

Presentation by **Igor Aleksandrovich Sedov**, Vice-President, «SAKHALINUGOL» Managing Company
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High Concentration of Coalmine Methane Constrains the Possibilities for Coal Extraction

Dear Colleagues, good afternoon!

I will speak about how we can use the problem of increasing the safety of coalmines to improve the energy efficiency. Sakhalinugol company produces coal in Sakhalin by both: open mining and underground mining, and it includes the full cycle related to coal production from geology exploration, exposing, drilling, extraction, enrichment, and sales. 70-80% of the total coal production in Sakhalin is produced by Sakhalinugol company. All coal produced we sell to Sakhalinenergo company, to the communal services in Sakhalin region and for export. The total annual volume of revenue makes more than \$ 200 mln.; 1,2 mln. tons of coal are exported, and 2 mln. tons are for the internal market.

We have a coalmine in which we produce the coal mostly for export. Last year, May 1st, the coal mine burnt off. The reason is that our coal mine has a high grade category and hence we experienced problems related with explosive danger to the fullest extent. June 18th this mine will come to exploitation again and we pay great attention to safety and new degasation methods. So we mostly extract energy coals. The mine has a very high-category there are certain numbers on gas volumes, methane volumes here; it means that for us the issue of degasation is a very important issue. Now recoverable reserves of the mine reach 19 mln. tons, and balance reserves – 47 mln. tons.

The methane resources in CIS countries are very high. According to some estimations there are 17 trillion cubic meters of methane in Russia, Ukraine, Kazakhstan and 13 trillion of them are in Russia. The share of these methane gases in Sakhalin is 565 mln. cubic meters and we conducted the degasation in 2008, so methane was simply removed from the mines, it was disposed into the air and no other utilization was used. Therefore our main objective now is to increase safety of operations in highly loaded mines, so if we remove higher volumes of methane we will be able to produce more coal. Thereafter if we do not emit methane into the air we will not pollute the environment as well. Moreover, methane is a very valuable product and it is environmentally friendly fuel, so we have to use it. Therefore we are contracting equipment for mine degasation and we plan to use the methane which will be collected in the mines for power generation; so we are not going to buy the electricity for the mines from power companies but we'll produce it ourselves. And we'll use the gas as well to produce the heat for boilers that we have in the city of Shakhtersk in Sakhalin and in mining settlement.

How could this methane be extracted? There are several options: to drill surface degasation wells; as well as the wells which are inside of the mines; the underground mines for the ventilation system, and the systems of extracting methane from mined-out space. Based on our calculations, 80-90% of all gases reside in this space. So this methane-air mixture may be extracted by special vacuum pumps then through a special system of gas preparation, purification from mixtures the purified and dried gas will be raised to the gas pipeline and into the gas generating station or compression unit and finally it could be used for further processing.

Our main priority is to use methane for power generation and we see real opportunity for this. We have already analyzed opportunities of gas engine with 1000 kW power capacity and 8 mln kW of annual electricity production, according to our data the pay-back period is 2-3 years. And for the boilers it is a simple principle of burning coalmine methane on the sites with a boiler, a burner, an air-supplier, smoke exhauster, etc.

The use of methane (practically without enrichment) for fueling the motor transport is another opportunity that could attract investors.

At the same time there are several remaining issues. We have problems related to the property of coalmine methane if we sell it. We have the license for extraction but we don't have the respective documents for its usage. Probably low prices for gas and electricity will affect the project's pay-back period; in Sakhalin electricity prices are not the highest but still very high. If we are able to find highly productive drilling equipment, go through all officials, I hope this project is likely to be really implemented.