Wildhorse Energy Ltd. is an emerging alternative energy company focussed on developing underground coal gasification (UCG) projects in Central Europe. The Company's primary focus is to become a major supplier of fuel in the region by producing syngas as a feedstock for power stations located in close proximity to Wildhorse's strategically located coal assets. The Company's portfolio currently consists of the Mecsek Hills, Izabela, Amelie and Suki UCG projects, all of which have substantive coal deposits which demonstrate potential suitability for UCG application.

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The Company was founded in 1990 and since than with continuous growing it has been developed to a market leader service provider in Hungary. It carries out about 600 logging jobs per year in Hungary and in the neighbouring countries. Thanks to the quality of their work the number of their Customers is growing from year to year. Due to professional preparedness and incomparable instruments in Central Europe it can provide borehole geophysical services up to 3000 meters and 120°C (in some case up to 70°C).

UCG technology assistance with geophysical methods on the example of the Mecsek research area, Hungary

6th Congress of the Balkan Geophysical Society, 3rd-6th October, 2011, Budapest, Hungary

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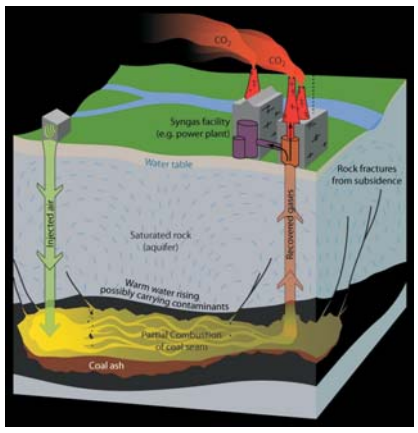
Summary

Underground Coal Gasification (UCG) technology is an important method for the utilization of coal beds characterized by disadvantageous geological conditions. During the process, we gasify the coal ‚in situ' to obtain product gas that is suitable for industrial processing. In our country the research on the future usage of the UCG technology takes place in the Mecsek Hill. It is crucially important to know the geology of the mining districts profoundly, because it might contribute to the constant reconsideration of the comprehensive geological phylogenesis of the area, too. In the past decades, connected to the Hungarian coal industry, an immense amount of data was produced about the Mecsek Mountain's coal deposit. Although the quality of this database is inconsistent, it provides an invaluable source for additional researches. At the current phase of the researches, to utilize the information of the database, to reuse the previously collected data, it is very important to continuously compare the archive documentation with the present geological results. Therefore the authenticity of the archive data is regularly verified with the help of different geophysical methods to support the calculation of the actual coal supply. The strategic objectives of the drilling campaign are to confirm the quality of the historic drilling data compiled by the Company, to facilitate UCG site selection and to provide for more detailed modelling of the coal seams available. The initial drilling comprises a six-hole program, each hole will be drilled adjacent to a historic hole. The drilling and verification processes have to enable a direct comparison of the geology, grade and structure of the coal present. If successful, the results will add significant additional confidence to the historic data sets already compiled by the project team for use in resource evaluation.



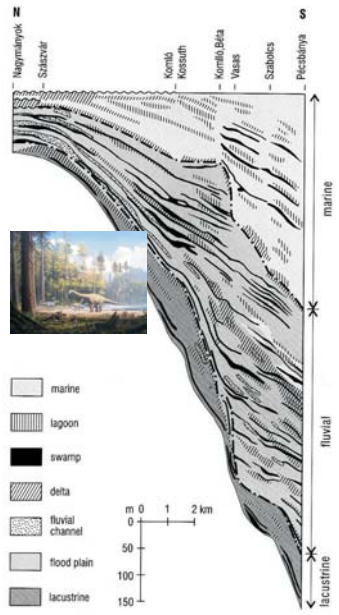
1. **Underground coal gasification (UCG)** is an industrial process, which converts coal into syn gas.

UCG is an in-situ gasification process carried out in non-mined coal seams using injection of oxidants and water, and bringing the product gas to surface through production wells drilled from the surface.

