

GAS CONTENT MEASUREMENT IN COALS BY DIRECT MEASUREMENT



The direct measurement of gas content in coals is one of the most basic and important measurements in determining a coal seam gas resource. Sigra uses three techniques directly measure the gas content of coals – Core Desorption, Chip Desorption and Gas Content Without Coring.

Chip Desorption

Sigra can determine gas content from coal chips delivered by air drilling. This is made viable in terms of gas loss by the speed with which the cuttings may be brought to surface. The cuttings are collected and placed in a canister where their desorption is automatically monitored and sampled for gas type analysis. The desorption occurs at a much faster rate than would be the case for core because of the small particle sizes.

As desorption slows (typically 2 hours later) the canister is weighed to determine the mass of the sample. It is then opened and the cuttings sub sampled and weighed. The sub samples are placed in a sealed vessel and crushed so as to release residual gas which is then measured. The crushed sample is retained for possible use in the measurement of the sorption isotherm and will have the ash content determined by proximate analysis. The particle size distribution of the remaining sample is determined.

Sigra fit a numerical model of diffusion from the various measured particle sizes to match the measured desorption behaviour including the residual gas measurement. This is then used to provide an estimate of the lost gas before the cuttings are sampled and the mean diffusion coefficient of the sample. The total gas content is determined from the estimate of lost gas and the measured gas released. The system can provide very accurate estimates of the gas content of coals.

Example of Chip Desorption – Real Data and Model Fit

Modelled Gas Desorption Vs. Recorded Gas Desorption

