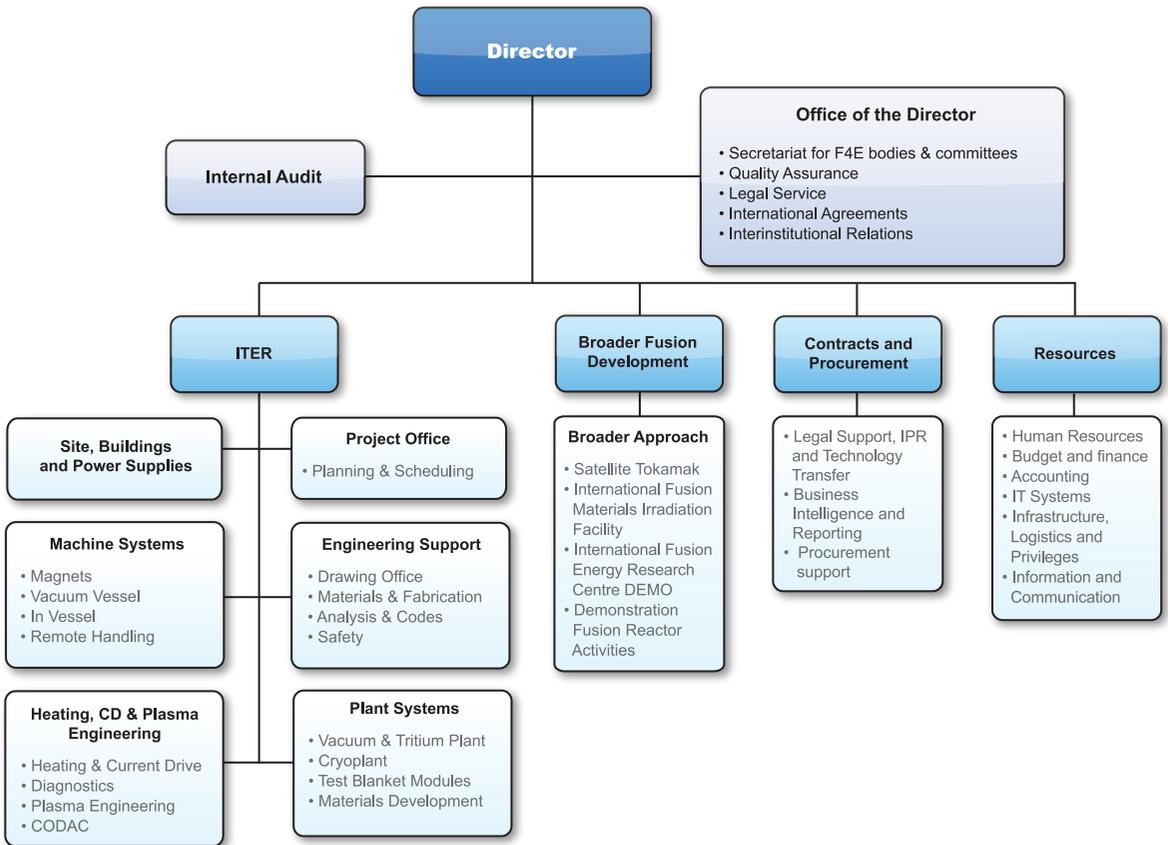
# **Organisation and Staff**

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# ORGANISATIONAL CHART

The basic organisational chart of four Departments, the Internal Audit function and the Office of the Director was approved by the Governing Board during its third meeting on 22nd October 2007.



**TEAM STAFF**

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**Director**

**Didier Gambier**

**Office of the Director**

Antonella Clissa  
Ines Cecere  
Radoslav Hanak  
Susana Clement

Diogo Rodrigues  
Manuel Szapiro  
Raymond Monk

**ITER Department**

Alessandro Bonito Oliva  
Alexander Vostner  
Angel Moreno Larriba  
Aurélie Cardon  
Bruno Riccardi  
Carlo Sborchia  
Carmen Gonzalez Gutierrez  
Eberhard Diegele  
Elena Fernandez Cano  
Esther Barbero Soto  
Federico Riccardo Casci

Alessandro Lo Bue  
Alfredo Portone  
Antonio Masiello  
Ben Slee  
Carlo Damiani  
Carmela Annino\*  
Didier Combescure  
Eckhard Warschewski  
Eric Pangole  
Fabienne De Brouhoven  
Ferran Albajar



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Gabriella Saibene	Gianfranco Federici
Gilbert Agarici	Giovanni Piazza
Glen Counsell	Hannu Rajainmaki
Italo Ricapito	Jesus Izquierdo
Katty Camino Garcia	Lars Christian Ingesson
Laurent Guerrini	Lawrence Jones
Lorenzo Perna	Luigi Semeraro
Marcello Losasso	Marco Ferrari
Maria Blanca Gomez	Maria Ortiz de Zúñiga
Mario Cavinato	Mark Mills
<b>Maurizio Gasparotto*</b>	Milan Zmitko
Monica Ghiringhelli	Muriel Simon
Patrick Lorenzetto	Paul Richard Thomas
Paula Harghel	Pietro Testoni*
Rafael de la Calle	Rainer Lässer
Roberta Sartori	Roberto Campagnolo
Shakeib Arshad	Silvia Madrid Pariente
Sonia Dominguez	Tullio Bonicelli
Vassilis Stamos	Yasmine Chtouki
Yves Poitevin	



