

Clue: A major city



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Alarm over new oil-from-coal plans

David Adam

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China is already the world's biggest coal user. Photo: Qilai Shen/EPA

A Chinese energy company is poised to open a chemical plant to make liquid fuels for cars and aircraft from coal, a move that has alarmed environmental campaigners who say it will increase carbon emissions and worsen global warming.

The plant, in Inner Mongolia, will use technology developed by Germany during the second world war to convert coal directly into synthetic diesel, dubbed "Nazi fuel". China says the process will help break its booming economy's reliance on foreign oil, and that it will build more such plants.

The US and India are also investing heavily in the technology, which is being heavily promoted by coal companies across the world as a cost-effective solution to soaring oil prices and concerns about energy security.

The Chinese facility, operated by Shenhua Corporation, will be the first of its type in the world. Shenhua would not say when it expects the plant to open, but industry experts said it would be within weeks. Last month, company officials said construction work was 99.5% complete.

Three similar plants were built in South Africa to beat the apartheid-era oil sanctions, and still produce almost a third of South Africa's energy needs.

Gordon Couch, of the International Energy Agency's clean coal centre in London, said the plant's opening was "imminent". and that it marked a surge of interest across the world. An IEA report on the technology, due to be published this spring, will highlight similar projects planned or under way in Japan, the US, Australia, China, New Zealand, India, Botswana, Indonesia, the Phillipines and South Africa. The US Air Force is very interested, and recently flew a B-52 bomber on fuel made from coal.

Couch said: "There is now considerable interest in these types of fuels, mainly in countries like China and the US that have large reserves of coal and are worried about relying on imported oil." He said the high price of oil could persuade more companies to turn to the coal conversion technology, which has traditionally been too expensive to compete with conventional petroleum-based fuel.

Analysts say the fuel could be economic if oil prices stay consistently above US\$25-40 a barrel. Oil currently costs double that, and briefly touched \$100 a barrel last month.

A study last year by the Chinese Academy of Sciences said: "Production of liquid fuels from coal is practically the most feasible route to cope with the dilemma in oil supply."

At least two more commercial scale coal-to-liquids plants are under construction in China, although the Chinese government has expressed concern about the possible environmental impact of uncontrolled expansion, and has taken steps to limit the number of smaller facilities.

Companies that promote the coal-to-liquids technique claim it is clean, because contaminants such as sulphur are removed from coal during the process. Some also herald it as a way to fight global warming, despite the industry's own figures, which show that converting and burning the liquid coal together releases almost twice the carbon pollution as using conventional diesel.

Nick Rau, a climate campaigner for Friends of the Earth, said the move was "in totally the wrong direction". He added: "We have great concerns about the rush to develop new sources of energy-intensive energies such as synthetic fuels from coal. We know they are technically feasible and it looks like they are going to happen, unless more people emphasise the sustainable options available."

Luke Warren of the World Coal Institute, admitted the process was "carbon dioxide intensive", but said the greenhouse gas could be captured and stored underground.

But the UN's intergovernmental panel on climate change says that large-scale carbon capture and storage remains unproven, and will not be available for decades.

Of the 30 or so large-scale coal-to-liquids plants being worked on around the world, only one in Australia plans to conduct a carbon capture trial.

Even capturing the carbon may not solve the problem. An analysis by the US Department of Energy's Argonne National Laboratory last year said that liquid fuels from coal, even with carbon capture and storage employed, would still produce at least 20% more carbon dioxide than petrol and diesel made from oil. The energy-intensive conversion plants also require massive amounts of cooling water to stop them overheating.

The World Coal Institute is among the organisers of a major industry conference in Paris this April to promote the coal-to-liquid technology. US coal giant Peabody, the largest coal company in the world, is listed as the event's main sponsor.

Coal is not the only unconventional source now being exploited for oil substitutes. Other companies across the Middle East and North Africa are making diesel in a similar way from natural gas. Airbus recently carried out a test flight of its giant A380 aircraft that used gas-derived liquid fuel. And Shell has just started an advertising campaign in the UK that promotes its gas-to-liquids technology as a "clean fuel" which provides "significantly lower emissions of local pollutants". Shell says a study commissioned by the company shows its new fuel produces no more greenhouse gas emissions than using conventional diesel.

But scientists at the University of California, Berkeley have found the gas-to-liquids process is typically some 7-16% worse for global warming than using oil. Adam Brandt and Alexander Farrell of the university's energy and resources group said a widespread transition to both gas-to-liquids and coal-to-liquids technology was looking "increasingly likely" but warned such "unconventional petroleum production could be a significant source of additional carbon dioxide unless mitigation steps are taken".

Farrell told the Guardian: "If companies are marketing these fuels as environmentally friendly then they are misleading people. At best, they could be as good as [existing] fossil fuels, but is that what we want in a world where we have to cut greenhouse gas emissions?"

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