

Construction of a Unique, Forced-Air Convection Oven

A special forced-air, infrared convection oven was built to enable rigorous experimental investigations of coal/gas interactions at temperatures and pressures equal to those measured in subsurface coalbeds into which CO₂ has been, or will be, injected. The purpose of the research is to gauge the feasibility of sequestering CO₂ in deep, unmineable coalseams as methane is being simultaneously recovered from nearby production wells. This rapidly developing technology enhances methane production from subsurface coalbeds, because CO₂ adheres to coal surfaces much more strongly than methane, causing methane to desorb from those surfaces and flow toward low-pressure regions in the coalbed created by extraction of gas and formation water.

The oven has a very large internal diameter to accommodate a unique, 19'-long autoclave, rated for operation at temperatures to 100°C and pressures as high as 5000 psi. The large dimensions of the oven and autoclave, and the wide ranges of temperature and pressure over which they can be operated, permit not only precise and accurate measurement of the densities and viscosities of coalbed gases, but also remote visual examination of coal samples through special window assemblies attached to the autoclave. [Read more about this work.](#)