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<b>Broader Fusion Development Department</b>	Bernard Teuchner	Enrico Di Pietro
	Lionel Meunier*	Manfred Wanner*
	Mario Verrecchia	Pietro Barabaschi
	Valerio Tomarchio	
<b>Contracts and Procurement Department</b>	Angel de Goya Castroverde*	Angela Bardenhewer
	Anne Schepens	Anne-Kathrin Preis
	Audrey Verpont	Benjamin Perier
	Christel Guirado	Fanny Cauvard
	Ivo Lobmaier*	Jorge Caballero
	Leonardo Biagioni	Philippe Corr�ea
	Pilar Rosado	Stefano Galvan
	Valerie Casarin	Victor Saez Lopez-Barrantes
	Walter Schuster	
	<b>Resources Department</b>	Anca Michael Grozea
B�n�dicte Li�geois		Caroline Georges
Cathal Thorne		Christine Konrath
Cristina Ortiz Shousbou�		Emilie Bauwin
Fatiha Ammari		Ga�l Nolard
Hashim Ludin		Hayd�e Vila Amigo Maria
Iacopo Ianniello		Isabel Garcia Tint�
Isabelle Harion		Javier Caceres Cotarelo
Javier Martinez Zamora		Jean-Jos� Lopez
Jesus Pena Cotarelo		Jordi Vall�s Foix
Lu�s Correia		Manuel Martins Alves
Maria Mourouzidou		Massimiliano Maglienti
Nathalie Devos		Osmar Naredo Lopez
Paloma Alvarez Hidalgo		Rafael Delgado Gomez
Raquel Ferrer		Roberto Abad Villanueva
Sandra Cenera		Sara Herrero Molinos
Stavros Chatzipanagiotou		Stefano Bracco
Thierry Malengreau		Thomas Bousios
Vinciane Callebaut		Walter Schiller
Ylenia Blok		

## **Annex III**

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# **Implementation of the Work Programme 2008**

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In the following tables, the implementation of the 2008 Work Programme (last revised on 08/07/2008) according to the Quarters (Q1-Q4) in which they were intended to be launched. Three tables are shown according to the three groups of activities presented in the Work Programme. The numbers in brackets indicate the number of contracts that were both launched and signed during 2008.

2008

## ITER PROCUREMENT

	Foreseen		Executed	
	Launch	Launch and Sign	Launch	Launch and Sign
<b>Q1</b>			1	
<b>Q2</b>		1		
<b>Q3</b>		2		
<b>Q4</b>	6	7		
<b>Total</b>	<b>6</b>	<b>10</b>	<b>1</b>	

2008

## DESIGN AND R&D PROCUREMENTS

	Work Programme 2008		Implemented 2008	
	Credited	Not Credited	Credited	Not Credited
<b>Q1</b>				
<b>Q2</b>				
<b>Q3<sup>1</sup></b>	32	4	6 (1)	1 (1)
<b>Q4<sup>2</sup></b>	35	7	2	1
<b>Total</b>	<b>47</b>	<b>11</b>	<b>8 (1)</b>	<b>2 (1)</b>

2008

## DESIGN AND R&D GRANTS

	Work Programme 2008		Implemented 2008	
	Credited	Not Credited	Credited	Not Credited
<b>Q1</b>				
<b>Q2</b>			6 (3)	
<b>Q3<sup>3</sup></b>	29	17	5 (1)	2 (2)
<b>Q4<sup>4</sup></b>	37	15		
<b>Total</b>	<b>66</b>	<b>32</b>	<b>11 (4)</b>	<b>2 (2)</b>

<sup>1</sup> Procurements foreseen for launch in Q3/Q4 have been equally divided between the two periods for the sake of this comparison.

<sup>2</sup> Ditto.

<sup>3</sup> Ditto.

<sup>4</sup> Ditto.

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The relatively low level of implementation of the 2008 Work Programme can be accounted for by the following:

- F4E had very low levels of staffing that persisted until Q4 2008 due to the time needed for the recruitment process in particular for some critical areas such as the Contracts and Procurement Department;
- While a major increase in recruitments was achieved by F4E during the latter half of 2008, time was needed to allow new staff to integrate in the organisation and obtain the necessary training;
- The approval of the model grant agreement by the Executive Committee, an essential step before any grants could be launched, was provided on 16th April 2008;
- Essential information or documents to be provided to F4E by the ITER Organisation were often delayed or subject to more extensive negotiations than originally foreseen;
- F4E took over the technical supervision of ongoing technology contracts that were launched under EFDA which constituted a significant additional workload.

## **Annex IV**

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# **ITER Credit Allocation**

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In the following table the credit allocation by the ITER Organisation for the secondment of EU staff and the implementation of a task agreement during the period Q2 of 2007 to end of Q4 2008 is provided.

	<b>Description</b>	<b>Date of credit notification</b>	<b>Credit allocated (IUA)</b>
<b>1</b>	EU Seconded staff 2007	08 April 2008	3962.40000
<b>2</b>	EU Seconded staff first quarter 2008	30 April 2008	672.37067
<b>3</b>	EU Seconded staff second quarter 2008	08 July 2008	684.24584
<b>4</b>	EU Seconded staff third quarter 2008	02 October 2008	719.69927
<b>5</b>	EU Seconded staff fourth quarter 2008	05 February 2009	707.47978
<b>6</b>	Regularisation of credits allocated for staff in 2008	05 May 2009	-6.99019 *
<b>7</b>	Regularisation for the final IUA/Euro rates 2007 and 2008	05 May 2009	-4.40679 *
<b>8</b>	Task agreement C81TD31FE "Detailed Analysis of Reference Events Scenarios"	08 August 2008	100.00000
<b>9</b>	<b>Total</b>		<b>6,834.79858</b>

\* The credit issued on the 5th May 2009 for the seconded staff in the first quarter 2009 also includes adjustments of credits allocated for seconded staff in 2007 and 2008 related to the adoption of the final exchange rates for 2007 and 2008 as well as an adjustment to earlier credits allocated for a seconded staff member.



