

PEAT BENEFICIATION AND ITS EFFECTS ON DEWATERING AND GASIFICATION CHARACTERISTICS.  
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In its natural state peat contains up to 90 weight percent water. Traditional methods of dewatering such as filtration and drying are unacceptable for large-scale peat utilization on an economic and technical basis. Wet-carbonization, a chemical pretreatment method using peat-water slurry, facilitates dewatering of peat in the effluent slurry by conventional pressure filtration. Decarboxylation and dehydratization reactions during wet-carbonization yield a beneficiated product which has higher energy value than the raw peat.

A wet-carbonization study, being performed at the Institute of Gas Technology with financial support from the Minnesota Gas Company and the U.S. Department of Energy, will determine the effects of wet-carbonization parameters (temperature, pressure, and reaction time) on the dewatering and gasification properties of the beneficiated peat. Peat from Minnesota, Maine, and North Carolina will be tested. The study will investigate the effects of reaction conditions upon the 1) energy value, 2) gasification characteristics, and 3) mechanical dewatering characteristics of wet-carbonized peat. One of the goals of the study is to identify wet-carbonization reaction conditions which permit mechanical weight. More severe conditions further enhance the energy value and dewatering characteristics of beneficiated peat, but would adversely affect the thermal efficiency of integrated peat gasification, liquefaction, and direct combustion facilities.