

# Renewable coal on the horizon

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Briquettes of "instant coal." Credit: University of Minnesota

Coal fueled the Industrial Revolution, but it took eons to form. Now, a team of researchers at the University of Minnesota Duluth has introduced what might be called "instant coal": an energy-dense biofuel made from wood and agricultural waste in the Natural Resources Research Institute's (NRRI) Renewable Energy Lab.

The new biofuel's vital statistics compares favorably with [coal](#) from the Powder River Basin of Montana and Wyoming. In tests at the lab, fossil coal yielded 8,000 to 9,500 BTUs per pound, while briquettes of the biofuel yielded 10,000 and a second biofuel, called "[energy mud](#)," packed even more energy per pound.

So far the lab has achieved the production of four to six tons of biofuel daily. More research is needed to determine the new fuel's future impact, but if substituted for fossil coal it will reduce the emission of carbon dioxide and impurities—including mercury and sulfur—in coal-fired power plants and reduce the mining of coal to make steel and other valuable iron products and to power steam locomotives.

The biofuels could also help salvage energy from trees killed by the [emerald ash borer](#), as well as biomass from invasive plants and other excess plant material.

To produce the [biofuel](#) briquettes, the NRRI team uses a process similar to coffee roasting in which raw biomass is dried, heated in a low-oxygen atmosphere, and compressed. To make energy mud, the researchers use a process akin to pressure-cooking that requires no drying. In addition to its value as a fuel, energy mud can act like glue to hold pieces of solid fuel together.

The two processes will be key in using biomass to more efficiently convert solid fuel into natural gas, and in making both activated carbon to purify air and water and carbon materials used in batteries, says Don Fosnacht, associate director of NRRI.

Provided by University of Minnesota

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