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### **F4E and Assystem to deliver high tech remote handling system for ITER divertor**

ITER's high tech remote handling system has entered its most decisive phase so far thanks to a multimillion deal signed between F4E, the organisation managing Europe's contribution to ITER- the international fusion energy project, and Assystem, a leader in innovation and engineering consultancy. All activities ranging from design, manufacturing, delivery, on-site integration, commissioning and final acceptance tests for ITER's divertor will be covered through this contract as it unfolds progressively. Its value is estimated in the range of 40 million EUR and it will involve some of the pioneers from the area of remote handling in Europe such as the UK's Culham Centre of Fusion Energy (CCFE) and Soil Machine Dynamics Ltd (SMD) together with Finland's Technical Research Centre (VTT) and the Tampere University of Technology (TUT). Through this contract, two multifunctional movers and two toroidal movers will be manufactured.

F4E Director, Professor Henrik Bindslev, explained that "this contract is a turning point for ITER's remote handling system because it will lead us to production mode. We have managed to bring together industry, fusion laboratories, SMEs and research centres under one contract that will unleash their potential and help them advance further in their domain". Commenting on the award, Peter Highton, Assystem's Energy and Nuclear UK Managing Director who has led the team effort, said: "We are very pleased to have been selected for this prestigious project. This contract is recognition that our capabilities and reputation for delivering high standards of innovative engineering, quality and safety are valued by our customers. We look forward to working with F4E and our partners to deliver these high tech components".

#### **What is remote handling?**

Remote handling helps us to perform manually a task without being physically present at the location it is carried out. It is widely used in space exploration missions, underwater or ground operations. The system brings together high tech robotics, advanced technological tools, powerful computers and virtual reality platforms. A high level of intuition and intelligence are inbuilt within the system which is handled by a human operator with extreme dexterity because of the degree of millimetric precision that is required.

#### **Why ITER needs a remote handling system for the divertor?**

When the ITER machine is operational some of the components in the vessel will be exposed to radioactivity. Therefore, any maintenance, inspection and repair will be conducted through remote handling. The ITER divertor, located in the lower part of the ITER machine, will consist of 54 divertor cassettes measuring 3,4m x 1,2 m x 0,6m and weighing 10 tonnes each. It is in this part of the machine that the superhot plasma temperature will be most felt. The divertor cassettes will form the machine's massive ashtray where the hot ashes and impurities will fall in. It is foreseen that these components will be replaced three times during the lifetime of the ITER machine.

### **How will the ITER divertor remote handling work?**

The 54 divertor cassettes will be installed by movers through three entry points, known as ports. If they need to be removed, they will be detached, unlocked from the ITER vessel, placed into a container and get transported.

### **Background information:**

MEMO: F4E and Assystem to deliver high tech remote handling system for ITER's divertor

View the film on remote handling: <http://www.youtube.com/>

### **Fusion for Energy**

Fusion for Energy (F4E) is the European Union's organisation for Europe's contribution to ITER.

One of the main tasks of F4E is to work together with European industry, SMEs and research organisations to develop and provide a wide range of high technology components together with engineering, maintenance and support services for the ITER project.

F4E supports fusion R&D initiatives through the Broader Approach Agreement signed with Japan and prepares for the construction of demonstration fusion reactors (DEMO).

F4E was created by a decision of the Council of the European Union as an independent legal entity and was established in April 2007 for a period of 35 years.

Its offices are in Barcelona, Spain.

<http://www.fusionforenergy.europa.eu>

<http://www.youtube.com/user/fusionforenergy>

<http://twitter.com/fusionforenergy>

<http://www.flickr.com/photos/fusionforenergy>

### **ITER**

ITER is a first-of-a-kind global collaboration. It will be the world's largest experimental fusion facility and is designed to demonstrate the scientific and technological feasibility of fusion power. It is expected to produce a significant amount of fusion power (500 MW) for about seven minutes.

Fusion is the process which powers the sun and the stars. When light atomic nuclei fuse together to form heavier ones, a large amount of energy is released. Fusion research is aimed at developing a safe, limitless and environmentally responsible energy source.

Europe will contribute almost half of the costs of its construction, while the other six parties to this joint international venture (China, Japan, India, the Republic of Korea, the Russian Federation and the USA), will contribute equally to the rest.

The site of the ITER project is in Cadarache, in the South of France.

<http://www.iter.org/>

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