

Bio-oil Overview

A totally different process than that used to produce biodiesel can be used to convert biomass into a renewable diesel fuel known as bio-oil. The process, called fast or flash pyrolysis, occurs by heating compact solid fuels in the absence of air at temperatures between 450 and 500 degrees Celsius for a very short period of time (less than 2 seconds) and then condensing the resulting vapors within 2 seconds. The bio-oils currently produced are suitable for use in boilers or in turbines designed to burn heavy oils for electricity generation. There is currently ongoing research and development to upgrade bio-oil into transportation fuels. There are many companies in the bio-oil business, including DynaMotive Energy Systems; Esyn Group; BTG Technology Group; ABRI TECH, Inc.; Renewable Oil International; and Renewable Fuel Technologies. Additional information about DynaMotive and Esyn Group, both with commercial fast pyrolysis bio-oil facilities, follows.

DynaMotive Energy Systems is commercializing a proprietary fast pyrolysis process that converts forest and agricultural residue (non-food crops) into liquid bio-oil and char. The company opened their first bio-oil cogeneration facility in West Lorne, Ontario, in collaboration with Erie Flooring and Wood Products Company. The flooring company provides the wood residue and Dynamotive's 2.5-megawatt plant uses its fast pyrolysis technology and a gas turbine to supply power to the wood product company's mills and lumber kilns. A 200 ton-per-day plant in Guelph, Ontario was completed in 2007, along with a new pilot plant and test plant nearby.

Ensyn Group Inc. has commercialized a fast pyrolysis technology under the name of Rapid Thermal Processing RTP[tm]. This technology is based on the biomass refining concept, where value added chemicals are produced in addition to a consistent quality bio-oil. Ensyn has RTP[tm] facilities in commercial operation. Four of the commercial facilities are in Wisconsin and one is near Ottawa, Canada. The largest of these facilities processes about 75 green tons per day of mixed hardwood wastes. Commercial demonstration facilities in Belridge, California, and a Feedstock Test Facility in San Antonio, Texas, help the company continue research for future renewable fuels. Ensyn has several international projects as well – using pine residues in Italy and palm residues in Malaysia. A recent alliance with UOP (a Honeywell Company) is also expected to further the technologies to produce renewable liquid fuels for heat, power, and transport fuels.

Sources: DynaMotive Energy Systems Corporation, <http://www.dynamotive.com/>

Ensyn Group Inc., <http://www.ensyn.com/>

BTG Group, <http://www.btgworld.com/>

Renewable Oil Technologies, <http://www.renewableoil.com/>

Renewable Fuel Technologies, <http://www.renewablefueltech.com/>