

Using Torrefaction Process, Low-Grade Materials Turn into a Coal Substitute

BY JOE KOERNER

Oregon Torrefaction, LLC (OTL) is an Oregon benefit company formed to develop and serve a market for biomass to support forest restoration activities. With a mission to advance forest health and rural, forest-rich community vitality, the company is developing the first commercial-scale torrefaction facility to demonstrate production that achieves the cost, quality, and product volumes needed to allow the torrefied biomass market to fully develop. OTL also focuses on the use of forest restoration residuals, which further achieves the mission and that of partners U.S. Endowment for Forestry and Communities (Endowment) and the USDA Forest Service.



Efforts are focused on forest restoration-based projects, recognizing that for a reliable, large volume market to emerge, forest-based fuel sources and multiple facilities will be necessary. The Endowment is the principal funder and has formed Restoration Fuels, LLC (RFL) to operate the facility.

Torrefaction is the roasting of renewable wood or biomass in the absence of air to make it crispy enough to be crushed to a fine powder. It serves as fuel to replace fossil coal at power generation stations. A medium-sized coal power plant can consume 8,000 tons of fuel per day, which equates to substantial market pull.

Our experience

In 2016, Oregon Torrefaction signed a purchase order with Portland

General Electric (PGE) to be the sole supplier of torrefied biomass for testing at PGE's 600 MW Boardman Coal-fired Power Plant. Five thousand tons of torrefied biomass fuel was provided in a four-month period to support PGE's five test burns, including a 100%



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Five thousand tons of torrefied biomass was processed at the Boardman Power Plant and used as a coal replacement in late 2016 and into 2017. Torrefied fuel is received either as densified pellets or briquettes—in the case of Boardman, they received pellets. The crushing to a fine powder is performed by the pulverizers at the power plant, an action that emulates how coal is processed at a coal-fired power plant.

test. These successful tests demonstrated that torrefied biomass fuel can be substituted 100% for coal in an existing power plant with few plant modifications. This in-depth experience puts Oregon Torrefaction at the forefront of this emerging industry.

Restoration Fuels, LLC—Grant County Project

The torrefaction facility is co-located at the Malheur Lumber mill in John Day, Ore. The site is owned by OTL's operational partner, Ochoco Lumber, which brings decades of local fiber sourcing, lumber mill, and white pelleting experience. The facility will sustainably source biomass from national forest restoration activities on the

Malheur, Ochoco, and Deschutes national forests, as well as biomass from private land management and mill residuals. Biomass from national forests will have been vetted for environmental impact through the National Environmental Policy Act (NEPA) requirements and termed "shelf ready."

The torrefied fuel will be sold to domestic and off-shore utilities under long-term contracts and in smaller quantities to facilitate expanded power plant testing and market development. The location in John Day with nearby rail trans-shipment in Prineville, Ore., facilitates local, regional, and international deliveries. The facility in Grant County will have a 100,000 ton per year production capacity, but will undertake a phased ramp up with initial production beginning in the second quarter of 2019 at 40,000-50,000 tons. ♦

Joe Koerner is the restoration fuels plant manager for Restoration Fuels, LLC. He can be reached at jakwsu@yahoo.com.



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