

Chinese experimental thermonuclear reactor on discharge test in July

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](#) (CAS), 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 (EAST), with an investment of 165 million yuan (about 20 million U.S. dollars).

The EAST's final assembly has been completed. The device will be subject to vacuumizing, cooling and galvanizing experiments from Feb. 20 to March. 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 Celsius degrees 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 a 10 billion-euro ambitious plan, the International Thermonuclear Experimental Reactor (ITER), which was joined by China in 2003.

"The EAST is the only prototype nearest to the ITER and, thus, it can serve ITER 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 Celsius 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.

The EAST is an upgrade of China's first superconducting Tokamak device, dubbed HT-7, which was also built by the plasma physics institute in 1994. The HT-7 made China the fourth country in the world, after [Russia](#), [France](#) and [Japan](#), to have such a device.

Source: Xinhua

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