## **Annex V**

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# **Financial Reports**

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PROCUREMENT

**OPERATIONAL BUDGET**

Type of Contract	Count	Amount (in Euros)
Supply	1	3.551.816
Services	2	96.000
Works	0	0
<b>Total</b>	<b>3</b>	<b>3.647.816</b>

Procedures	Count	Amount (in Euros)
Open	1	3.551.816
Restricted	0	0
Negotiated	2	96.000
Other	0	0
<b>Total</b>	<b>3</b>	<b>3.647.816</b>

PROCUREMENT

**ADMINISTRATIVE BUDGET**

(excluding real estate contracts, joint procurement with the Commission, administrative support contracts from Host State and contracts < 25 kEuro)

Type of Contract	Count	Amount (in Euros)
Supply	1	46 613,07
Services	8	21 892 013,41
Works	0	0
<b>Total</b>	<b>9</b>	<b>21 938 626,48</b>

Procedures	Count	Amount (in Euros)
Open	4	15 350 000
Restricted	0	0
Negotiated (Art. 126 & 127 IR)	4	6 542 013,41
Other (low value >25 kEuro)	1	46 613,07
<b>Total</b>	<b>9</b>	<b>21 938 626,48</b>

## INDIVIDUAL PROCUREMENTS

**OPERATIONAL BUDGET >50KEUROS**

Activity Area	Contract Title	Type of Contract	Amount (in Euros)	Launch Date	Award Date
Magnets	Chromium-plated Cu strand for TF conductor	Supply	3.551.816	18/03/2008	13/02/2009
<b>Total</b>			<b>3.551.816</b>		

## NEGOTIATED PROCEDURES

**OPERATIONAL BUDGET >250K EUROS**

Reference No.	Contract Title	Contractor	Type of Contract	Amount (in Euros)
None	None	None	None	None

## INDIVIDUAL PROCUREMENTS

**ADMINISTRATIVE BUDGET**

Reference No.	Contract Title	Type of Contract	Amount (in Euros)	Launch Date	Award Date
<b>F4E 2007 ADM 01/VC</b>	Relocation services	Service	Max 350000 - 4 years	21/12/2007	26/03/2008
<b>F4E-2008-ADM/IT-02</b>	sTESTA connection to F4E	Service	42,013.41 - 1 year. Renewable	15/02/2008	17/04/2007
<b>F4E-2008-ADM/FN-03</b>	Temporary travel agency services	Service	Max 850 000	1/04/2008	9/04/2008
<b>F4E 2008 ADM IT 04</b>	SharePoint Server 2007 services	Service	Max 5 M - 4 years	1/08/2008	27/10/2008
<b>F4E 2008 ADM IT 05</b>	Specialist IT Support Services	Service	Max 5 M - 4 years	18/08/2008	12/10/2008
<b>F4E-2008-ADM/FN-07</b>	Travel Agency Services	Service	Max 5 M - 4 years	22/04/2008	21/10/2008
<b>F4E 2008 ADM IT 09</b>	Additional internet access line	Service	Max 5 M - 4 years	6/08/2008	28/10/2008
<b>F4E-2008-ADM/LOG-10</b>	Service Car	Supply	46613,07	15/09/2008	27/10/2008
<b>F4E-2008-ADM/HR-11</b>	Language courses services	Service	Max 0.65M -4 years	22/07/2008	25/11/2008

## NEGOTIATED PROCEDURES

**ADMINISTRATIVE BUDGET ART. 126 AND 127 OF IMPLEMENTING RULES EXCLUDING LOW VALUE CONTRACTS)**

Reference No.	Contract Title	Contractor	Type of Contract	Amount (in Euros)
<b>F4E-2008-ADM/IT-02</b>	sTESTA connection to F4E	Orange Business Belgium SA/ NV and Hewlett-Packard Belgium SPRL/BVBA	Service	42,013.41 for one year. Renewable
<b>F4E-2008-ADM/FN-03</b>	Temporary travel agency	Carlson Wagonlit Travel Belgium	Service	Max 850.000
<b>F4E-2008-ADM/FN-07</b>	Travel Agency services	Andromeda	Service	Max 5M for 4 years
<b>F4E-2008-ADM/HR-11</b>	Language courses services	Inlingua	Service	Max 650 000 for 4 years

**GRANTS**

Activity Area	Title	Amount (in Euros)	Beneficiary	Launch Date	Signature Date
<b>Safety</b>	Combined hydrogen and dust explosion model development and validation	758.808	FZK , CEA, ENEA	10/06/2008	8/05/2009
<b>Safety</b>	Combined hydrogen and dust explosion model development and validation	50.000	Studsvik AB	10/06/2008	8/05/2009
<b>Magnets</b>	Sultan test facility and manufacture / testing of samples (including back-up solution)	1.027.200	EPFL*	9/06/2008	10/10/2008
<b>Remote Handling</b>	DTP Testing and first Upgrades (MAM mounted on CMM) TEKES (for implementing DTP2 test programme)	1.580.435	TEKES*	4/06/2008	10/10/2008
<b>Safety</b>	Detailed Analyses of LOCA Reference Event Scenario	60.000	Studsvik AB	10/06/2008	8/10/2008
<b>Divertor</b>	Preparation of high heat flux testing of CFC and W mock ups: IR examinations and test set up.	189.017	CEA*	23/06/2008	27/02/2009
<b>Test Blanket Modules</b>	Upgrade of DIADEMO facility	345.000	CEA*	9/07/2008	23/12/2008
<b>EC Power Sources</b>	Design and development of the EU gyrotron for ITER	736.138	Gyrotron Consortium of Associates	21/07/2008	26/02/2009
<b>Test Blanket Modules</b>	HCLL and HCPB TBM Systems design and R&D	2.919.630	FZK, CEA, CIEMAT, ENEA, NRI, KFKI	21/07/2008	19/12/2008
<b>Neutral Beam</b>	Design , development and specification of the NB system components for NB Test Facility and ITER	2.587.635	Consorzio RFX*	11/08/2008	19/12/2008