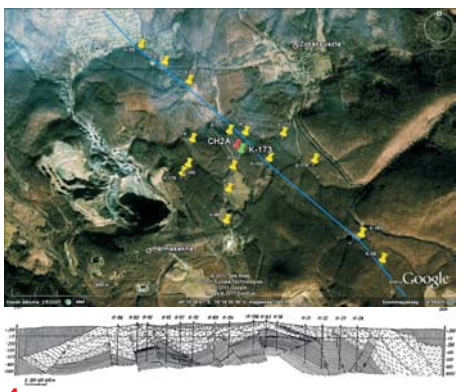
The syngas could to be used as a chemical feedstock or as fuel for power generation.

The technique can be applied to resources that are otherwise unprofitable or technically complicated to extract by traditional mining methods and it also offers an alternative to conventional coal mining methods for some resources. [1]

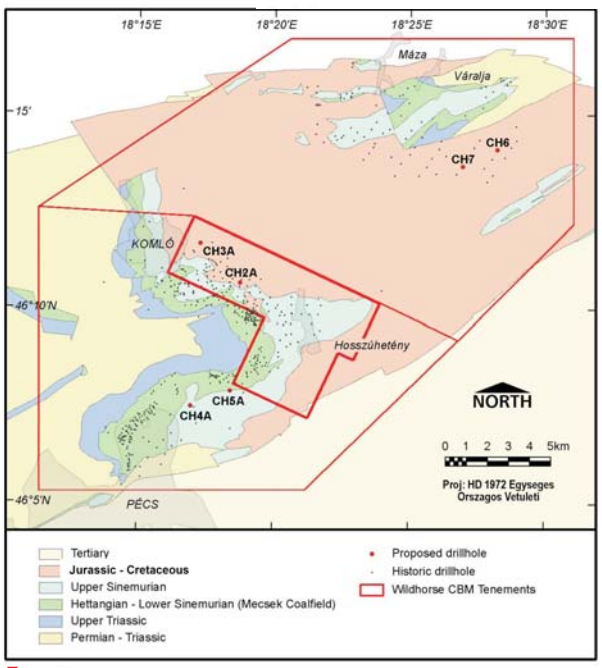
2. **The Mecsek project area** is situated in the south-east of the Transdanubia forming a prominent outcrop of Pre-Tertiary rocks within the Tertiary Age sediments of the Pannonian Basin. [2]



3. In the Alpine-Carpathian region Lower Liassic, coal-bearing, siliciclastic sequences, showing features similar to those in the Mecsek Zone, are classified as **„Grestein Facies"**, which is considered to be a characteristic facies of the European shelf of the Tethys. The ***Mecsek Coal Formation*** is made up of a **cyclic alternation** of arcosic sandstone, siltstone, claystone and coal layers. The thickness of the coal-bearing series is usually 150-300 m; in the southern part of the Mecsek Mts., however, it may attain 1200 m. This assimetric thickening, already encountered in the Upper Triassic ***Karolinavölgy Sandstone***, may be explained by the formation of an **extensional half-graben**. Thin coal interlayers already appear in the fluvial succession in the latest Rhaetian. At the beginning of the Liassic **fluvial-lacustrine-palustrine sedimentation** continued but paralic coal-swamp deposits became predominant in the sedimentary record. The coal formation is overlain by fine-grained sandstone and dark grey shale (***Vasas Marl***). [3]



4. **Normal and reverse faults** are common in the Mecsek Coalfield and have divided it into a series of discrete fault blocks. These blocks are variable in size and shape but several are large enough to host coal deposits suitable for UCG. The position of the cross-section and the location of ancient and new boreholes see on the attached Google Map. [2,4]

