

SHALE GAS-UNCONVENTIONAL NATURAL GAS

Tadeusz Kościuszko Cracow University of Technology; Kraków, Poland

According to the general division of natural gas categories we can distinguish natural gas in conventional and unconventional deposits. While mining of the conventional deposits poses no problems and has been performed since 19th Century, the unconventional deposits, where the gas is dispersed in small rock pores, the require a different mining approach.

This type of natural gas is commonly known as shale gas. Aside from the shale gas there are also deposits of tight gas, originating from coalbed methane, deep gas and gas hydrates. The main difference between those types is the mining site, i.e. gas- containing shale, isolated rock pores, coal deposits.

Shale gas is deposited in the rocks in which it was originally formed. Rocks with low permeability have kept the gas inside, preventing it from rising to higher soil layers. Rocks containing unconventional gas are either completely impermeable oil shale or very low permeable sandstones. Gas deposits can be accumulated in low permeable sandy reservoir rocks and source rocks (thus far not considered as gas reservoirs), containing black clay shale.

Shale gas and the environment

Environmentalists fear that potable water might be polluted with chemicals added to water used for shale fracturing. Scientists from Colorado School of Mines in Golden, Colorado claim that at the depth of shale gas deposits there is no potable water and the additives used in fracturing, such as viscosity- reducing agents, surface active agents, biocides, scale formation inhibitors, pH stabilizers, should have no impact on human life, since the proportions will be 99.5% water and 0.5% additives.

Aquifers are located 300 m below the surface and drills go much deeper, at least 1.5 km below the aquifers.