

# An escape valve for greenhouse gas

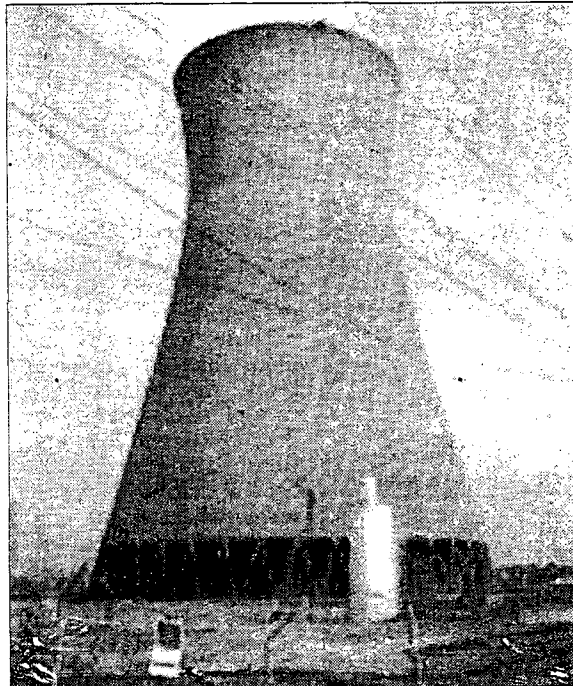
Out on the gusty plains of Saskatchewan, miles of new clean-energy wind turbines will eventually be joined by a familiar old ghost of electricity generation: a new coal-fired power plant.

Such coal facilities are generally bad news for those worried about climate change. Fossil-fuel power plants produce about a third of all the heat-trapping man-made carbon dioxide released into the atmosphere. And the 1,300 new coal-fired plants expected to be built over the next quarter-century will pump an extra 145 billion tons out by 2030 - and much more over their 40 to 50-year life spans.

But at least the Saskatchewan plant, slated to go on-line in 2013 about 110 miles south of Regina, will sport a new-fangled escape valve. By designing in a few million dollars of extras - everything from extra ductwork and bigger boilers to extra open space right next to key areas of the plant - utility officials are creating one of 'the world's first 'capture ready' plants.

The idea: If and when government regulation forces it, the plant will be ready to accommodate any future technology needed to capture CO<sub>2</sub> from its exhaust and pump it permanently underground.

"We're building a plant that will last for a number of decades, so it seems



Coal-fired power plant

prudent to recognise that at some point during that time, carbon will have to be managed," says Rick Patrick, SaskPower's vice president of planning, environment, and regulatory affairs. "We think a capture-ready design will give us maximum flexibility for whatever comes at us."

Saskatchewan's 'capture ready' idea seems most likely to appeal to Canada, the European nations, and other countries required to slash CO<sub>2</sub> emissions under the Kyoto accord by 2012. But the idea has less traction in critical areas such as China, India, and the United States, where

most new coal-fired power plants will be built, and where there is no immediate demand to reduce CO<sub>2</sub>.

## Critics on the left

Even environmentalists are wary. Some see the capture-ready idea as another excuse for power companies to drag their heels on a far more advanced clean-coal technology called integrated gasification combined cycle or IGCC.

"Building new coal-fired plants and betting on vague claims and future promises of technology at least a decade behind IGCC is a bad bet," says David Hawkins,

director of the Natural Resources Defense Council's climate center. "We've got gasification plants capturing CO<sub>2</sub> today."

Still, he would not oppose capture-ready technology for any conventional coal power plant that's about to be built, calling it 'a reasonable backup.'

For a 'negligible cost,' China could direct its power-plant developers to at least design their coal-fired plants so they could be cheaply retrofitted, says Jon Gibbins, an energy expert and senior lecturer at the Imperial College of London. "Certainly China is today facing a power shortage, so anything that distracts them even in a small degree from building plants is not seriously considered," Dr. Gibbins says. "Still, I think there are several reasons China might just decide to do it. The Chinese government might order its plants to be built capture ready."

And the other possible driver is that there's a strong likelihood money will be coming into China to pay for it."

Beside potential World Bank or other international funding, he says, Kyoto nations that want to earn carbon credits might fund carbon reduction in China to help them meet the treaty's requirements. Chinese plants that were already capture ready would be far cheaper to convert to carbon capture

and be most likely to attract such funding.

## Leaked memo?

There are also signs the British government likes the idea and could champion it at diplomatic levels, Gibbins says. Support for that notion came on Friday in the form of an apparently leaked diplomatic document that lays out British proposals - including a new 'capture ready' plan - for the G-8 summit in Gleneagles, Scotland, in July. British authorities refused to comment on the document or to confirm or deny its authenticity, according to The Scotsman newspaper's website.

A big question is cost. Although making a plant capture ready represents only a small fraction of a power plant's construction budget, the equipment to capture CO<sub>2</sub> would almost certainly run into serious money, experts say. Even if a reasonable technology were found, installing it in a capture-ready coal plant would raise construction costs some 50 per cent (75 percent for plants not capture ready), Gibbins estimates. And running such a plant would raise the cost of producing electricity at least 40 per cent due to heat loss involved in the carbon-capture process, he adds.

Nevertheless, some in the US think the idea could catch on. Environmental engineers with

Alstom Power, a Paris-based supplier of power-plant equipment with operations throughout the US has been studying the capture-ready concept.

"It's definitely an idea we think has a lot of merit," says Sean Black, marketing manager for Alstom's environmental control systems division in Knoxville. "I would not say any US plants being designed today are doing it. It's something though that we're going to see in the near future."

But Hawkins demurs, saying a far better approach would be for the US to lead by example and implement IGCC widely in the US. Since China pays close attention to power-generation trends, especially in the US, it could follow suit if IGCC were demonstrated in America.

Meanwhile, back in Regina, Patrick says he's gotten a warm reception from a power consortium in North Dakota with which he shared the capture-ready idea.

"Even though the US government hasn't specifically pushed Kyoto, the writing is on the wall," Patrick says. "At least I sure hope it catches on. Because if it doesn't, the little bit of CO<sub>2</sub> we'll capture up here in Saskatchewan will be swept aside by China and India."

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