11 May 2015, Barcelona

F4E awards to AMEC Foster Wheeler one of the largest robotics contracts to date in the field of fusion energy

ITER is the world's biggest international collaboration designed to demonstrate the scientific and technological feasibility of fusion power. The machine will consist of an unprecedented number of high-technology components that will require a vast range of bespoke devices for operation and maintenance. F4E, the European Union's organisation managing Europe's contribution to ITER, has awarded one of the largest robotics contracts to date in the field of fusion energy to Amec Foster Wheeler, a UK innovation leader with a proven track record in energy.

All activities ranging from design, manufacturing, factory testing, delivery, on-site integration, commissioning and final acceptance tests for ITER's Neutral's Beam remote handling system will be covered through this contract as it unfolds progressively. Its value is in the range of 70 million EUR and it is expected to run for seven years. Under the leadership of AMEC Foster Wheeler, a group of laboratories and companies such as CCFE- the Culham Centre for Fusion, the UK's Fusion National Laboratory, Reel SAS of France, Wallischmiller Engineering GmbH of Germany, Hyde Group of UK, Capula of UK, "KU Leuven-MaGyICs" of Belgium, VTT-the Technical Research Centre of Finland, and the Technical University of Tampere will share their expertise in robotics and contribute to the works.

F4E acting Director, Pietro Barabaschi, explained that "thanks to this collaboration, leading innovators will be joining forces to deliver high-end engineering for ITER's maintenance system and will push forward know-how in robotics, a field with many applications". Clive White, President of Amec Foster Wheeler's Clean Energy Business, said: "This contract reinforces our company's strong expertise in remote handling and robotics, and more generally in taking a key role in the design and development of future fusion energy reactors".

What is remote handling?

Remote handling helps us to perform a task without being physically present where it is being carried out. For example, it is widely used in space exploration missions, underwater repairs or challenging maintenance works. The operations require extreme dexterity and milimetric precision. Technical staff will be specifically trained to use the equipment that combines inbuilt intelligence and intuition, together with advanced robotics, tooling and virtual reality platforms.

Why ITER needs a remote handling system for Neutral Beam Cell?

ITER's superhot plasma will reach 150million˚C with the help of powerful injectors and heating systems. The confined space in the machine together with the weight of the tooling and the exposure of some components to radioactivity will require the use of remote handling systems during maintenance. The equipment in the Neutral Beam Cell falls under this category due to the nature of the tasks performed. A Diagnostic Neutral Beam Injector will measure the temperature,

density and other properties of the plasma; two Heating and Current Drive Neutral Beam Injectors will fire high energetic particle beams in the plasma in order to raise its temperature.

How will the ITER Neutral Beam Cell remote handling work?

A sophisticated repair hub will use a 90m monorail that will spread over the Neutral Beam Cell, and will consist of transfer trolleys, beam line transporters and a variety of supporting beams that will operate in perfect coordination with tooling and manipulators. Some of the key tasks performed will include the maintenance work of the Neutral Beam Injectors, with the cutting and welding of myriads of pipes, and the transportation of heavy components coils to the Neutral Beam Cell storage area or to its main entrance for refurbishment and disposal.

Background information:

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F4E clip: AMEC Foster Wheeler explains the benefits of its contribution to ITER: http://bit.ly/1Frvt5c

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 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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