



**FUSION  
FOR  
ENERGY**

BRINGING  
THE **POWER**  
OF THE **SUN**  
TO **EARTH**

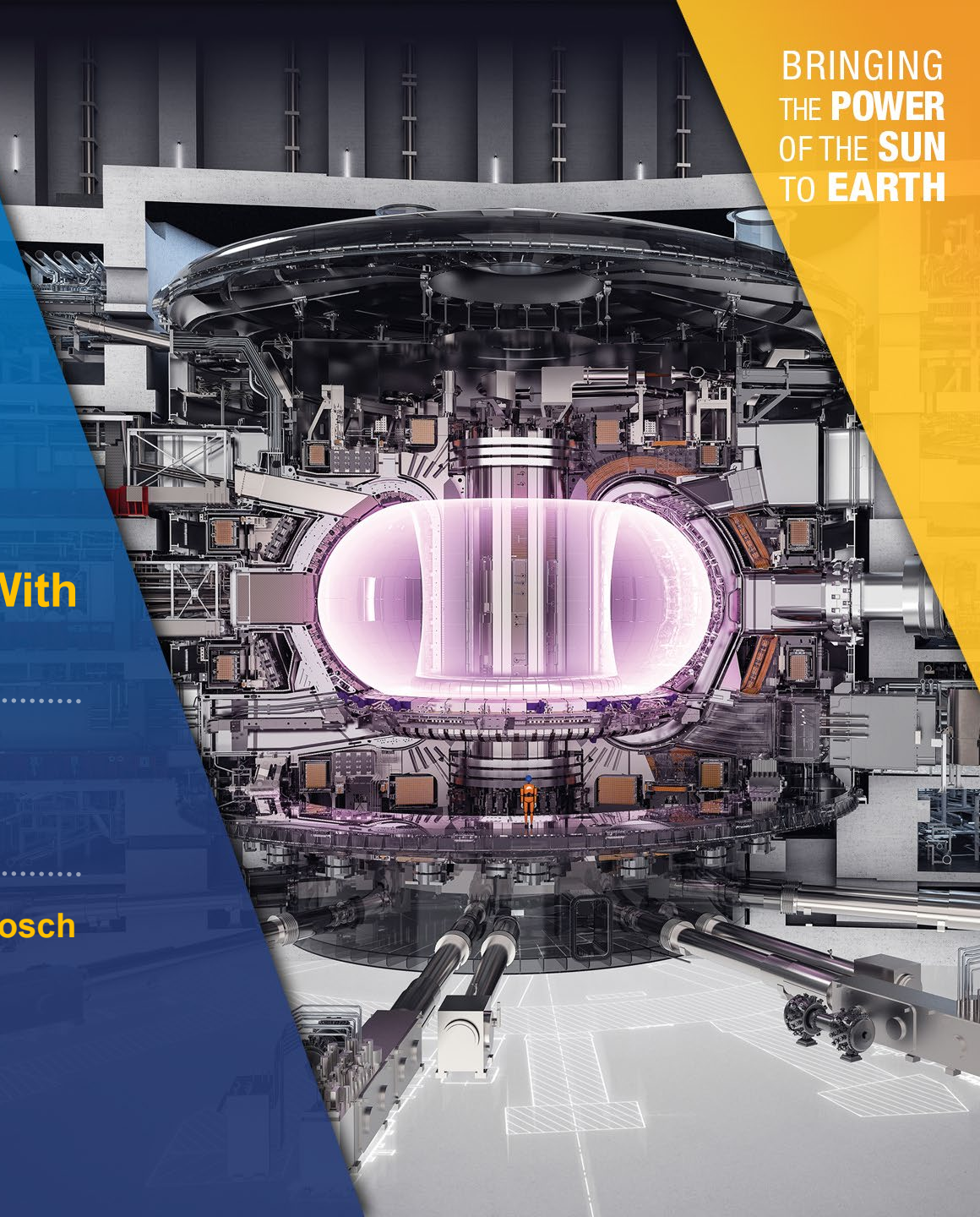
**ITER- F4E Forthcoming  
Business Opportunities With  
Special Materials (Focus)**

---

**Mehdi DAVAL – F4E**

---

**19<sup>th</sup> November 2023 'S-Hertogenbosch**



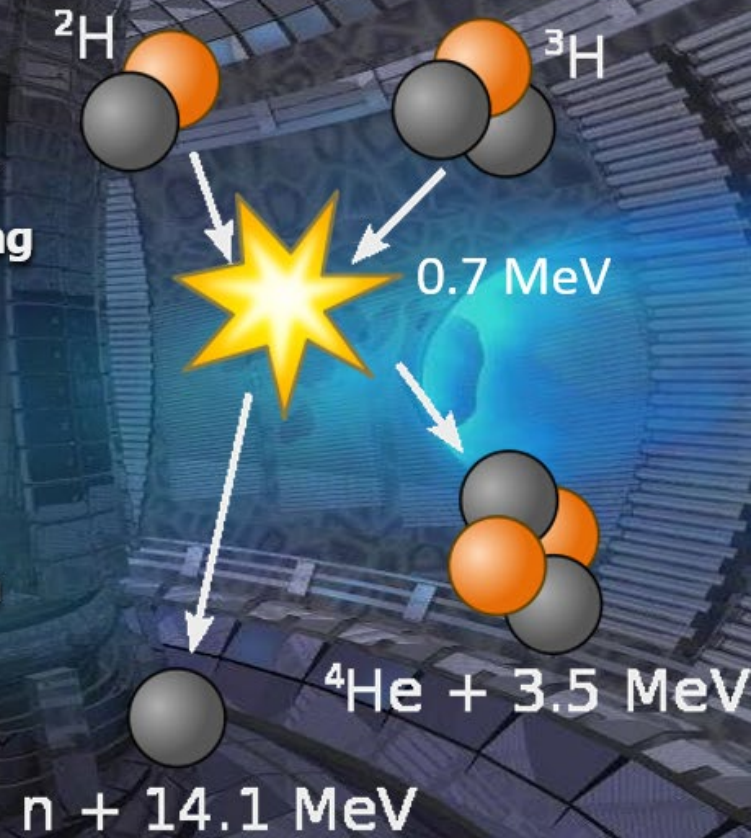
- **ITER at a glance**
- How to access ITER opportunities (IO and F4E)
- Upcoming ITER opportunities (F4E)