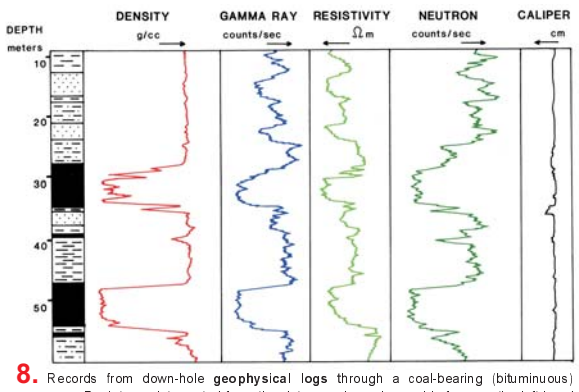


5. **The Mecsek Coalfield** is an elongated basin striking south-west to north-east app. 30 km long and 20 km wide. The coal deposits within the Company's license area have undergone significant previous exploration (app. 520 historical drill holes). In September 2010 the Wildhorse Energy Ltd. announced the commencement of a confirmation drilling program at its Mecsek UCG Project. [2,5]

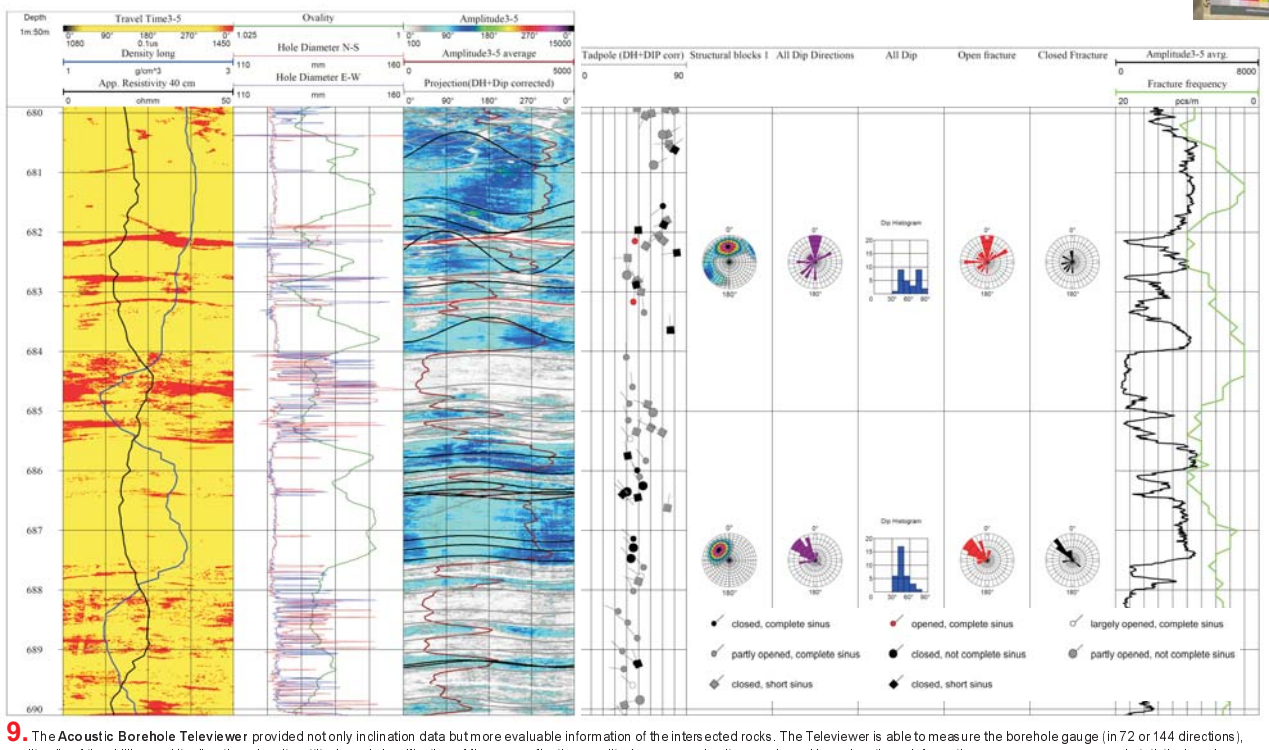
6. **The confirmatory drilling** has commerced at Komló with the drilling of CH2A, an HQ diamond core hole collared adjacent to the historic drill hole called K173.