<b>Remote Handling</b>	Gathering of requirements for final IVVs	470.800	ENEA (IT)	18/08/2008	19/05/2009 (commitment)
<b>Remote Handling</b>	Studies on Transfer Cask path in the ITER building and on rescue scenarios; start of preparation of tender packages for Air Transfer System prototype	172.060	IST (PT), CIEMAT (ES)	18/08/2008	24/05/2009
<b>Plasma Engineering</b>	PF System Analysis and Compatibility with Plasma Control	236.060	Consorzio CREATE (IT)	30/09/2008	7/05/2009
<b>Total</b>				<b>14 11.192.783</b>	

Note \* indicates a unique beneficiary for the grant as identified in the 2008 Work Programme

2008

## BALANCE SHEET

<b>ASSETS</b>		<b>31.12.2008</b>
<b>A. NON CURRENT ASSETS</b>		
<b>Intangible fixed assets</b>		<b>0,00</b>
<b>Tangible fixed assets</b>		<b>483.472,00</b>
	Computer hardware	109.759,00
	Furniture and vehicles	299.690,00
	Other fixtures and fittings	74.023,00
<b>TOTAL NON CURRENT ASSETS</b>		<b>483.472,00</b>
<b>B. CURRENT ASSETS</b>		
<b>Stocks</b>		<b>0,00</b>
<b>Short-term pre-financing</b>		<b>6.513.159,60</b>
	Short-term pre-financing	6.513.159,60
<b>Short-term receivables</b>		<b>41.711.738,27</b>
	Current receivables	384.900,00
	Sundry receivables	42.579,70
	Other	41.171.589,75
	Accrued income	67.621,95
	Deferrals and Accruals with consolidated EC entities	41.103.967,80
	Short-term receivables with consolidated EC entities	112.668,82
<b>Cash and cash equivalents</b>		<b>58.980.569,87</b>

<b>TOTAL CURRENT ASSETS</b>	<b>107.205.467,74</b>
<b>TOTAL ASSETS</b>	<b>107.688.939,74</b>

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<b>LIABILITIES</b>	<b>31.12.2008</b>
--------------------	-------------------

<b>A. CAPITAL</b>	<b>66.534.076,61</b>
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Accumulated surplus/deficit	0,00
-----------------------------	------

Economic result of the year - profit+/loss-	66.534.076,61
---	---------------

<b>C. NON CURRENT LIABILITIES</b>	<b>977.500,00</b>
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Provisions for risks and charges	0,00
----------------------------------	------

Other long-term liabilities	977.500,00
-----------------------------	------------

Pre-financing received from consolidated EC entities	977.500,00
--	------------

<b>TOTAL NON CURRENT LIABILITIES</b>	<b>67.511.576,61</b>
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<b>D. CURRENT LIABILITIES</b>	<b>40.177.363,13</b>
-------------------------------	----------------------

Accounts payable	40.177.363,13
------------------	---------------

Current payables	187.019,94
------------------	------------

Sundry payables	645,65
-----------------	--------

Other	13.088.518,54
-------	---------------

Accrued charges	12.961.554,46
-----------------	---------------

Deferrals and accruals with consolidated EC entities	126.964,08
--	------------

Accounts payable with consolidated EC entities	26.901.179,00
--	---------------

Pre-financing received from consolidated EC entities	25.406.415,22
--	---------------

Other accounts payable against consolidated EC entities	1.494.763,78
---	--------------

<b>TOTAL CURRENT LIABILITIES</b>	<b>40.177.363,13</b>
----------------------------------	----------------------

<b>TOTAL LIABILITIES</b>	<b>107.688.939,74</b>
--------------------------	-----------------------

**ECONOMIC OUTTURN**

	<b>2008</b>
Operating revenues	123.739.884,44
Revenues from administrative operations	562.323,48
<b>TOTAL OPERATING REVENUE</b>	<b>124.302.207,92</b>
Administrative expenses	-11.821.558,13
Staff expenses	-8.635.888,07
Fixed asset related expenses	-125.464,55
Other administrative expenses	-3.060.205,51
Operational expenses	-46.162.378,07
Other operational expenses	-46.162.378,07
<b>TOTAL OPERATING EXPENSES</b>	<b>-57.983.936,20</b>
<b>SURPLUS/(DEFICIT) FROM OPERATING ACTIVITIES</b>	<b>66.318.271,72</b>
Financial revenues	216.304,89
Financial expenses	-500,00
<b>SURPLUS/ (DEFICIT) FROM NON OPERATING ACTIVITIES</b>	<b>215.804,89</b>
<b>SURPLUS/(DEFICIT) FROM ORDINARY ACTIVITIES</b>	<b>66.534.076,61</b>
Extraordinary gains (+)	0,00
Extraordinary losses (-)	0,00
<b>SURPLUS/(DEFICIT) FROM EXTRAORDINARY ITEMS</b>	<b>0,00</b>
<b>ECONOMIC RESULT OF THE YEAR</b>	<b>66.534.076,61</b>