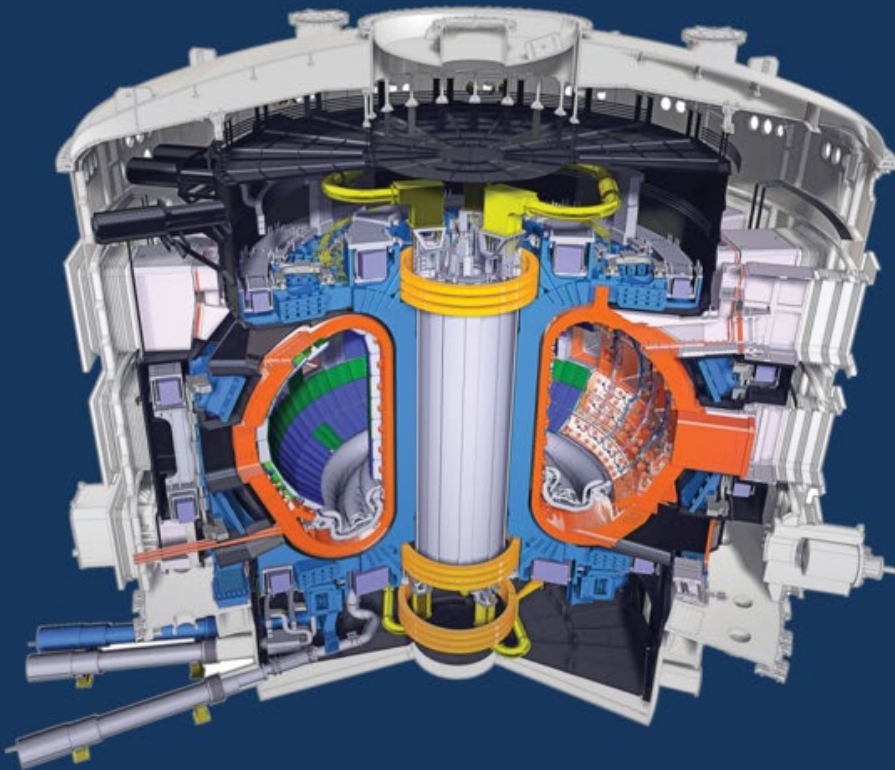
## Fusion on Earth

- A plasma of Deuterium + Tritium (hydrogen isotopes) is heated to more than 150 million °C.
- The hot plasma is shaped and confined by strong magnetic fields.
- Helium nuclei sustain burning plasma.
- Neutrons transfer their energy to the Blanket.
- In a fusion power plant, conventional steam generator, turbine and alternator will transform the heat into electricity.

**1 gram of fusion fuels = 8 tons of oil**



## The ITER Tokamak



**Vacuum Vessel: ~ 8 000 t.**  
**TF Coils: ~ 18 x 360 t.**  
**Central solenoid: ~ 1 000 t.**  
**Etc.**  
**Total ~ 23 000 t.**

**$R=6.2$  m,  $a=2.0$  m,  
 $I_p=15$  MA,  $B_T=5.3$  T,  
23,000 tonnes**



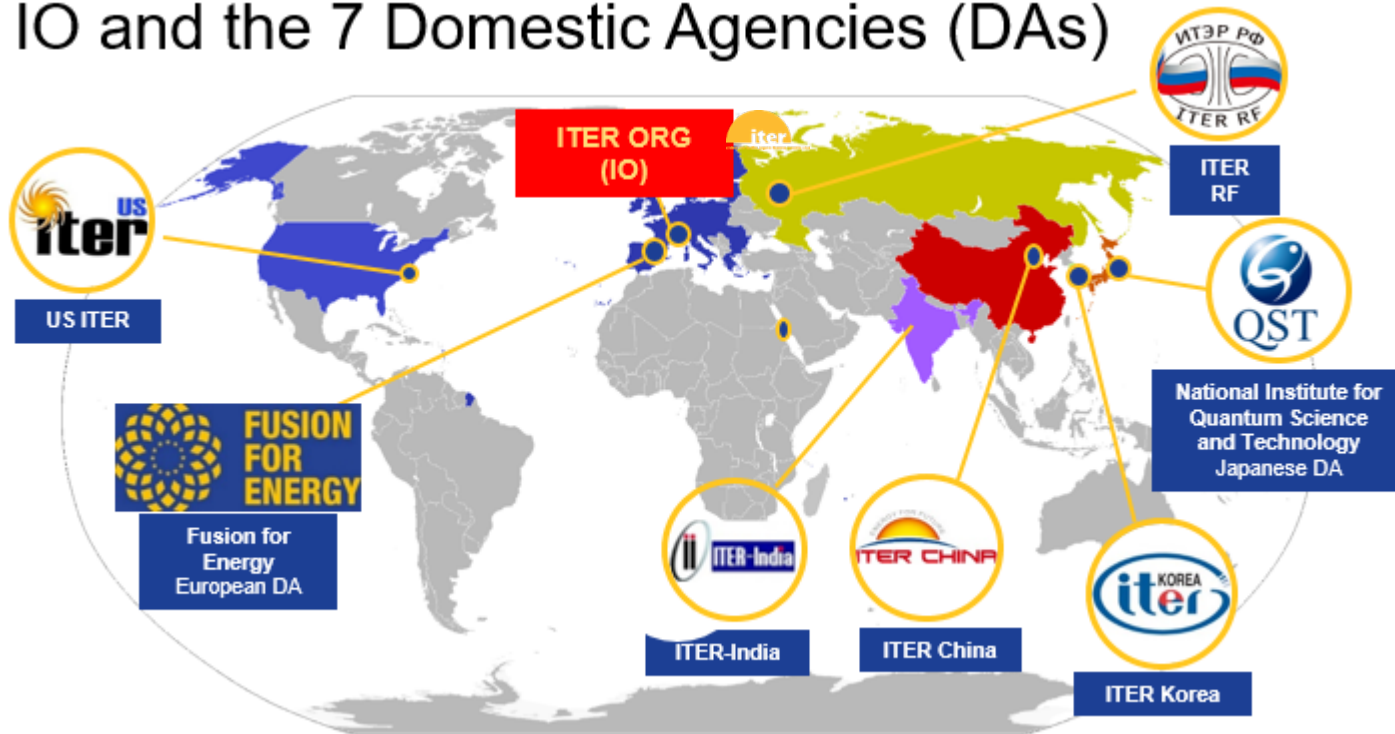
**3,5 times the weight of  
the Eiffel Tower!**