7. For the operations was built a **new logging unit by the Geo-Log Ltd**. The downhole tools can measure more parameters simultaneously reducing the number of the necessary runs, thus the total logging time.

The measurements were carried out in six occasions in accordance with the drilling progress. The total depth of the borehole was **1001.3 m**. The average inclination of the borehole was **6.6°**.



8. Records from down-hole **geophysical logs** through a coal-bearing (bituminous) sequence. Rock types interpreted from the data are shown in graphic form on the left-hand

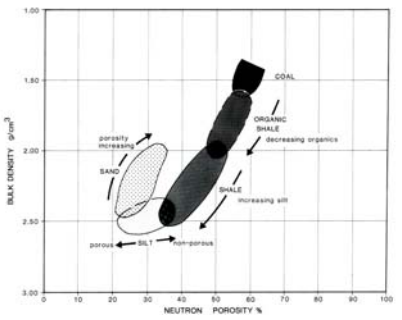


9. The **Acoustic Borehole Televiewer** provided not only inclination data but more evaluable information of the intersected rocks. The Televiewer is able to measure the borehole gauge (in 72 or 144 directions), ovality, dip of the drilling and its direction, density, attitude and classification of fissures, reflecting amplitude average simultaneously and based on these informations we can process several statistical analyses (rose-diagram, histogram, pole-density figures) about the surrounding rocks.

10. On the occasions for the most part **we carried out** Resistivity, Spontaneous Potencial, Gamma- Ray, Caliper, Temperature, Obliquity, Density, Neutron-porosity measurements, and in addition to the normal logging suite in some section Acoustic Wave-Logging and in the cased section Cement Bond Logging were measured too.

In the available Full Wave Acoustic Logs, we highlighted the travel time of the primary and secondary arrival, and the velocities of the longitudinal and transversal wave, and showed it on the composite log.

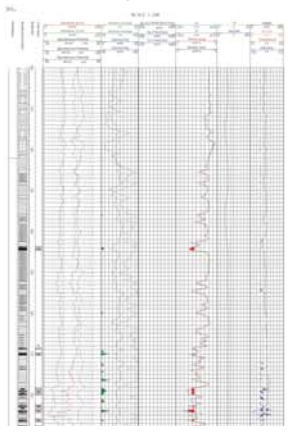
Section where all the logs were available have been usd in the evaluation.



11. In CH2A borehole below 543.8 m, the **Density** decreases sharply in many places, and at the same places high values can be observed on the **Neutron-porosity** section view.

The decrease of the Density and the growth of the Neutron-porosity is caused by the growing carbon ratio about the geophysical literature. [7]

CH2A



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12. In the so-called **"productive" zone** of the CH2A borehole we identified low Density (**<1.9 g/cm³**) sections.

With the use of crossplot-diagrams, we determined that the sections characterized by high Neutron-porosity (**app. 50 %<**), Resistivity (**app. 21 ohmm<**) and low Gamma Ray (**app. <25 µR/h**) values are presumably clear, top-quality coaly beds (so-called **"clean coal"**).

