

UCG&CO<sub>2</sub> STORAGE project  
Joint Press Release  
(for immediate release)

## **FOR CLEANER ENERGY FROM THE DIRTY COALS**

The largest Bulgarian private gas company Overgas Inc. AD in a consortium of partners from five European countries has signed an agreement for financial support of a research project on underground coal gasification and CO<sub>2</sub> storage. This is the first Bulgarian project financed under the Program of the Research Fund for Coal and Steel (RFCS) of the European Commission.

Overgas is the leader and coordinator of the initiative and its partners in the project are well-known European academic organizations and business entities such as the Centre for Research and Technology Hellas (Greece), the Technical University of Lisbon (Portugal), the Geological Institute of the Bulgarian Academy of Sciences, the University of Leeds (UK), the German company DMT GmbH & Co. KG, the National Research Institution for Geosciences in Germany (German Research Centre for Geosciences), the British UCG Engineering Ltd.

The international team of engineers and scientists is going to explore the potential to utilize deeply lying coal seams (>1200m under the ground) for the production of cleaner, safer and cheaper energy.

Despite the ongoing trend towards switching over to renewable energy sources, fossil fuels, in particular coal, will continue to be a major source of energy for some time to come. However, many of the world's coal reserves are unusable just because they are buried too deep. On the other hand, the fossil fuels utilization is the main reason for the rising CO<sub>2</sub> concentration in the atmosphere and the resulting global climate change – an issue that is becoming increasingly more pressing on the political agenda.

The specialists involved in this €3 million project funded by the RFCS of the European Commission have joined efforts in an attempt to find a solution to both of these problems.

According to the suggested scheme, coal would be converted to gas deep underground to generate energy, while the waste greenhouse gases would be stored back in the "extracted" coal spaces (cavities) or in the surrounding rocks.

The process of converting coal underground within the coal seams into a product gas is known as "underground coal gasification" (UCG). To make this happen, oxidants (oxygen or enriched air together with water) are injected into the coal seam and coal is combusted underground at high pressure. This generates combustible gas (consisting mainly of CO<sub>2</sub>, hydrogen, CO, methane, as well as smaller quantities of other gases), that is extracted from underground through boreholes.

Brought to surface, the product gas could be used as a fuel for power generation or as a feedstock for the chemical industry (incl. hydrogen and synthetic natural gas production). CO<sub>2</sub> from the product gas can be easily separated and after compression, could be injected back to fill in the rocks or the cavities from the coal gasification.

The idea for gasification of coal underground is not new - the process has been the target of extensive development over 90 years. Several large-scale power schemes were constructed in the 1980's in the former Soviet Union and at least one is still operational at Angren in Uzbekistan. UCG has been tested in some 50+ trials in different parts of the world. The technology was proven in deeper seams during the EU funded Spanish trial (1992-1999) using moveable injection technology from the oil and gas industry. Commercial exploitation of this technology is underway in Australia, the United States

China, and in the UK offshore UCG licenses have been issued. Little further research is required on the process itself.

"The proposed scheme of combining underground coal gasification with subsequent CO2 storage in the affected areas utilizing the same borehole infrastructure is completely new." said Prof. Georgi Dimov from Overgas who is the Scientific Person in Charge of the Project. "If proved to be applicable and effective, it would provide an enormous source for cleaner and cheaper energy with near zero emissions for the environment not only for Bulgaria but for mankind as well. I am convinced that the day will come when we will produce such cleaner energy from otherwise "dirty" coals on an extended scale.

The joint team of researchers will assess the feasibility of the scheme for deeply lying coals in Bulgaria – they will use data from the target site to model the complete process, incl. combustion, gas extraction and CO2 storage. Particular attention will be paid to potential hazards for the environment, such as the chance of stored CO2 leaking through cracks in the rocks.

End results are expected in early 2013.

**For further information:**

UCG&CO2 STORAGE project website: [www.ucg-co2.eu](http://www.ucg-co2.eu)