High Vacuum + Nuclear + Cryogenics = (Very) High precision

- ITER at a glance
- **How to access ITER opportunities (IO and F4E)**
- Upcoming ITER opportunities (F4E)



## IO and the 7 Domestic Agencies (DAs)



## ITER ORGANISATION (IO)

### International Public Procurement Rules

Competition, fair treatment, transparency  
Ultimate authority with ITER Council

Geographical scope: **all ITER parties**

Threshold for publication: **100 k€ (services)**

Publication: website and through DAs  
<http://www.iter.org/proc/overview>

Types of contract: commercial procurement, ITER Project Associates, expertise.

Contact: [ITER-Procurement@iter.org](mailto:ITER-Procurement@iter.org)

Tendering: Mandatory registration on IPROC  
[www.iter.org/proc/overview](http://www.iter.org/proc/overview)

Procurement procedures: open call, restricted call, negotiation, competitive dialogue, etc.

Support to locate staff and facilities near ITER site is provided through **Agence ITER France** and **Welcome Around ITER** partnership <http://welcome-around-iter.com>

## FUSION FOR ENERGY (F4E)

### EU General Financial Regulation

(based on Public Procurement Directive 2014/24/EU)  
Wide competition, fair treatment, transparency, proportionality, non-discrimination  
Ultimate authority with European Parliament

Geographical scope: **EU (sometimes Worldwide)**

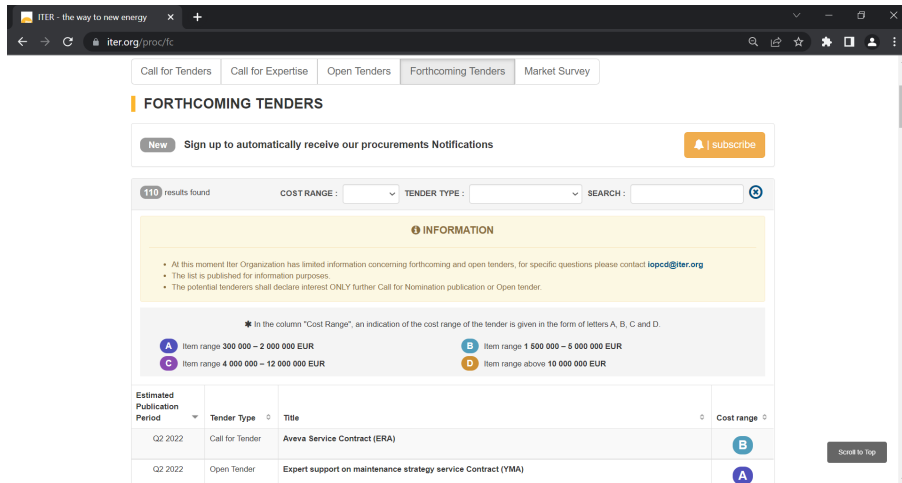
Threshold for publication: **144 k€ (services)**

Publication: website and TED  
<https://industryportal.f4e.europa.eu>

Types of contract: commercial procurement, research grants, innovation partnerships, framework partnerships, expertise.

Contact: [mehdi.daval@f4e.europa.eu](mailto:mehdi.daval@f4e.europa.eu)

Tendering: Mandatory upload of tenders on EU Supply  
<https://eu.eu-supply.com/login.asp?B=>



Call for Tenders | Call for Expertise | Open Tenders | **Forthcoming Tenders** | Market Survey

## FORTHCOMING TENDERS

**New** Sign up to automatically receive our procurements Notifications [subscribe](#)

110 results found COST RANGE: TENDER TYPE: SEARCH:

**INFORMATION**

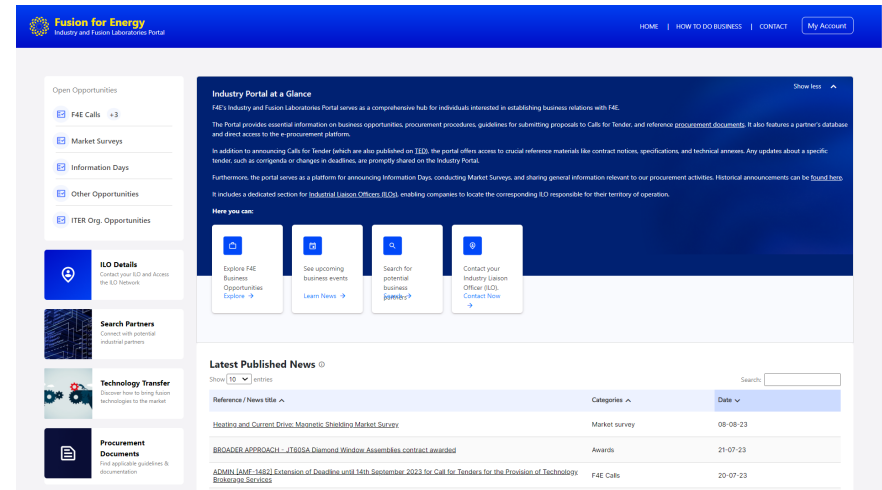
- At this moment ITER Organization has limited information concerning forthcoming and open tenders, for specific questions please contact [topcd@iter.org](mailto:topcd@iter.org)
- The list is published for information purposes.
- The potential tenderers shall declare interest ONLY further Call for Nomination publication or Open tender.

