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Alberta to be site of \$30-million experiment to turn underground coal into syngas

BY GINA TEEL, CALGARY HERALD MARCH 17, 2009

Alberta will be the site of a unique \$30-million demonstration project aimed at unlocking the clean energy potential of the province's vast coal reserves.

The province is contributing \$8.83 million toward a \$30-million underground coal gasification demonstration project that taps into coal seams that are too deep to be mined economically — and would otherwise sit idle — to produce clean, synthesis gas for power generation.

The demonstration project, with Calgary's Swan Hills Synfuels LP, is the first of its kind in North America and, at roughly 1,400 metres below the surface, the deepest underground coal gasification ever conducted in the world.

"In gasification, your two best friends are pressure and temperature, so the deeper you go, the more pressure; the more pressure, the better gasification," said Martin Lambert, chief executive of the privately-held Swan Hills Synfuels.

The project also has the future potential of using the coal seams for carbon capture and storage, the province said.

The project uses an in situ process that involves the injection of oxygen and saline water into coal seams to convert it into synthesis gas, which can be used as fuel for clean power generation.

Synfuel's goal is to develop a commercial operation, selling the syngas for clean power generation and the captured CO2 to oilfield players who can use it in enhanced oil recovery.

The full-scale demo project is located 17 kilometres southwest of Swan Hills, Alta. — an area rife with old established oilfields — and will tap the Mannville coal formation, a vast seam that runs from Grande Prairie to Calgary.

Lambert said this higher quality coal has never before been considered to have any value, due in part to its being out of reach.

"If this project works the way we think it will work, and the demo project will prove it, then what you've done is created value in all of that coal for all Albertans," he said.

But the greatest benefits of underground gasification is likely environmental.

To begin with, there's no need to surface mine the coal, as is the case with other types of coal gasification. And as it occurs at depths more than

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1,000 meters, no fresh water is used in the operation.

"We're going very deep underground because then you do not worry about fresh water, because its saline water," said Eddy Isaacs, executive director of the Alberta Energy Research Institute (AERI), through which the province is providing the funds.

"The deeper you are the less likely that you would harm the environment," he added.

Isaacs said the demonstration project is a first step to testing the technology. Though not new — underground coal gasification has been used commercially outside of North America for 40 years — the technology has to be tweaked for coal types and refined for geological formations.

Doug Horner, Alberta's minister of advanced education and technology, said it's important to examine better ways to better use the province's coal supply.

"This is another project where our province is poised to open new markets and be a global leader in clean energy development," he said in a release.

Lambert, however, has no doubts the technology will work, and calls the demonstration project "more like fine tuning the parameters."

Synfuel has already drilled a pair of production wells and will start producing gas in June, he said.

AERI, which has an interest in developing clean technologies and next-generation technologies, is also involved in a surface coal gasification project with Epcor for a 270-megawatt generating station at its Genesee site, west of Edmonton.




Currently in the front end engineering stage, the integrated gasification combined cycle technology (IGCC) plant would turn sub-bituminous coal into synthesis gas and hydrogen.

The initiative is in conjunction with the Canadian Clean Power Coalition, which is chaired by Epcor senior vice-president, David Lewin.

"In order to use these vast coal resources in the province, these are the kinds of things that need to be looked at in the early stages from a research and development point of view," he said of Synfuel's project.

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