

Biofuels Companies Aim Big by Thinking Small

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Non-governmental organizations (NGO) in Africa have been touting for some time the use of ethanol cook stoves to replace three-stone, wood-based stoves that can trigger local deforestation, and expose women and girls (who do much of the firewood collection in traditional communities) to violence that comes from wider and wider sweeps for firewood.

But the most promising of small-scale systems are those that offer an opportunity to convert yard or farm waste to ethanol for the production of renewable power.

These systems have come a long ways.

These days, in California, with an investment of \$655,000, a farmer or local community can get into the business of producing renewable power from waste biomass processed first into ethanol and then renewable electricity. Payback, according to the figures we have obtained at the Digest, is under five years.

This is the E-Fuel system that we have been following for a while, but new detail has emerged on the economics.

What Exactly Is an E-Fueler?

Designed to operate 24/7 with fault-tolerant redundancy, an E-Fuel MicroGrid can generate up to 100 kW. Each MicroGrid is comprised of a series of generators, distillation columns and a feedstock storage tank. The system uses community

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waste or farm biomass, and the company says it generates power at a 50 to 90 percent energy efficiency, far above that realized by combusting waste.

Plus, an add-on option includes a fuel-dispensing feature that can be added to the MicroGrid to fuel vehicles, not to mention the possibility of having a densified ethanol product that can be sold, stored and transported for power or fuel use in a different geography or another time.

Here's a [downloadable PDF profiling the E-Fuel system](#) [1], and [here](#) [2] and [here](#) [3] are spreadsheets with costs and returns on investment, in Excel form, which you can adapt for your own analysis of how E-Fuel may give you solutions in your own community.

Other Micro-Fueling Systems of Note

Nigeria

Last March, [Crownek announced that it will construct up to 16 biofuel "mini-refineries"](#) [4] across Ekiti state, with projects expected to be completed as soon as this year.

Each refinery, it said, will produce 906,500 gallons of ethanol per year (365,000 liters) and supply up to 8,000 ethanol stoves to state residents free of charge, with ethanol sold for cooking at \$1.76 per gallon. (\$0.466 per liter).

Kenya

Earlier this year, [Gravitas Ltd., a Kenyan green energy firm.](#) [5] announced plans to generate ethanol-based electricity by mid-2011 using hydrous ethanol.

Gravitas has already launched an ethanol cooking stove and plans to open an ethanol bottling plant in Kisumu later this month. The ethanol is expected to replace use of the expensive and environmentally polluting kerosene.

Indonesia

New World Energy (NWE), and Bosch and Siemens Home Appliance Group (BSH) of Germany have partnered on a pilot project last April to distribute the BSH-manufactured Protos, a stove powered by crude plant oil instead of kerosene, the dominant cooking fuel in Indonesia.

The Protos' clean-burning technology is 50 percent more efficient than traditional kerosene stoves, and utilizes jatropha oil supplied by NWE. The project is now heading into its second phase with a 2010 goal to distribute up to 2,000 stoves, using 120,000 liters of oil per annum.

New World Energy is a jatropha and castor oil plantation company whose primary business is in the NTB region of Indonesia. The company operates approximately 500 hectares on Lombok with plans to expand to 2,500 by the end of 2010. NWE

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also has 15,000 hectares of farmer co-op plantation models throughout NTB and Sulawesi.

U.S.

Last November, [Chantico Fire revved up promotion](#) [6] for ethanol stoves for indoor decoration in sophisticated homes. The company offers a range of styles for its patented “bio fireplaces” ranging from \$675 to \$6,500 with some models qualifying for 30 percent discounts in tax credits. Smaller versions for table use are also available from \$50. The company sells and distributes its own brand of ethanol to supply the stoves.

In Mississippi, Mississippi Gulf Coast Community College recently chose the B-60 biodiesel processor as a hands-on educational tool to show students how to make renewable energy. The B-60 biodiesel processor requires 60 minutes of assembly time and allows students to safely produce 45-gallon batches of biodiesel. Florida Biodiesel completed the sale of a B-60 biodiesel processor made by [70centsagallon.com](#). The biodiesel production equipment will be used to demonstrate green fuel technology to students.

Dubai

Last month, [the S.S. Lootah Group and Practical Energy Solutions](#) [7], based in the UK, have signed a partnership agreement to bring the Biobot, a small-scale biodiesel production unit, to Dubai.

Colin Bolton, managing director of Practical Energy, states, “Biobot is compatible for home and business use, and can be deployed at schools and universities to create awareness among students and the society. Practically anyone with used cooking oil can use Biobot to fuel their diesel-powered vehicles with biodiesel.” The principle feedstock will be waste cooking oil from home kitchens, food chains and restaurants.

UK

Last October, [Practical Energy Solutions launched a process called the Biopot](#) [8] that transforms 75 liters of oil into biodiesel in 20 minutes for under 80 cents per liter. The product costs \$3,740, produces up to 375 liters of biodiesel per day and pays itself back in under a year when used at maximum capacity.

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[1] <http://www.ascension-publishing.com/BIZ/Efuel.pdf>

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- [5] <http://biofuelsdigest.com/bdigest/2011/01/06/gravitas-proposes-ethanol-to-power-project-for-kenya/>
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