

China gets ready to set pace with nuke fusion test

Having planned to mine tritium fuel on the moon, they now need the technology.

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CHINA'S new generation experimental Tokamak fusion device will conduct its first discharge test in July or August this year. If the experiments prove successful, it would be the world's first experimental nuclear fusion device to come into operation.

Li Jiangang, head of the Institute of Plasma Physics under the Chinese Academy of Sciences, and leader of the project, said the enterprise is a "major move" for China to tap the clean energy from nuclear fusion.

China has provided the project, dubbed the Experimental Advanced Superconducting Tokamak, with an investment of 165 million yuan (US\$20 million).

The EAST's final assembly has been completed. The device is now being subject to vacuumizing, cooling and galvanizing experiments. If the discharge experiment proves successful, it will await state inspection and approval according to routine procedures.

According to Li, the EAST can create plasma with a temperature between 50 to 100 million degrees Celsius and a lifespan of 1,000 consecutive seconds.

"Once successful in the discharge tests, the EAST will be the first full superconducting experimental Tokamak fusion device ever put into operation in the world, and will be unbeatable for at least one decade," Li said.

In the mid 1980s, nations, including the United States and the former Soviet Union, launched an ambitious plan, the International Thermonuclear Experimental Reactor, which was joined by China in 2003.

"The EAST is the only prototype nearest to the ITER and, thus, it can serve ITER with advanced research in terms of engineering technology and physics," Li said.

Using deuterium, which is in seawater, as fuel for reaction, a hydrogen plasma torus operating at over 100 million degrees will produce 500 megawatts of fusion power. The development of ITER is based on the idea of edging out irrecycled mineral resources such as uranium and plutonium.

All the commercialized nuclear reactors in the world were designed for fission, a process contrary to the ITER's fusion, and have to consume irrecycled mineral resources such as uranium and plutonium. Waste of fission reactors are radioactive while a fusion reaction is rather environment-friendly.