**BUDGET OUTTURN**

			2008
<b>REVENUE</b>	Euratom contribution	+	122.457.297,35
	ITER host state and Membership contributions	+	26.298.100,00
	Other revenue	+	1.013.682,94
<b>TOTAL REVENUE (a)</b>			<b>149.769.080,29</b>
<b>EXPENDITURE</b>	Title I: Staff		
	Payments	-	9.050.469,06
	Appropriations carried over	-	2.063.062,49
	Title II: Administrative Expenses		
	Payments	-	223.048,21
	Appropriations carried over	-	5.288.722,23
	Title III: Operating Expenditure		
	Payments	-	82.873.869,37
	Appropriations carried over	-	24.865.000,00
<b>TOTAL EXPENDITURE (b)</b>			<b>124.364.171,36</b>
OUTTURN FOR THE FINANCIAL YEAR (a-b)			25.404.908,93
<b>Exchange differences for the year (gain +/-loss -)</b>		+/-	1.506,29
<b>BALANCE OF THE OUTTURN ACCOUNT FOR THE FINANCIAL YEAR</b>			<b>25.406.415,22</b>

## ITER ORGANISATION AND JAPAN

**CASH CONTRIBUTIONS**

ABAC Code	Contribution in Cash	Date	Amount (€)
F4E.870	IO - CONTRIBUTION IN CASH 2008	07/11/08	17,584,130.47
F4E.1322	IO - CONTRIBUTION IN CASH 2009	23/12/08	41,011,940.00
F4E.1316	2008 CONTRIBUTION IN CASH TO JAPAN -PA 1.1.P6.JA.01.0 (TF CONDUCTORS)	30/12/08	5,797,879.20

**IMPLEMENTATION OF THE BUDGET**

(1 000 euro)

Revenue					Expenditure	
Origin of Revenue		Revenue entered in the final budget for the financial year	Revenue collected	Outstanding at the end 2008	Allocation of expenditure	
<b>Title I</b> Community subsidies	- CA	141.667	122.457	0	<b>Title I</b> Staff	- CA
	- RO	122.457				- PA
<b>Title II</b> Membership contributions	- CA	2.683	2.298	385	<b>Title II</b> Administration	- CA
	- RO					- PA
<b>Title III</b> ITER host state contribution	- CA	47.800	24.000	0	<b>Title III</b> Operational expenditure	- CA
	- RO	24.000				- PA
<b>Title IV - V</b> Other revenue*	- CA	1.126	1.014	113	<b>Title III</b> Earmarked revenue	- CA
	- RO					- PA
<b>TOTAL</b>	- CA	<b>193.276</b>	<b>149.769</b>	<b>497</b>	<b>TOTAL</b>	- CA
	- RO	<b>150.266</b>				- PA

RO = Entitlements established

\* including all amounts collected that were p.m. in the budget

### Appropriations under the final budget

Entered* (a)	committed (b)	% (b/a)	paid (c)	% (c/a)	carried over (d)	% (d/a)	cancelled (e)	% (e/a)
16.507	14.207	86,1%	9.050	54,8%	2.063	12,5%	5.393	32,7%
8.279	5.512	66,6%	223	2,7%	5.289	63,9%	2.767	33,4%
119.713	119.565	99,9%			0	0,0%	149	0,1%
100.118			82.874	82,8%	0	0,0%	17.245	17,2%
48.778	47.800	98,0%			978	2,0%	0	0,0%
24.865			0	0,0%	24.865	100,0%	0	0,0%
<b>193.276</b>	<b>187.083</b>	<b>96,8%</b>			<b>8.329</b>	<b>4,3%</b>	<b>8.309</b>	<b>4,3%</b>
<b>149.769</b>			<b>92.147</b>	<b>61,5%</b>	<b>32.217</b>	<b>21,5%</b>	<b>25.405</b>	<b>17,0%</b>

CA: Commitment appropriation

PA: Payment appropriation

**ESTABLISHMENT PLAN**

Category	Posts Authorised 2008		Filled as at 31/12/2008	
	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts
AD16				
AD15				
AD14		1		1
AD13	1			
AD12	8		13	3
AD11	12		6	
AD10	14			
AD9	10	24	4	22
AD8	4			
AD7			1	1
AD6	2	35		31
AD5			2	2
<b>Total AD category</b>	<b>51</b>	<b>60</b>	<b>26</b>	<b>60</b>
	<b>111</b>		<b>86</b>	
AST11				
AST10	1		1	
AST9			1	
AST8	1		1	
AST7			1	
AST6	1		2	
AST5	1			
AST4	1		1	
AST3	2	25	1	6
AST2	1			
AST1	1		1	
<b>Total AST category</b>	<b>9</b>	<b>25</b>	<b>9</b>	<b>6</b>
	<b>34</b>		<b>15</b>	
<b>TOTAL</b>	<b>60</b>	<b>85</b>	<b>35</b>	<b>66</b>
	<b>145</b>		<b>101</b>	

## **Annex VI**

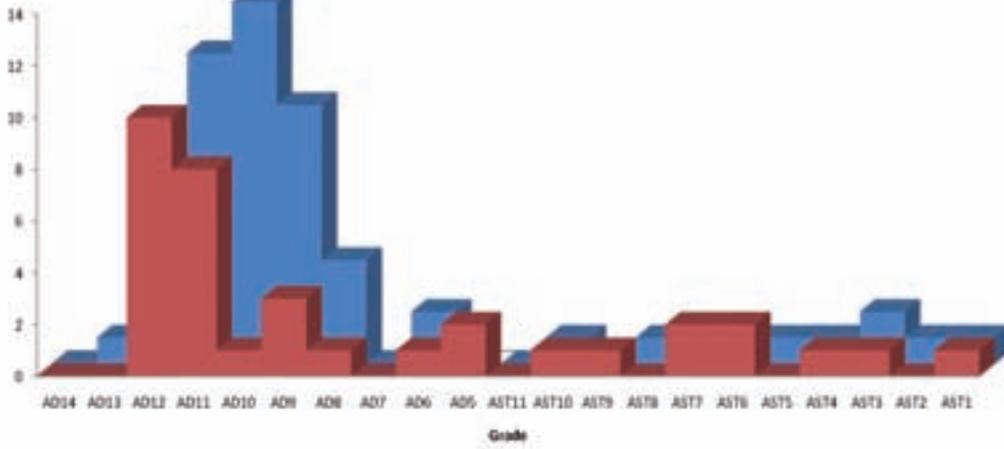
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# **Staffing Information**

