



## **TECHNICAL NOTE**

### **Introduction**

Fusion for Energy and its industrial partners delivered 10 out of 19 TF coils and 5 out of 6 PF coils as part of its in-kind contribution to ITER. Those coils, amongst the largest ever built, are now on the ITER site, either under test, being assembled in the machine, or in storage.



There is now a need to support on site activities and possibly manufacture model coils to preserve and develop associated skills and expertise in Europe.

F4E is exploring the opportunity to launch a specific framework contract to cover those needs. The information provided by interested parties in the framework of this survey will be used to decide whether to launch the call for tender and, if launched, the extent of its scope.

### **Potential scope**

The full extent of activities that may be undertaken includes two main categories: on-site support and, as an option, manufacturing of model coils. The exact details cannot be provided at this time, and the intention is to launch a framework contract which will include a technical specification providing more details. Exact tasks would then be detailed in each specific contract placed under the framework.

The list below provides an overview of the range of services that may be required.



**On site support activities**

Support to preventative maintenance, preservation and assembly

- Visual inspections
- Inspection, filling and flushing of hydraulic circuits
- Electrical continuity testing
- Low and high voltage insulation testing
- Engineering analysis and surveillance for handling and assembly operations

Support during commissioning and testing

- Review of the test procedures
- Assistance and surveillance during testing and commissioning
- Engineering analysis of the results and findings

Support for corrective actions and repairs

- Assistance for root cause analysis and definition of corrective actions
- Development of repair procedures
- Assistance, surveillance or execution of repair activities

**Optional: superconducting coil manufacturing (up to 1.5m bore and 500 MJ stored energy)**

Engineering and procurement

- Specialized analysis services
- Review of designs, participation to phase gate meetings (eg design reviews)
- Development of manufacturing designs
- Design, procurement and commissioning of specialised tooling
- Procurement of superconducting materials (tape, wire or conductors, LTS or HTS), raw materials and finished items for coil manufacturing activities.

Coil manufacturing and testing

- Manufacturing and welding of structures, formers, piping and casings
- Winding
- Heat treatment
- Joining and terminating
- Impregnation
- Integration and extraction of heaters, instrumentation and other diagnostics and auxiliary systems
- Magnet assembly
- Mechanical, magnetic, electrical and thermal testing



## **Market survey**

With this Market Survey, F4E would like to identify capable EU companies/entities with experience related to the scope that is the subject of this Technical Note.

Extensive experience manufacturing large superconducting magnets (for example ITER magnets) will be particularly valued. Consortia, including public-private ones, may be formed to cover the range of skills and experience described in the *Potential scope* section.

Interested companies/entities are invited to answer the questions and submit the requested information as instructed on the F4E Industry Portal. Information submitted will be accessible to F4E and ITER parties (IO and the Japanese DA in particular) only and will not be disseminated to others (except with prior agreement from the respondent).

Based on the received responses, F4E may contact and visit interested companies/entities to further explore the market and technical conditions of this potential call for tender.

[LINK to the Market Survey](#)