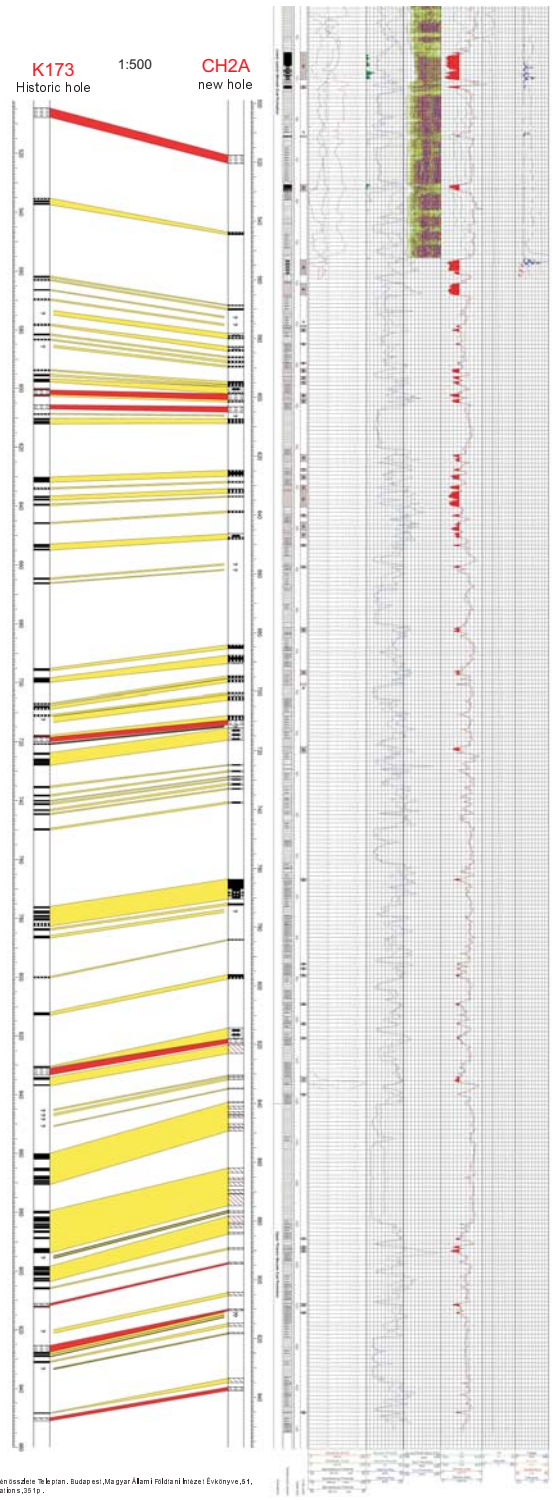
During the evaluation, we took the effect of the caverns of the borehole to the Density into consideration, aside from the lowermost cased section.

We showed coaly sections with maximum 20 mm caverns (so-called **"corrected coal"**) separately on the geophysical column.

In the more cavernous sections, we assumed coaly variations of the surrounding rocks.

13. The identification of drilled rocks (type, spatial position, thickness) were continuously checked and confirmed by Wildhorse UCG Ltd., using the collected **core samples**.

K173 Historic hole 1:500 CH2A new hole



14. The geophysical logging of the **CH2A** hole in February 2011 demonstrated good correlation with the historic hole called **K173**.

The coal seam groups (bituminous) had reasonable correlation (yellow) but individual seams within the group show changes in seam thickness and variation in coal parameters.

Much of **the present correlation** scheme depends on identifying a specific unit of volcanic origin (**rhyolitic tuff**) (red) which closely overlies one of the key seams. [2]

Main conclusions:

The **main geological risks** for the UCG project (structural complexity, coal continuity relating to structure and geological variation, etc.) are not totally defined yet. [2]

More research and programs are required to validate the coal quality data of the Mecsek area.

Literature:

[1] http://en.wikipedia.org/wiki/Underground_coal_gasification [2] WEST BLADE D. 2011: Underground Coal Gasification Projects, Hungary Competent Persons Report, Wildhorse Energy Ltd., 64 p.; http://www.wildhorse.com.au/projects/mecsek-hills-gas-ucg-project; [3] HAAS J. et al. 2001: Geology of Hungary. Budapest, Eötvös University Press, 317 p., [4] NÉMEDI VARGA Z., 1971: A komlói feketekőszénterület kutásos kutatása, A Mecsek hegységalsó liász szénösszlete. Telepian. Budapest, Magyar Állami Földtani Intézet Évkönyve, 51, [3] 135 148 pp., [5] ASX Release 2010: Exploration update Drilling commenced at Mecsek Hills Gas (UCG) Project, 3 p., http://www.wildhorse.com.au/investors/announcements/2011--exploration-update--drilling-commenced-at-mecsek-hills-gas-ucg-project-; [6] RIDER M. 2008: The geological interpretation of Well Logs. Sutherland, Rider-French Consulting Ltd., 280 p., [7] WARD R.C. 1984: Coal geology and coal technology. United States, Blackwell Scientific Publications, 351 p.