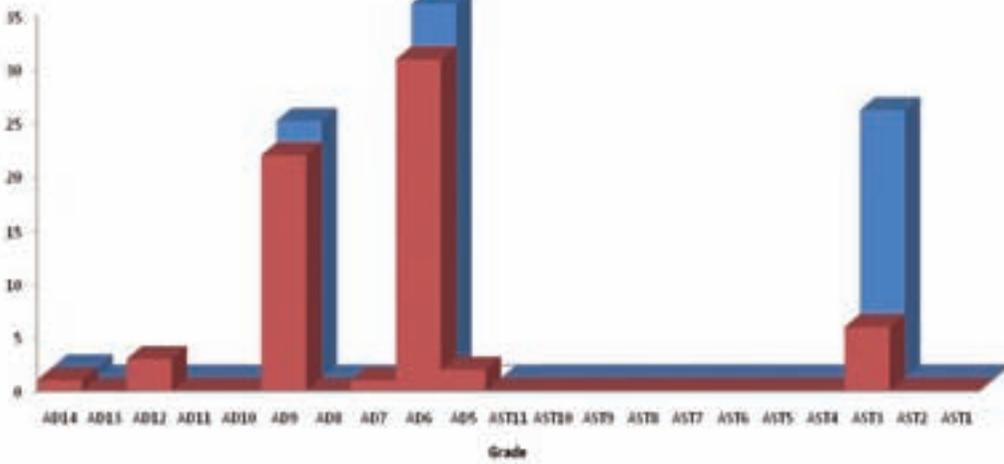
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PERMANENT POSTS FILLED (RED) COMPARED WITH ESTABLISHMENT PLAN (BLUE)



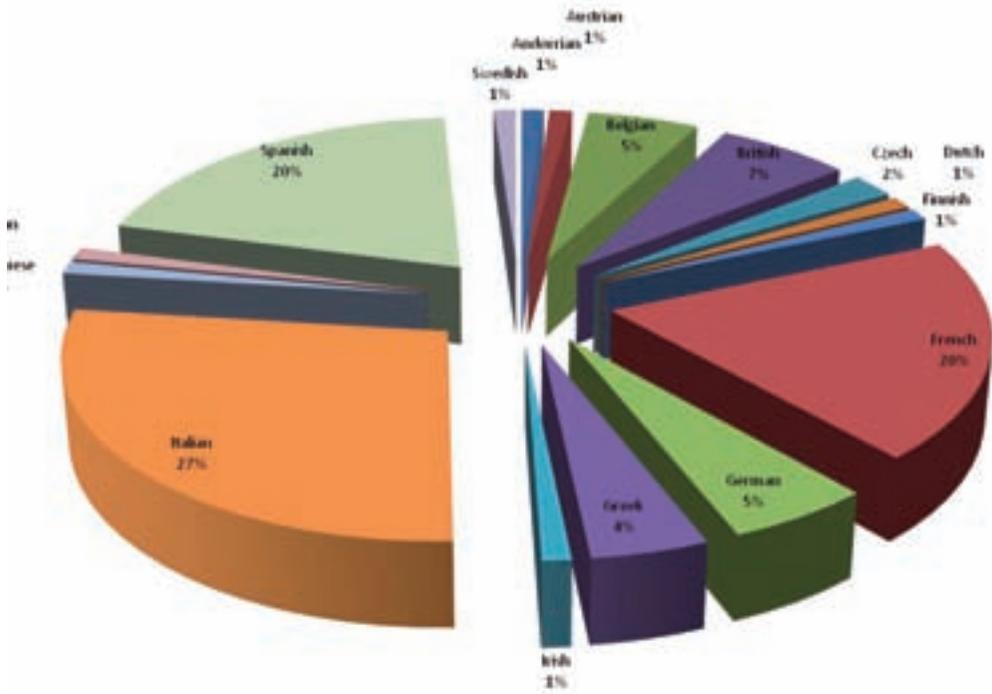
TEMPORARY POSTS FILLED COMPARED WITH ESTABLISHMENT PLAN (BLUE)