\* In the column "Cost Range", an indication of the cost range of the tender is given in the form of letters A, B, C and D.

|          |                                       |          |                                      |
|----------|---------------------------------------|----------|--------------------------------------|
| <b>A</b> | Item range 300 000 – 2 000 000 EUR    | <b>B</b> | Item range 1 500 000 – 5 000 000 EUR |
| <b>C</b> | Item range 4 000 000 – 12 000 000 EUR | <b>D</b> | Item range above 10 000 000 EUR      |

| Estimated Publication Period | Tender Type     | Title   | Cost range |
|------------------------------|-----------------|---|------------|
| Q2 2022                      | Call for Tender | Aveva Service Contract (ERA)                                  | <b>B</b>   |
| Q2 2022                      | Open Tender     | Expert support on maintenance strategy service Contract (YMA) | <b>A</b>   |

<https://www.iter.org/proc/fc>



Fusion for Energy Industry and Fusion Laboratories Portal

HOME | HOW TO DO BUSINESS | CONTACT | My Account

Open Opportunities

- F4E Calls +3
- Market Surveys
- Information Days
- Other Opportunities
- ITER Org. Opportunities

**Industry Portal at a Glance**

F4E's Industry and Fusion Laboratories Portal serves as a comprehensive hub for individuals interested in establishing business relations with F4E. The Portal provides essential information on business opportunities, procurement procedures, guidelines for submitting proposals to Calls for Tender, and reference procurement documents. It also features a partner's database and direct access to the e-procurement platform.

In addition to announcing Calls for Tender (which are also published on ITER), the portal offers access to crucial reference materials like contract notices, specifications, and technical annexes. Any updates about a specific tender, such as complements or changes in conditions, are promptly shared on the Industry Portal.

Furthermore, the portal serves as a platform for announcing Information Days, conducting Market Surveys, and sharing general information relevant to our procurement activities. Historical announcements can be found [here](#).

It includes a dedicated section for Industrial Liaison Offices (ILOs), enabling companies to locate the corresponding ILO responsible for their territory of operation.

**Here you can:**

- Explore F4E Business Opportunities [Explore](#)
- See upcoming business events [Learn News](#)
- Search for potential business partners [partner](#)
- Contact your Industry Liaison Office (ILO) [Contact Now](#)

**Latest Published News**

Show 10 entries

| Reference / News title  | Categories    | Date     |
|---|---------------|----------|
| <a href="#">Health and Current Drive Magnetron Shaker Market Survey</a>   | Market survey | 08-09-23 |
| <a href="#">BROADER APPROACH – JT60SA Diamond Window Assemblies contract awarded</a>  | Awards        | 21-07-23 |
| <a href="#">ADMIN LIAISON – 14921 Extension of Deadline until 14th September 2023 for Call for Tenders for the Provision of Technology Resources Services</a> | F4E Calls     | 20-07-23 |

<https://industryportal.f4e.europa.eu/>

\* In the column "Cost Range", an indication of the cost range of the tender is given in the form of letters A, B, C and D.

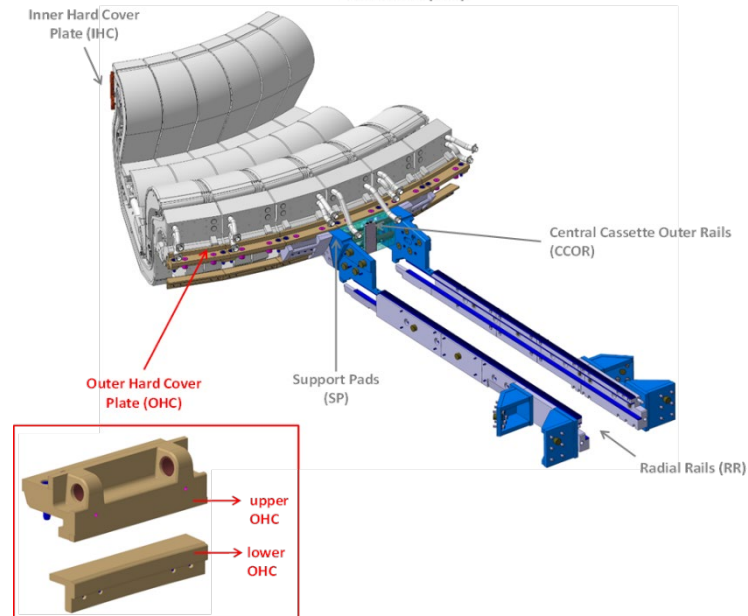
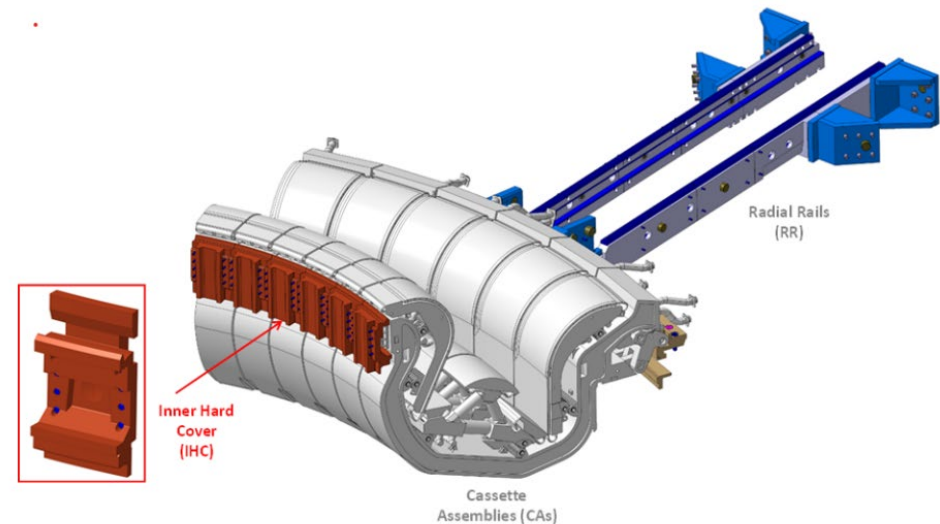
- A** Item range 300 000 – 2 000 000 EUR
- C** Item range 4 000 000 – 12 000 000 EUR

