Fushun Mining Group Co., Ltd.
Liaoning Province

Opportunities for Investment in Coal Mine Methane Projects

A major coal producer, the Fushun Mining Group Company, Ltd. has one producing underground mine and one open-pit mine. Total coal production in the mining area is about 6 million tonnes of coal annually. The underground mine, Laohutai, drains about 100 million cubic meters (more than 3.5 billion cubic feet) of methane annually, and methane production from surface boreholes has also begun. Significant opportunity exists for expanding recovery and utilization of methane from surface and underground boreholes.

The Fushun Mining Group Company, Ltd. seeks investment for expanding the production of methane from surface boreholes and combining it with a portion of the methane recovered from the Laohutai mine to meet the energy needs of the nearby city of Shenyang. Fushun Mining Group seeks investment from China and abroad to for the proposed coal mine methane development project described in this brochure.
OVERVIEW OF THE FUSHUN MINING GROUP COMPANY LTD.

The Fushun Mining Group Company Ltd. (informally known as the Fushun Mining Group) is a large state-owned coal enterprise with 26 subsidiaries. Located in the city of Fushun in northeastern China’s Liaoning Province, it is about 45 km from Shenyang, the capital of the province, and 126 km from Anshan, a major iron and steel manufacturing center. Although the Fushun area has produced coal for more than 100 years, an estimated 800 million tonnes of recoverable reserves remain. The Fushun Mining Group has total assets of 4.7 billion yuan ($US 566 million).

Fushun has abundant methane resources, with an estimated 8.9 billion cubic meters (315 billion cubic feet) of methane in place. It was also one of the first mining groups in China to adopt a methane drainage program for active coal mines.

CURRENT STATUS OF METHANE RECOVERY AT THE FUSHUN MINING AREA

Over the past 20 years, the Fushun Mining Group has developed a comprehensive underground drainage program, employing pre-drainage, drainage during mining, and gob wells. Currently, three underground degasification systems remove more than 100 million cubic meters (3.5 billion cubic feet) of methane annually from the Laohutai Mine. Of this gas, more than 70 million cubic meters (173 billion cubic feet) of methane are utilized, primarily by residents of Fushun City and also by consumers in nearby Shenyang.

The Fushun Mining Group has also begun to produce coalbed methane from surface wells. Daily production from the two wells drilled to date has reached 2,000 cubic meters (70,600 cubic feet). The following page describes Fushun Mining Group’s proposal for supplying methane produced from surface wells and underground boreholes to consumers in Shenyang.
The proposed project would use surface wells to recover coalbed methane from virgin coal seams, mix this high heating value gas with lower heating value gas recovered from underground drainage systems, and supply the mixed gas to Shenyang for residential and commercial use. Currently, Fushun Coal Group supplies about 10 million cubic meters (353 million cubic ft) of methane to Shenyang, but the city’s demand for clean energy is greater than the amount of methane currently supplied.

The project area covers 9.6 km² and contains an estimated 4.82 billion cubic meters (170 billion cubic ft) of geological resources of coalbed methane. In the initial phase, 32 surface wells would be drilled to recover methane from deep strata in the active Laohutai mine and the abandoned Shengli mine. Based on trial production of the two recently completed wells, and by analogy with wells in the Tiefa coal field (about 140 km northwest), annual production from the surface wells would be about 47.3 million cubic meters (1.7 billion cubic ft). Based on planned underground drainage, the annual gas supplied for this project from underground boreholes would be 15.12 million cubic meters (534 million cubic ft). The total supply capacity of the project would thus be 61.84 million cubic meters (2.2 billion cubic ft) per year of pure methane.

Each production well would be completed with perforated pipe. Coal mine methane would be collected from each production well and transported to a trunkline in the drilling area that leads to a gas collection station at the central heating plant at the Northeast Bureau of Coal Geology.

Total estimated capital investment for this project will be nearly 155.59 million yuan ($US 19 million). Of this total, the Fushun Mining Group is contributing 37.7 million yuan ($US 4.5 million) in existing facilities and will provide an additional 41.26 million yuan ($US 5.0 million). Fushun Mining Group is seeking the remaining $76.63 million ($US $9.23 million) from outside investment or financing sources. The project would take three years to complete.

This project will replace coal with coalbed and coal mine methane, reducing coal combustion by 292,000 tonnes of coal equivalent (tce). It will also reduce emissions of methane from mining by 927,400 tonnes of CO₂ equivalent. The net decrease in carbon emissions will be an estimated 1.6 million tonnes of CO₂ equivalent.

**Preliminary Economic Analysis**

<table>
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<th>Investment:</th>
<th>156 million yuan ($US 19 million)</th>
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<tr>
<td>NPV:</td>
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<tr>
<td>IRR:</td>
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<td>Payout:</td>
<td>7 years</td>
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<td>Project Life:</td>
<td>20 years</td>
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INFRASTRUCTURE AND MARKET

The Fushun mining area features good infrastructure to support the proposed project. Three underground drainage systems, six drainage pipelines with a total length of more than 80 km, a gas transport pipeline from Fushun to Shenyang, and gas storage facilities are already in place.

Local government actively supports development and utilization of coal mine methane in Fushun, and there is a high demand for fuel in Fushun and nearby cities, thus ensuring a market for coal mine methane. With abundant methane resources, Fushun can satisfy long-term demand.

PARTNERSHIPS SOUGHT

The Fushun Mining Group seeks investors interested in this project. Based on the preliminary economic analysis described herein, the project is potentially highly profitable, and provides the added benefit of reducing emissions of methane and other greenhouse gases. In particular, we seek equity investment in the form of joint venture partners, and partners with technical expertise in gas projects.

The Fushun Mining Group recognizes that investment in this project entails uncertainties, such as potential fluctuations in CMM and electricity sales prices. We can help potential investors determine the likely range of these prices for use in modeling project potential.

We are eager to do business with foreign partners. With total assets of 4.7 billion yuan ($US 566 million), the Fushun Mining Group is a reliable business partner.

HOW TO BEGIN WORKING WITH US

Fushun Mining Group encourages those interested in project opportunities in the Fushun Mining Area to contact them for more information. In conjunction with the China Coalbed Methane Clearinghouse, we have prepared market packages describing these opportunities in more detail. The data package includes maps, information on energy prices, markets, and more, and is available to interested parties upon request.

“We warmly welcome friends from home and abroad to come to Fushun Mining Group Co., Ltd. for field investigations or business talks”.
—Wang Zhanzhou, Chairman, Fushun Mining Group Co., Ltd.

Please visit www.coalinfo.net.cn/coalbed for updated information that may be available on the status of activities and development plans at the Fushun Mining Area.