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Germany plans CO2-free power plant

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The search for a coal-fired power station that does not give off any carbon dioxide has taken a step forward with the announcement of plans to build such a plant in Germany.

Vattenfall, a Swedish company, which owns mines and power stations in Germany, plans to start construction next year.



Vattenfall already operates a coal-fired power station in Germany

"We believe coal has a future," says Markus Sauthoff, who is leading the project.

"But this is linked to the carbon-dioxide trading system."

"It's likely that there will be quite ambitious emission reduction targets in the future, and that the price of CO2 trading certificates will be quite high, as a kind of penalty for the use of fossil fuels in power plants," he says.

"So we need to try to reduce our CO2 emissions."

Pilot project

Mr Sauthoff admits that "carbon-dioxide free" is something of a misnomer.

Burning coal inevitably produces carbon dioxide. The idea is to capture the carbon dioxide before it is released into the atmosphere and then store it in a safe place.

The technology now being developed by Vattenfall is designed primarily for use with lignite, or brown coal, which is one of eastern Germany's primary mineral resources.


Its use in power stations has long been controversial, because of the high level of carbon dioxide it emits in comparison with other fossil fuels.



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Vattenfall is to build its new plant at Schwarze Pumpe, south-east of Berlin in the state of Brandenburg, where it already operates a conventional coal-fired power station.



The new plant will use what Vattenfall is calling the Oxyfuel process.

"In a conventional power plant we burn lignite in air, which is about 75% nitrogen," explains Markus Sauthoff.

"But in the Oxyfuel process we extract the nitrogen and burn the coal in almost pure oxygen combined with some of the flue gases, which are re-circulated into the furnace."

"Today we're testing single components of this at the university level but to stick all the different parts together and to try to operate them in the most effective way will be the task of the pilot plant."

Climate issues

Oxyfuel is not the only method of capturing CO2 that's currently being investigated.

There is another so-called "pre-combustion" method, which involves turning the coal into gas before it is burned, and then producing hydrogen that can be used in fuel cells.

A "post-combustion" method involves the chemical "scrubbing" of the gases produced by burning coal, to extract the carbon dioxide.

Markus Sauthoff admits that it is not yet clear which method will prove to be the most efficient and economically viable.



Environmental groups say relying on coal fuel is a bad idea

"But Vattenfall does believe that Oxyfuel will be the most favourable and this is why we've decided to build the pilot plant," he says.

The company has come in for criticism from environmental groups for its continued investment in fossil fuels.

Gabriela von Goerne, a climate campaigner for Greenpeace Germany says: "I don't think Vattenfall is taking climate issues seriously."

"They want to move on with coal technology, which

ultimately is a dead end. The best choice would be to concentrate on renewable energies and put renewable energies in the energy mix of Vattenfall."

Vattenfall says it plans to have the 40m-euro plant in operation by 2008.

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