- B** Item range 1 500 000 – 5 000 000 EUR
- D** Item range above 10 000 000 EUR



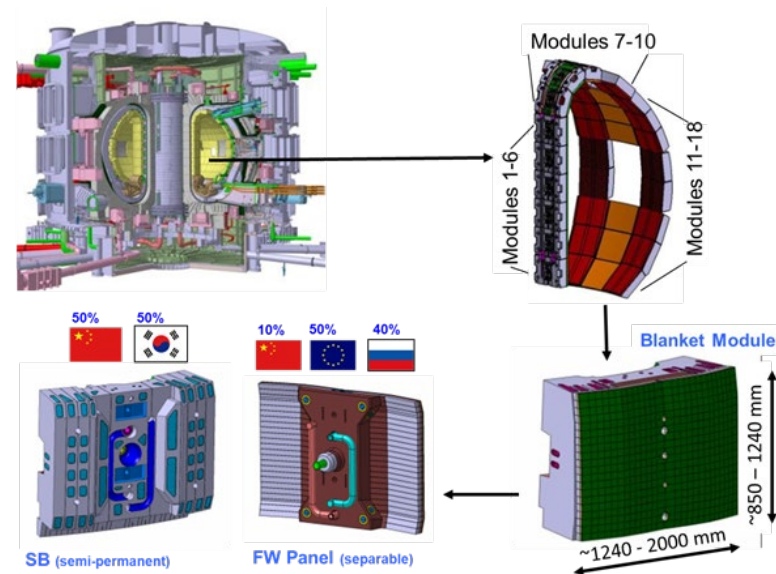
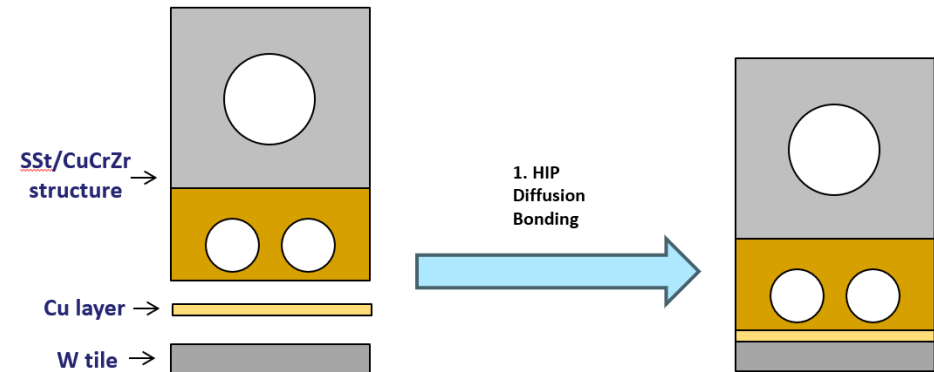
- ITER at a glance
- How to access ITER opportunities (IO and F4E)
- **Upcoming ITER opportunities (F4E)**

- 316 LN Stainless Steel Divertor rails. Cat C.
- Market Survey soon.
- CFT in Q3 2024.
- Contract signature: Q2-3 2025.
- 316 LN Stainless Steel High Precision machining and assembly.



## Tungsten Tiles. Cat D.

- W tiles machining, bonding, and assembly.
- About 600 m<sup>2</sup> => 200-500 k pcs.
- Market Survey in Q3 2023.
- CFT in Q3 2024.
- Contract signature: Q3 2025.





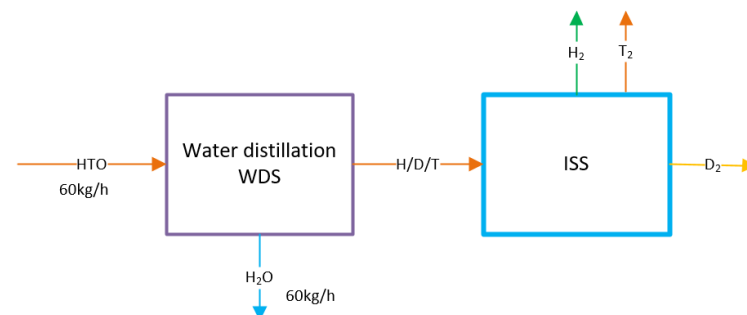
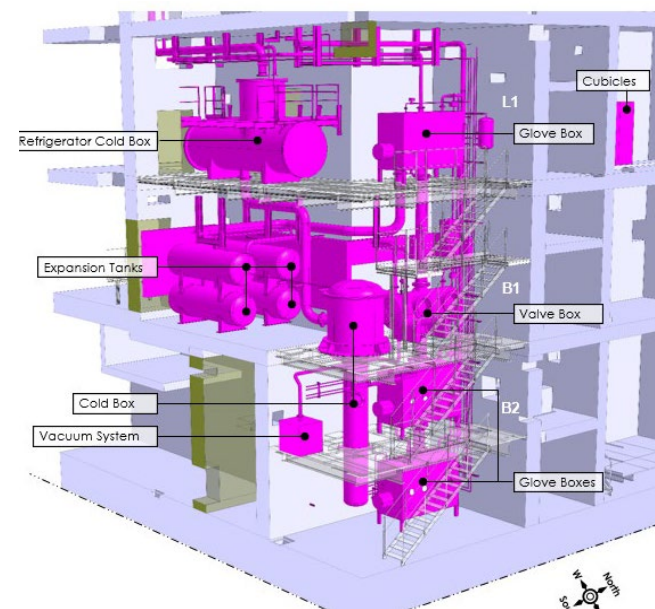
## TRITIUM=> Stainless Steel components

