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British industry amongst winners in €100m EU robotics deal

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Nuvia Limited and Culham Centre for Fusion Energy are amongst the beneficiaries of a multi-million deal to develop sophisticated robotics equipment for ITER, the world's largest experimental fusion facility. Fusion for Energy (F4E), the EU body managing Europe's contribution to ITER, signed the €100m deal to develop high-tech remote handling system which will run for seven years. Fusion research is aimed at developing a safe, limitless and environmentally responsible energy source.

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The high-tech remote handling systems will support the maintenance and repair of the ITER fusion experiment, where space is extremely limited and the exposure of some of the components to radioactivity prohibits any manual intervention inside the machine.

The transfer of components from ITER's vacuum vessel to the Hot Cell building where they will be deposited for maintenance will use approximately 15 huge double-door containers known as casks, some of which will weigh 100 tonnes when transporting the heaviest components.

Resembling a conventional shipping container, these casks will be remotely operated as they move within the different levels and buildings of the facility.

The overall system is known as the ITER Cask and Plug Remote Handling System and is underpinned by a variety of leading technologies which must comply with stringent nuclear safety requirements.

See how the ITER Cask and Plugs Remote Handling System will operate:

F4E Youtube channel (<https://www.youtube.com/user/fusionforenergy>)

ITER 3D remote handling video:

ITER - Remote Handling 1 (<https://www.youtube.com/watch?v=Heco57jMAP0>)

ITER - Remote Handling 2 (<https://www.youtube.com/watch?v=z4JvpqBKM2s>)

The state of the art equipment will form part of ITER fusion facility located in Cadarache, France, and **the first in history to produce 500 MW.**

Fusion for Energy (<http://www.fusionforenergy.europa.eu/>) (F4E), the EU organisation managing Europe's contribution to ITER (<http://www.iter.org/>), signed the deal with a group of companies: Airbus Safran Launchers (France-Germany), Nuvia (UK) and Cegelec CEM (France), members of the VINCI Group. CCFE (UK), Instituto Superior Tecnico (Portugal), AVT Europe NV (Belgium) and Millennium (France) will also deliver remotely operated systems for the transportation and confinement of components located in the ITER machine.

Europe will contribute almost half of the costs of its construction, while the other six parties to this 35-year joint international venture (China, Japan, India, the Republic of Korea, the Russian Federation and the USA), will contribute equally to the rest. The parties represent 50% of the world's population and 80% of the global GDP.

This is the latest success for British industry on the ITER project. Last year F4E awarded a €70m contract to the British multinational consultancy and engineering company Amec Foster Wheeler (https://ec.europa.eu/unitedkingdom/news/uk-innovation-leader-wins-%E2%82%AC70m-eu-robotics-contract-iter-project_en) to develop the neutral beam cell remote handling system on the fusion reactor.

Background

Fusion, the process which powers the sun and the stars, occurs when light atomic nuclei fuse together form heavier ones, releasing a large amount of energy.

ITER will be the first fusion device to produce net energy, ie the energy created during a fusion plasma pulse will exceed the energy required to power the machine's systems. It will also be the first fusion device to maintain fusion for long periods of time and to test the integrated technologies, materials and physics regimes necessary for the commercial production of fusion-based electricity.

Nuvia Limited (<http://www.nuvia.co.uk/>) is an international engineering, project management and services contractor bringing nuclear expertise to a number of highly regulated industries, including nuclear, defence, science and research, oil and gas.

Culham Centre for Fusion Energy (<http://www.ccf.ac.uk/>) (CCFE) is the UK's national laboratory for fusion research based at Culham Science Centre, Oxfordshire. It is owned and operated by the UK Atomic Energy Authority. The CCFE also hosts JET, the world's largest magnetic fusion experiment on behalf of its European partners. The JET facilities are collectively used by European fusion scientists. Around 500 people are employed at the facilities with around a further 350 scientists visiting each year to conduct research.

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