

France to host world's first nuclear fusion plant

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By Guy Faulconbridge

MOSCOW (Reuters) - Science's quest to find a cheap and inexhaustible way to meet global energy needs took a major step forward on Tuesday when a 30-nation consortium chose France to host the world's first nuclear fusion reactor.

After months of wrangling, France defeated a bid from Japan and signed a deal to site the 10-billion-euro (\$12.18-billion) experimental reactor in Cadarache, near Marseille.

The project will seek to turn seawater into fuel by mimicking the way the sun produces energy. It would be cleaner than current nuclear reactors, would not rely on enriched uranium fuel or produce plutonium.

But critics argue it could be at least 50 years before a commercially viable reactor is built, if at all.

"We are making scientific history," Janez Potocnik, the European Union's Science and Research Commissioner, told a news conference in Moscow, where the multinational partners in the ITER (International Thermonuclear Experimental Reactor) project were meeting. They also reached preliminary agreement on how to fund one of the world's most expensive scientific experiments.

A nuclear fusion power station is the 'Holy Grail' for scientists trying to find a viable alternative to the world's depleting stocks of oil and gas. The search took on new significance as crude this week reached a record price of \$60.95 a barrel in some trading.

Next week, a summit of the Group of Eight leading industrial nations in Scotland is to discuss climate change, widely blamed on burning fossil fuels for energy.

DECADES OF RESEARCH

Unlike fission reactors, which are used in existing nuclear power stations and release energy by splitting atoms apart, ITER would generate energy by combining them.

Power has been harnessed from fusion in laboratories but scientists have so far been unable to build a commercially viable reactor, despite decades of research.

The 500 megawatt ITER reactor will use deuterium, extracted from seawater, as its major fuel and a giant electromagnetic ring to fuse atomic nuclei at extremely high temperatures.

One of the biggest challenges facing scientists is to build a reactor that can sustain temperatures of about 100 million Celsius (180 million F) for long enough to generate power.

"I give it a 50:50 chance of success but the engineering is very difficult," said Ian Fells of Britain's Royal Academy of Engineering.

"If we can really make this work there will be enough electricity to last the world for the next 1,000 to 2,000 years," he said.

The ITER project began in 1985 but scientific challenges and wrangling between its partners over the site and financing have caused repeated delays.

At their meeting in Moscow, officials from ITER partners China, the 25-nation EU, Japan, Russia, South Korea and the United States chose France over Japan.

Japan will provide headquarters and research facilities.

"We believe that the ITER project should start as soon as possible for the sake of mankind's future," said Nariaki Nakayama, Japan's science minister.

The EU is to take on 40 percent of the project's cost, France will pay 10 percent and the remaining five partners 10 percent each. Building the reactor is expected to take about ten years at a cost of 4.6 billion euros (\$6.14 billion).

But some scientists say it could take three times that long and the sides have yet to reach a final agreement on a number of issues, including financing, before the builders can move in.

Environmental campaign group Greenpeace estimates that if the project yields any results at all, it will not be until the second half of this century.

"At a time when it is universally recognized that we must reduce greenhouse gas emissions by 2050, Greenpeace considers it ridiculous to use resources and billions of euros on this project," it said.

France has been a big producer of nuclear energy since the oil shocks of the 1970s and has 58 nuclear reactors, the most in the world after the United States.

"It is a big success for France, for Europe and for all the partners of ITER," French President Jacques Chirac said.

(Additional reporting by Patricia Reaney in London, Swaha Pattanaik in Paris, Elaine Lies in Tokyo and Brussels newsroom) (\$1=.8209 Euro)

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