- **Isotope Separation System (cat D)**

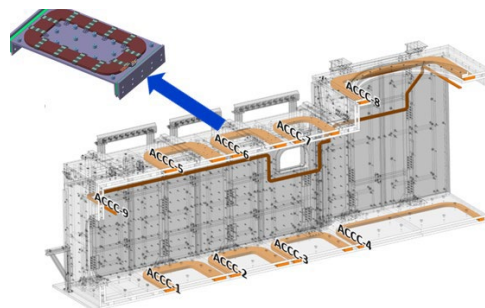
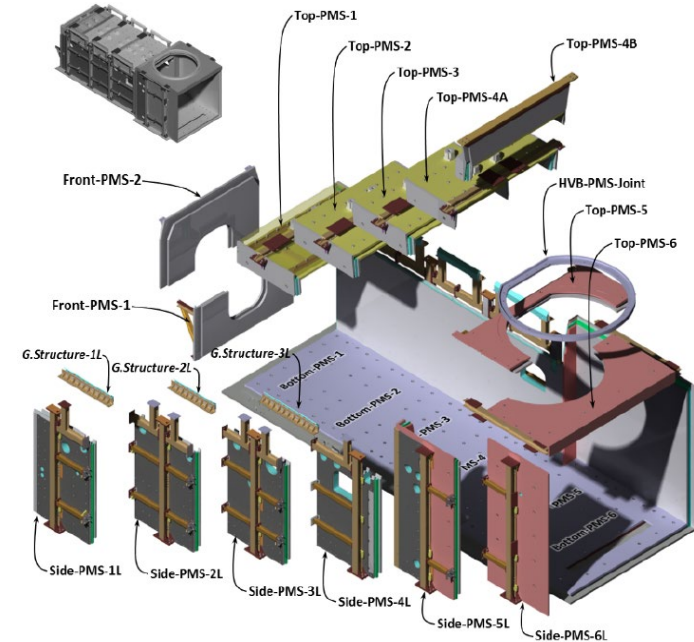
- Cryogenic distillation of >650 thermal shield panels
- Tight tolerances
- Market Survey imminent.

- **Water Detritiation System (cat D)**

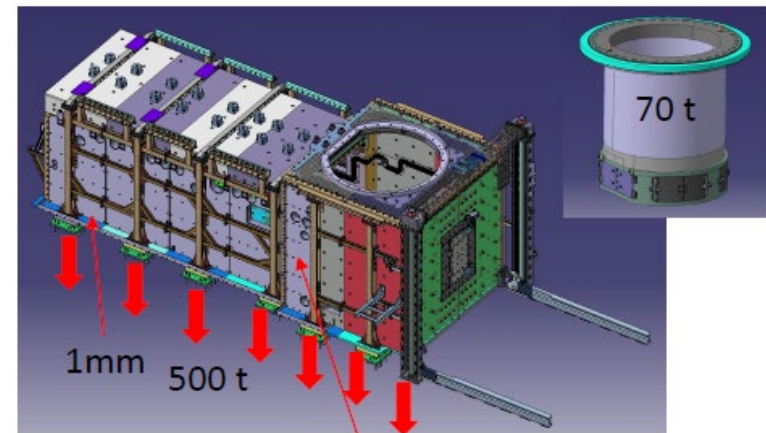
- Market Survey ongoing.



- **Neutral Beam Magnetic Shielding (NBMS)**  
Cat. **D.** (2 units)
    - Active Compensation Correction Coils (ACCC): 2 x 8 units.
    - Passive Shielding with plates (see next slide)
    - Skills: Machining and precise Assembly (1mm gaps/0.1 mm tolerances) of heavy components (500t) nuclear classified (RCC-MR) + coil design and manufacturing).
    - Market Survey ongoing
- => Target CFT: Q3 2024. Market Survey online.

