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China to build its own thermonuclear experimental reactor



A leading Chinese plasma physicist said Thursday China might build its own thermonuclear experimental reactor, which would be expected to supply sustained electricity for the world's most populous country.

While building their own sophisticated devices in thermonuclear reaction, Chinese scientists have already participated in the International Thermonuclear Experimental Reactor (ITER), a testing step between today's plasma physics studies and tomorrow's electricity-producing fusion power plants.

The scientist, who has access to the ITER, said to Xinhua on condition of anonymity, "The ultimate goal of the Chinese scientists is to build thermonuclear experimental reactors with their own efforts."

"International cooperative endeavors like the ITER make us keep abreast of the world's most advanced technologies," He said. "We're entitled to share all top-notch know-how once we enter the global consortium."

Using deuterium, which is in seawater, as fuel for reactions, a hydrogen plasma torus operating at over 100 million Celsius degrees will produce 500 megawatts of fusion power. The ITER, which means "the way" in Latin, is based on the idea.

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 is radioactive while a fusion reaction is rather environment-friendly.

Chinese scientists started to develop a fusion operation torus four decades ago in mountains southwest of inland [Sichuan](#) Province.

In the late 1980s, the [United States](#) and [Japan](#) launched the ITER, which was joined by China in 2003. Among the six partners of the 10 billion-euro ambitious plan, the European Union will cover 50 percent of the total budget. The remaining five, the US, [Russia](#), the Republic of Korea and China, will pay 10 percent each.

Since 2003, the Chinese team has mandated a batch of important missions. The ITER international coordinator, Japanese physicist Yasuo Shimomura said, "The work done by the Chinese is the most impressive."

The [Chinese Academy of Sciences](#) (CAS) Institute of Plasma Physics is developing an Experimental Advanced Superconducting Tokamak (EAST), one prototype of the ITER.

The EAST, which costs 200 million yuan (24 million US dollars) and is scheduled for completion late this year, could operate at over 100 million Celcius degrees and produce electricity in a consecutive 1,000 seconds, which will be a world record.

"The EAST is the only prototype nearest to the ITER and will be unbeatable in at least one decade," an official with the CAS Bureau of Basic Research said.

After fierce diplomatic manoeuvres, the six partners agreed Tuesday in Moscow to construct the first ITER at Cadarache, near Aix-en-Provence, France, overriding Japan's competition for hosting the innovative reactor.

It is ready to start ITER construction and the first plasma operation might be in 2016. But the most optimistic estimation on first commercialization of ITER said it needs at least half a century.

After the deal was clinched in Moscow, Chinese Minister of Science and Technology

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Xu Guanhua said, "As China is short of energy, global research endeavors for energy supply solutions meet our strategic interest."

Source: *Xinhua*

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