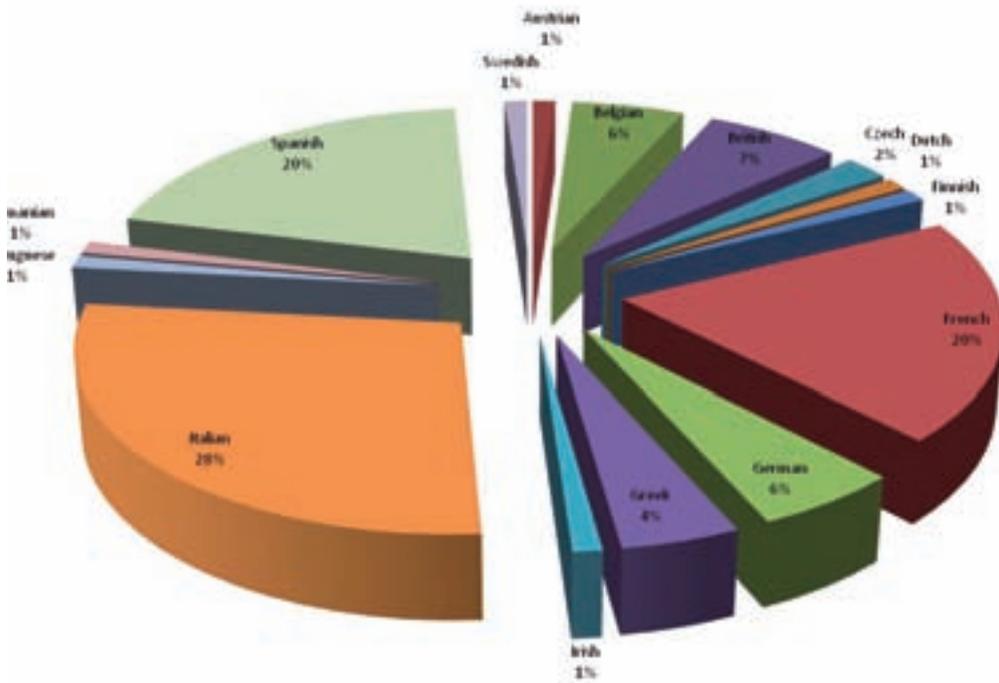
CONTRACT AGENTS PER GRADE

Grade	Number
I	2
II	14
III	10
IV	12

NATIONALITY BREAKDOWN – ALL STAFF

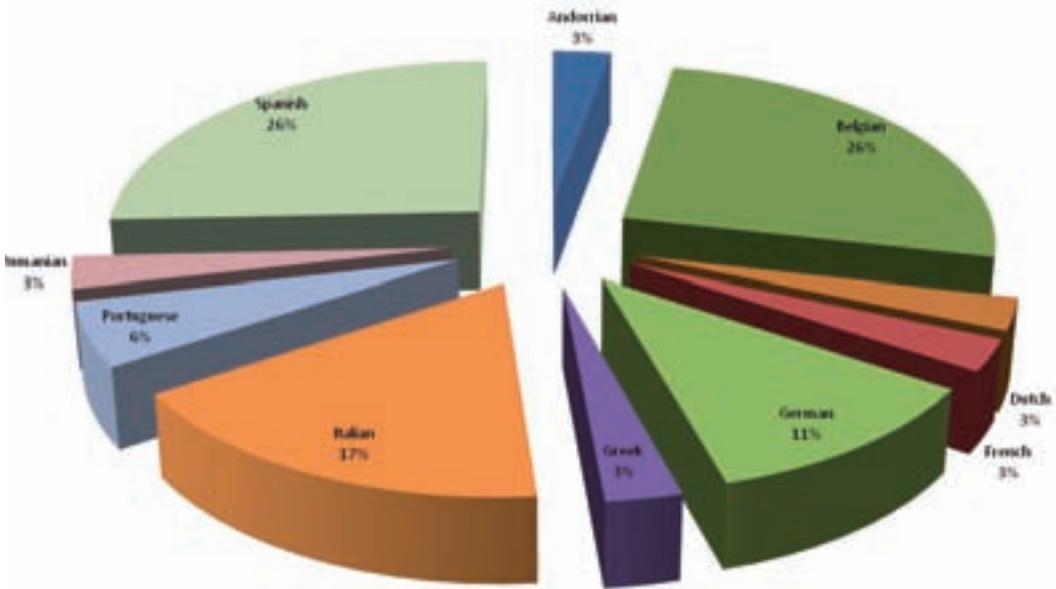


NATIONALITY BREAKDOWN – OFFICIALS AND TEMPORARY AGENTS



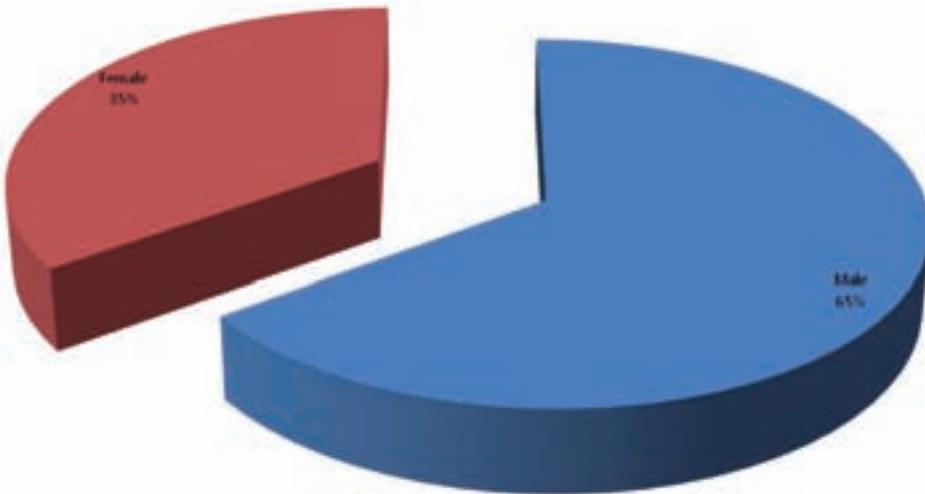
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NATIONALITY BREAKDOWN – CONTRACT AGENTS



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BREAKDOWN ACCORDING TO GENDER OF ALL STAFF



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## **Annex VII**

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# **Declaration of Assurance by the Director**

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I, the undersigned, Didier Gambier, Director of the European Joint Undertaking for ITER and the Development of Fusion Energy (Fusion for Energy) in my capacity as authorising officer;

Declare that the information contained in this Annual Activity Report 2008 gives a true and fair view;\*

State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles

of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions;

This reasonable assurance is based on my own judgement and on the information at my disposal;

Confirm that I am not aware of anything not reported here which could harm the interests of the Agency and the institutions in general.