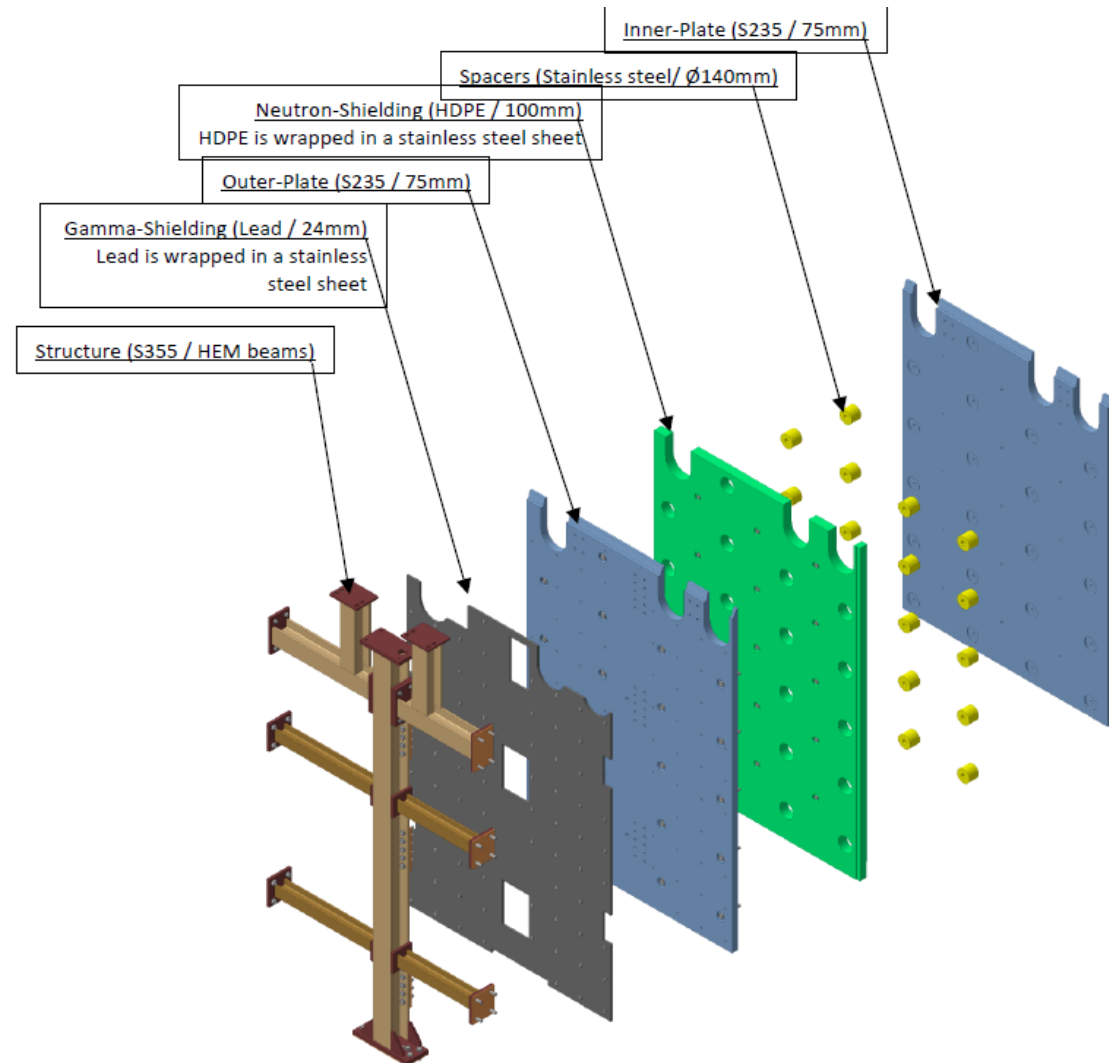


Active  
Compensation  
Correction Coils  
(ACCC)



- **NBMS- FOCUS on Materials**

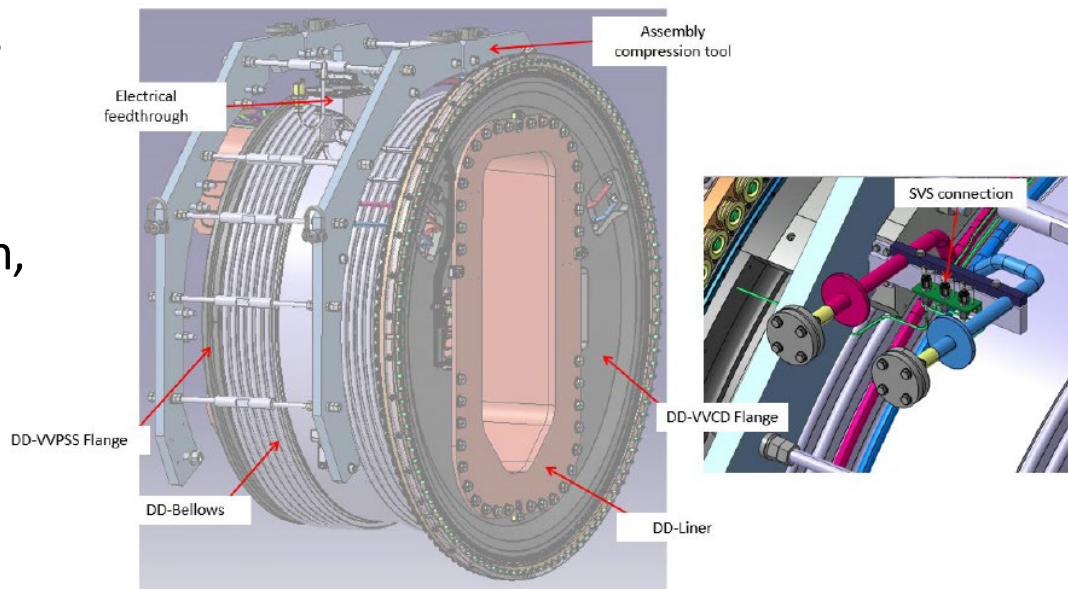
- **Steel S235** plates (EN 10025-2) (2 x 400 tons): 1 or 2 additional sample(s) still welcome nowadays for characterization.
- **LEAD** plates
- **HDPE** plates
- **Inconel** or special **316L Stainless Steel** BOLTS (High content in molybdenum)





# ITER Heating and Current Drive

- CuCrZr of the Drift Duct.  
Cat. C. (2 units)
- Skills: Nuclear component manufacturing, High Vacuum, Stainless Steel welding, Brazing of S.S pipes over the CuCrZr plates, NDTs, EBW of CuCrZr.
- S. Steel SIC-1 Bellows and flanges.



