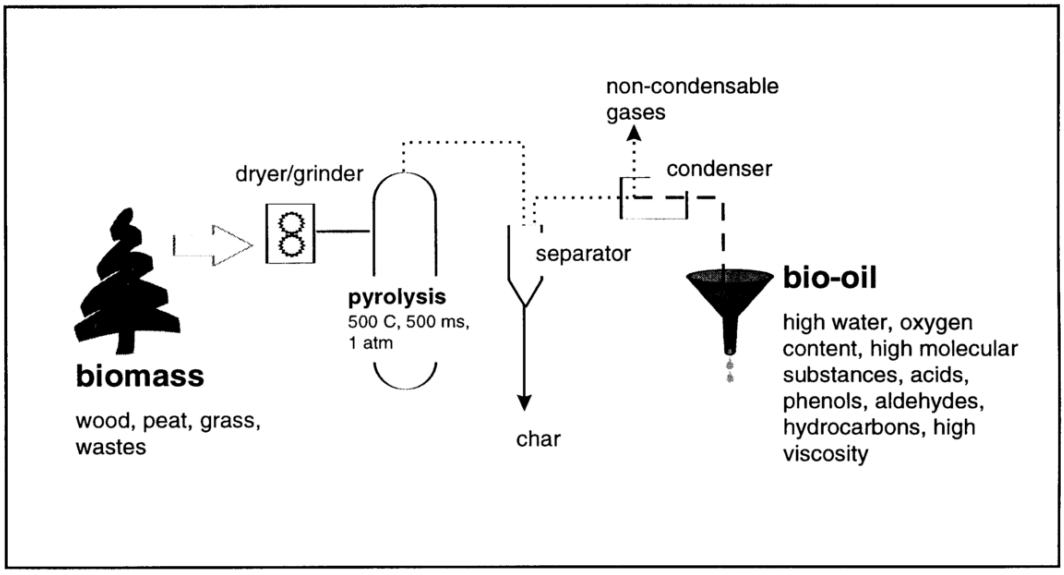
FACT SHEET: Penrose Biomass Technology

An application has been submitted to the North Carolina Utilities Commission by RD-Penrose 1, a subsidiary of RENEWable Developers, LLC for a certificate of convenience and public necessity for an electric generating plant near Brevard, NC. If approved, the plant would use up to 100 tons per day of household trash and wood waste to generate up to 4 megawatts of electricity.

Pyrolysis is an oxidation process in which solid materials are converted to intermediate combustible gases and combustible solids through a variety of thermo-chemical reactions. The synthetic gas created may be used as fuel.

The diagram below illustrates the process of biomass pyrolysis fuel production:[1]



The company plans to use the gas to run an internal combustion engine. The pollutants released to the atmosphere during this process would include fine particulates (PM2.5), hydrochloric acid, nitrogen oxides, sulfur dioxide, mercury, dioxins and furans. A comparison of air emissions from pyrolysis and old fashioned mass burn incinerators reveals that pyrolysis emits some of the same toxic air pollutants. Further, a pyrolysis unit can emit the same amount or greater quantities than the mass burn incinerator. For example, the upper range of particulate emissions from pyrolysis can be as much as 80% higher; hydrochloric acid 253% higher; nitrogen dioxide 41% higher, sulfur dioxide 224% higher; and dioxin/furan 145% higher.[2]

Louis A. Zeller, 4/9/13

[1] Diagram from *Rural electrification from local resources: Biomass pyrolysis oil combustion in a direct injection diesel engine*, Shihadeh AL, Massachusetts Institute of Technology, September 1998.

[2] Status of Existing Biomass Gasification and Pyrolysis Facilities in North America, Proceedings of the 18th Annual North American Waste-to-Energy Conference, NAWTEC18, May 11-13, 2010, Orlando, Florida.

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