**Dr. Didier Gambier**  
Director of Fusion for Energy

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## **Annex VIII**

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# **Analysis and Assessment of the 2007/2008 Annual Activity Report by the Governing Board**

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# Approval of the Annual Activity Report of the Authorising Officer of Fusion for Energy for the period 2007-2008

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## Adoption of an analysis and assessment here of by the Governing Board

The Governing Board,

Having regard to the Statutes annexed to the Council Decision (Euratom) No 198/2007 of 27th March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy (hereinafter “Fusion for Energy”) and conferring advantages upon it<sup>1</sup> (hereinafter “the Statutes”) and in particular Article 14 thereof,

Having regard to the Financial Regulation of Fusion for Energy<sup>2</sup> adopted by the Governing Board on 22nd October 2007 last amended on the 18th December 2007<sup>3</sup> (hereinafter “the Financial Regulation”) and in particular Article 43 thereof;

Having regard to the 2008 Work Programme of Fusion for Energy adopted by the Governing Board on 18th December 2007<sup>4</sup> and last amended on 31st October 2008<sup>5</sup>,

Having regard to the Annual Activity Report for the period 19 April 2007 – 31 December 2008 of the Authorising Officer of Fusion for Energy and the Declaration of Assurance for the period 18 March 2008 to 31 December 2008 signed by the Director,

Has adopted this decision:

### Article 1

The Annual Activity Report 2007-2008 of Fusion for Energy is hereby approved.

### Article 2

The analysis and assessment of the report annexed hereto is adopted. It shall be annexed to the Annual Activity Report and sent to the Council, the European Parliament and the Court of Auditors.

### Article 3

This Decision shall have immediate effect.

*Done at Lisbon, 14th September 2009*

*For the Governing Board*



**Carlos Varandas**

*Chair of the Governing Board*

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1 O.J. L 90 , 30.03.2007, p. 58.  
2 F4E(07)-GB03-11 Adopted 22/10/2007  
3 F4E(07)-GB04-06 Adopted 18/12/2007  
4 F4E(07)-GB04-12 Adopted 18/12/2007  
5 F4E(08)-GB07-05 Adopted 31/10/2008



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# Analysis and Assessment of the Annual Activity Report of Fusion for Energy for the period 2007-2008

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The Governing Board:

- (1) Welcomes the results presented in the first Annual Activity Report of the Authorising Officer and the strong commitment and contribution of Fusion for Energy (F4E) and its staff to beginning efficiently its operations.
- (2) Congratulates the management and staff of F4E for the hard work performed between its establishment in April 2007 and until the end of 2008 and, in particular, for its achievements in:
  - a) Establishing the required operation, financial, legal framework and infrastructure to allow F4E to become operational;
  - b) Achieving financial independence from the European Commission on 18<sup>th</sup> March 2008 and becoming operational before the end of the year;
  - c) Supervising the ITER Site Preparation activities, in particular the preparation of the main platform for excavations and construction;
  - d) Carrying out an assessment of the costs of the EU in kind contributions to ITER which was endorsed by the Governing Board;
  - e) Taking over the technical supervision of the ongoing EFDA technology contracts and tasks related to the activities of F4E, where progress in a number of important technical areas has been achieved;
  - f) Qualifying European industries for the manufacture of the divertor vertical target and first wall panels;
  - g) Successfully completing the JT-60SA re-baselining exercise and other progress made on Broader Approach activities.
- (3) Notes that although there were extraordinary efforts by F4E staff in the period of 2007-8 in setting up the organisation, ensuring continuity with EFDA activities and preparing for ITER procurements, at the end of 2008 the Work Programme 2008 has only been much less implemented than planned;

- 
- (4) Appreciates that the delays in the implementation of the Work Programme are mostly attributed to the fact that F4E was not fully operational until the end of 2008 and that there were also delays in the preparation of Procurement Arrangements by ITER;
  - (5) Welcomes the launch of the first few grants and procurements and anticipates a strong ramp-up in this activity during 2009 which will be necessary to ensure that F4E can deliver upon the obligations of Euratom;
  - (6) Notes the level of budget execution (over 97%) of the overall budget in commitment appropriations which was achieved, inter alia, through the use of global commitments which are still to be individually committed in 2009;
  - (7) Commends the rapid recruitment of staff during 2008 by F4E noting that there are certain areas (e.g. the Contracts and Procurement Department) that remained understaffed and had an adverse effect on the implementation of the Work Programme 2008;
  - (8) Acknowledges the progress made by F4E in the areas of Quality Assurance, Information Technologies, Logistics and Infrastructure as well as Information and Communication;
  - (9) Asks the Director to provide a more explicit explanation of the implementation of the Work Programme (s), internal control, risk analysis and ITER credit allocation in future Annual Activity Reports. The explanation shall include detailed evaluation of the results with respect to the objectives and the timetable set and of the risks associated with the activities carried out (as required in Article 14 of the F4E Statutes);
  - (10) Notes the importance that F4E develops and implements indicators to measure and report on the implementation of the Work Programme including an Earned Value Management system.



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## **Fusion for Energy**

The European Joint Undertaking for ITER and  
the Development of Fusion Energy

C/ Josep Pla, nº 2 · Torres Diagonal Litoral

Edificio B3 · 08019 Barcelona · Spain

Telephone: +34 933 201 800

Fax: +34 933 201 851

E-mail: [info@f4e.europa.eu](mailto:info@f4e.europa.eu)

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

