
Will China leapfrog France as a nuclear superpower?

Enthusiasm for nuclear power is growing across the globe and China intends to be the world's biggest domestic producer and a key international supplier.

Published: 10:30PM BST 14 Aug 2010

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France has traditionally dominated expertise in atomic power with state-sponsored giants Areva and EDF Energy.

However, China is fast catching up. The superpower wants to build 153 new plants using existing technology and believes it can cut the costs of French and Japanese-based reactor designs by one third by rolling out the parts in bulk.



Work begins on a nuclear power plant in Sanmen, China Photo: Bloomberg News

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Jimmy Wang, deputy general manager of China Nuclear Power Engineering Company, told a London conference last month that the Chinese-made CPR-1000 reactor was "proven, reliable, and cost-effective".

It will soon have an operating base of "50 cousins", he says, allowing customers to share spare parts, engineering, construction and operating experience.

Despite potential concerns about its safety standards matching Western regulations, Peter Atherton, an analyst at Citigroup, believes its reactors could reach Europe.

"The Chinese have a number of reactors designed by themselves. China arriving and saying 'please approve our technology' in one or two years is perfectly feasible," he says.

China is unlikely to have a shortage of customers, especially since it is willing to tout its newfound expertise to unpopular countries that the rest of the world would rather did not have nuclear capabilities. Its state nuclear companies recently signed a controversial deal to export technology to Pakistan and are said to be involved in Iran's first reactor, which was switched online this week.

Among the countries thinking of building their first plants are Vietnam, Bangladesh, Indonesia, Saudi Arabia, UAE, Egypt, Jordan, Algeria, Nigeria, Ghana, Kazakhstan and the Philippines.

However, China's priority is likely to be its own energy-hungry domestic market, where it aims to build enough nuclear power to provide 8pc of its population's electricity.

The energy planners are also moving to ensure it has enough fuel stockpiled for its burgeoning programme.

In June, China agreed to buy more than 10,000 tons of uranium concentrate, known as yellowcake, over the next decade from Cameco, guarding against the possibility of a nuclear fuel squeeze as the technology's popularity spreads.

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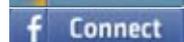
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YordanGeorgiev

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Just another example that market economy is not the best promoter for a superior technology especially when the widespread needed depends on education and know-how - fields in which both USA and Europe have not been active enough ... Obviously.

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john_busby

08/17/2010 10:46 AM

A 1000 MW reactor requires 200 tonnes of natural uranium, so to stockpile fuel for 150 reactors for 40 years would require the procurement of $150 \times 200 \times 40 = 1,2$ million tonnes, which at current prices of \$120/kg is USD 144 billion. Such a demand would lift the prices, enabling some further lower grade mines to be opened, but making anything other than a state enterprise non-viable, while the cost of the stockpile would rocket.

Current U world production is 50,000 tonnes/year, so it would take 24 years of the whole mining output to build the stockpile.

Putting it another way, China would need $150 \times 200 = 30,000$ tonnes/year U. Mines last 10 to 20 years, so a mine producing 5,000 tonnes a year might produce 75,000 tonnes, so that over the 40 years, 16 to 20 mines would have to be opened. There is only one prospective mine of that ilk in the world, the Cigar Lake mine in Canada, delayed by flooding.

The Chinese programme needs further evaluation as it may not be possible for it to be fuelled.

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08/15/2010 10:08 AM

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Thank you for reminding us. Indeed, if we in Europe don't wake up we risk to land up becoming a third world redeveloping group of countries. The French might be recognized as champions in the nuclear field, however if Europe doesn't consolidate its expertise in atomic power with EEC state-sponsored partnerships we will have to let China and Russia take over! It will not take much longer then 30 years before Europe will represent less than 10% of the world population. If we don't start profiling and sustaining growth of our knowledge we risk becoming dependent and will land up as beggars. If we had not scaled down our research in the nuclear field the last 30 years we would have solved ample problems by now, maybe even the waste issue. By having turn this industry into a decommissioning mode we have discouraged students to take up the R&D challenges. Now we have to kick start the interest. Biodiversity is our life line and nuclear is a natural component of nature. Let's not waste time on politics and auto recognition but form a European front to confront the challenges nuclear science offers and contribute responsibly to the energy balance for future generations.

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