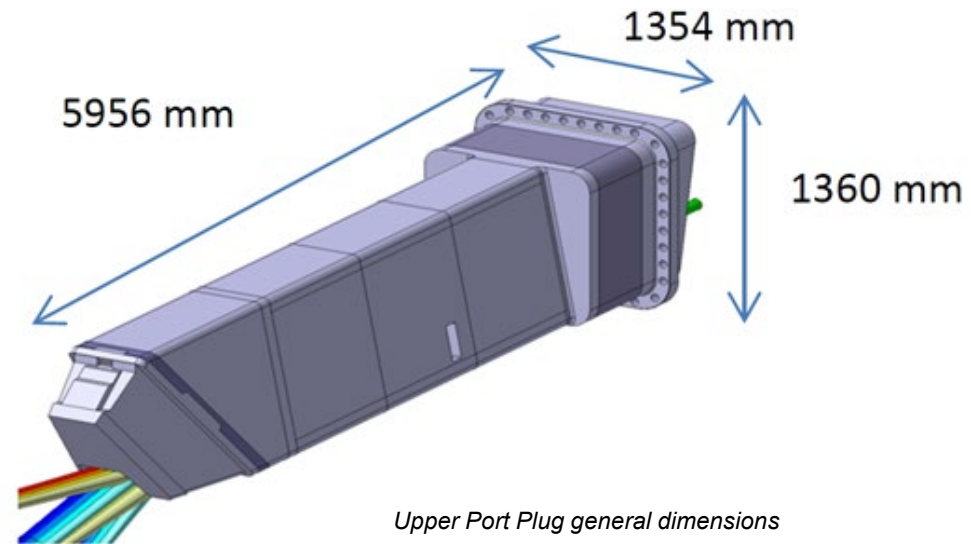
L1.4 m x W3.2 x H3 m -Weight ~ 5.7 t



View of the flanges

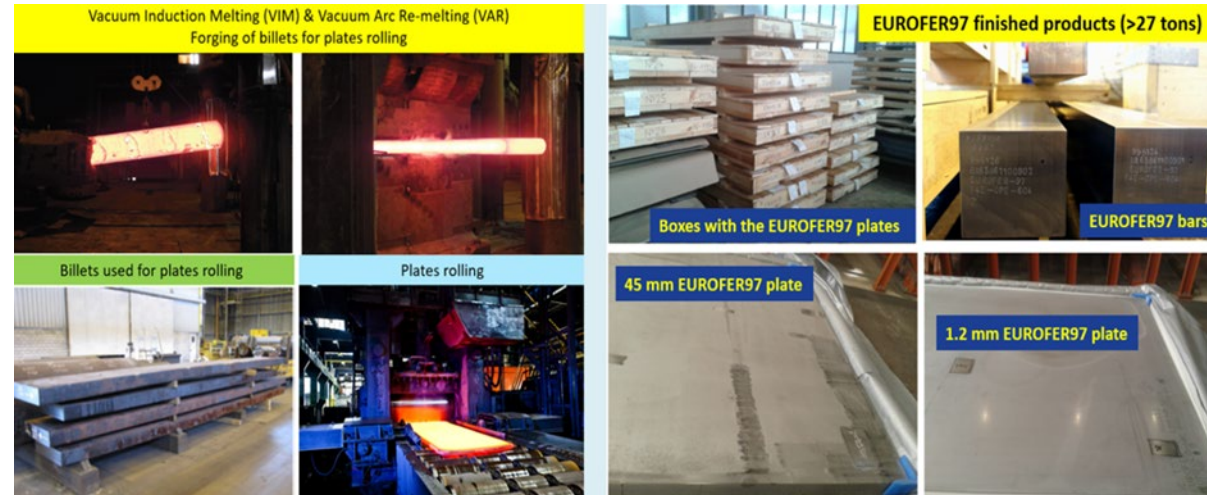
=> Target CFT: Q2-Q3 2024.

- 6 Diag **PORTS Manufacturing and Assembly**.  
Cat. **D**. (OFC-1183)
- Target => CFT: Q1 2024.
- **316L(N)-IG) Austenitic stainless steel**  
“X2CrNiMo17-12-2 controlled nitrogen”  
with a concentration of Cobalt, Niobium  
and Tantalum not exceeding 0.05%, 0.01%  
and 0.01% weight respectively
- **Polybore** HE 430, as neutron shielding  
blankets for ISS (TBC).
- **B<sub>4</sub>C pellets**: sintered B<sub>4</sub>C pellets used to  
fill the DSMs B<sub>4</sub>C Shielding Chambers, as  
neutron shielding (about 15 tons).
- **Commercial Off-The-Shelf (COTS) items**:  
bogie wheels, fasteners, flexible metal  
seals, piping fittings, connectors, etc.
- **Glass To Metal Process** with 99% purity N<sub>2</sub>  
atmosphere.



- **EUROFER Steel Supply (OPE-1502)**

- EUROFER97-5 (X10CrWVTa9-1) is a Reduced Activation Ferritic Martensitic steel.



- **About 30 tons needed:** 87 rolled plates, 3 billets/square bars.
- **plates of various thicknesses** with max. thickness up to 50-55mm (plate thickness according to standard EN 10029, class C), plate width: 1000mm  $\pm$  20.0mm, plate length: 2300mm  $\pm$  200.0mm; detailed list of plates' products will be specified in the Call for Tender
- **billets/bars** with a squared cross-section of 100-150mm with tolerance of  $\pm$ 3%, bar length: 4000mm  $\pm$  50.0mm; detailed list of bars' products will be specified in the Call for Tender CFT imminente.





**FUSION  
FOR  
ENERGY**

BRINGING  
THE **POWER**  
OF THE **SUN**  
TO **EARTH**

See you during our next CFTs!

.....

Follow us on:



[www.f4e.europa.eu](http://www.f4e.europa.eu)

X (ex-Twitter fusionforenergy)



[www.youtube.com/fusionforenergy](http://www.youtube.com/fusionforenergy)



[www.linkedin.com/company/fusion-for-energy](http://www.linkedin.com/company/fusion-for-energy)



[www.flickr.com/photos/fusionforenergy](http://www.flickr.com/photos/fusionforenergy)

