19 July 2013, Barcelona

Manufacturing starts for ITER's massive cranes and high tech cargo lift

Fusion for Energy (F4E), the organisation managing Europe's in-kind contribution to ITER, has signed a contract with the NKMNOELL-REEL consortium formed by NKMNoell Special Cranes GmbH (Germany) and REEL S.A.S. (France) part of Groupe REEL, for the the design, certification, manufacturing, testing, installation and commissioning of the four cranes that will be used to assemble the Tokamak machine and the Tokamak cargo lift which will move the casks containing components of the machine. The budget of the contract is in the range of 31 million EUR and it is expected to run for five years.

The cranes will be located within the Tokamak building and the Assembly Hall building and will operate like a pair of safe hands moving the heavy components between the two areas and positioning them during assembly with extreme precision. The consortium will deliver two 750 tonne cranes that in tandem will lift up to 1,500 tonnes of the ITER components during its assembly stage, two 50 tonne auxiliary cranes and the Tokamak cargo lift. Sophisticated engineering combined with advanced safety lifting and remote handling technologies are some of the elements that describe the nature of the work undertaken by the two companies.

How will the cranes work?

The four electric overhead travelling cranes will be moving between the key buildings of the ITER project: the Assembly Hall and the Tokamak building, which is divided in two areas housing the Tokamak machine and a crane hall above the machine.

The major heavy lifting requirements shall be met by the two 750 tonne cranes. Each of them will be equipped with two trolleys, each carrying a single 375 tonne hoist. In total, the four 375 tonne hoists will provide a maximum lifting capacity of 1500 tonnes, which is the weight of 187 London double-decker buses in total. The cranes shall be capable of working in tandem to provide a fully synchronised lift and precise positioning. Two auxiliary cranes of 50 tonnes capacity each, will be used for other lifting activities working independently of each other.

What components will the cranes carry?

The principal purpose of the Tokamak crane system is to lift and receive heavy components, support the assembly operations, move the cryostat components and transport the assembled vacuum vessel sectors and other major components. When the Tokamak machine becomes operational there will be no further planned use for the cranes. The 750 tonne cranes will remain parked and electrically isolated while the 50 tonne cranes will continue to be used in the Assembly Hall.

How will the Tokamak cargo lift work?

The Tokamak cargo lift shaft will be located in the Tokamak building with connecting doors into the Hot Cell building. The lift will carry the casks that contain components of the machine. The cask is 3,7 metres high by 2,7 metres wide and 8,5 metres long. When empty, its total mass is roughly 60 tonnes. The size of a cask is the size of a London double-decker bus. Automated transfer systems and high tech remote handling systems will be deployed to transfer the casks. The transfer process involves the transfer and return of empty and full casks between various levels of the Tokamak

building and the Hot Cell building by remote control. Therefore, all components involved in the transfer need to be integrated in a seamless manner.

Background information:

MEMO: Manufacturing of ITER's massive cranes and high tech cargo lift starts

View the different stages of the ITER Tokamak cryostat assembly:
http://bit.ly/14zrld5

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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