

EPI NEWSLETTER

VOLUME 5 ISSUE 1 SPRING - 2008

WHAT'S NEW AT ENERGY PRODUCTS

EPI is expanding our pilot plant capabilities to include a stand-alone gasifier and a modernized fluidized bed combustor unit. This combination will be used for gasification, staged combustion and R&D on biogas to liquids. Our investment reflects our dedication to new fuels and technologies and the markets of the future. Our combustor enhancement project allows complete design and operating flexibility to suit our clients needs including the use of variable internal tube configurations.



EPI Pilot Plant

New combustor body parts - left
New gasifier components - below



OPPORTUNITY FUELS - WHAT ARE THEY?

One of the advantages of EPI's fluidized bed combustor is the ability to burn multiple types of fuel at the same time. We have biomass plants in operation today that burn as many as 80 different fuels due to seasonal availability. How flexible your opportunities are depends on your feed system and your emissions design criteria. Plants that are originally designed to burn high chloride fuels with back end wet scrubbers can certainly burn fuels that are cleaner. The opposite is not the case and opportunity fuels are restricted to those that will fit your emissions profile and operating permit. What determines what I can feed through my current system? . . . Cont'd page 3

SPECIAL POINTS OF INTEREST:

- *Pilot Plant Expansion*
- *Projects in Construction*
- *Opportunity Fuels*
- *Evaluating fuels*
- *Fuel Feed Options*

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What is It ?

See Page 4 for Details

CURRENT PROJECTS IN CONSTRUCTION

EPI has two projects in construction that are scheduled for commissioning and operation in 2008. Taking advantage of local opportunity fuels, these ethanol facilities have an economic edge over similar gas fired plants. The facility on top is built in strip mining country and has an onsite 30 year supply of waste coal. This facility also features a 4.5MWe steam turbine generator for the plant's parasitic load. The Panda Ethanol Project (bottom) is located in the "Cattle Capital of the World", Hereford Texas, and will be the first plant of it's kind to use cow manure to generate the facility's 267,000 pph steam supply. This facility takes advantage of it's immediate neighbors (250,000 head) and has no need for dryers.



GOOD DEALS GONE WRONG !

Are you always on the lookout for a better price? Everyone must remain vigilant to remain competitive and to reduce overhead expenses. Before accepting that new product make sure it is compatible with your entire system or your savings may cost you more in the long run. A lot of the calls we receive in customer service result from changes in the process for no apparent reason. Once the problem is explained we usually ask the client to reflect on what changes were made prior to this and when the problem was first noticed. Some of the culprits that have turned on systems include resins in wood plants and different types of limestone. Resins should be analyzed for contents to ensure they will not produce slag. If you change limestone be certain of the constituents and, more importantly, the reactivity. We recently had an example of 50% savings from a new limestone supplier. Later reports indicated SO₂ readings were increasing, limestone consumption had doubled, the boiler was fouling and the boiler differential pressures finally forced a shutdown. Upon inspection the boiler was found to be fouled with slag and had to be hydro-blasted clean. The plant is now back in service, uses the original limestone, and operates in compliance with emissions. If you have any questions regarding your system, additives, or proposed changes, please contact EPI Customer Service for friendly conversation and feedback.

***BEFORE
ACCEPTING THAT
NEW PRODUCT
MAKE SURE IT IS
COMPATIBLE
WITH YOUR
ENTIRE SYSTEM***



Customer Service Welcomes Dan White

Dan is the newest member of the Customer Service Team. Dan is not new to EPI and has almost 20 years experience in fabrication and construction. Dan is our client facilitator and "parts guy". Following in Paul Logan's footsteps, he can save you money on consumables and spare parts because of our account relationships. Next time you're looking for bed media, nozzles, etc., see what he can do for you. Paul Logan is now our purchasing manager and still willing to get you the "good deals" when asked.

OPPORTUNITY FUELS CONT'D

Plants designed with EPI's gravity metering bins and stokers have a great deal of flexibility in terms of fuel sizing and preparation. Fuels as large as four inch minus are possible when you take into consideration the high and low heating values, moisture content and density. Pneumatically conveyed fuel systems have an obvious restriction on one hand but are easy additions for lighter opportunity fuels. Since fuel distribution plays an important role in the combustor temperature profile, sizing and point of introduction must be considered at all times. See fuel feed examples, Figure 1, Page 4. As an example, feeding saw dust horizontally over bed is not recommended. This situation promotes all of the heat release in the vapor space and provides no heat release to support bed temperatures. With all of the flexibility our systems offer the windows of opportunity are only increasing. Are rising fuel cost making it more cost effective to bring you the fuel rather than the drive to the land fill? Are you in a position to charge tipping fees for disposing of an otherwise waste stream?

Listed below is a sampling of the more than 200 fuels we are burning and have tested in our pilot plant. For a more complete list visit our web site at www.energyproducts.com. For questions regarding your opportunities feel free to contact EPI customer service at cserv@energyproducts.com or 208-765-1611.

EPI FUEL EXPERIENCE

Partial List of 250 Fuels Burned by EPI Operating Units or Pilot Plant

AGRICULTURAL WASTE

| | |
|--------------------|----------------------|
| Alfalfa Seed Straw | Almond Brush |
| Almond Shells | Almond Wood |
| Apple Wood | Apricot Wood |
| Barley Straw | Bean Straw |
| Cherry Pits | Chicken Litter |
| Citrus Trees | Coffee Grounds |
| Corn Cobs | Corn Kernels |
| Corn Stalks | Cotton Gin Wastes |
| Cotton Seed Hulls | Cotton Stalks |
| Cow Manure | Cubed Garlic |
| Fig Culls | Fig Wood |
| Grape Pomace | Grape Scaffolds |
| Grass Straw | Manure & Wheat Straw |
| Pistachio Shells | Oat Straw |
| Olive Pits | Orange Peel & Pulp |
| Paunch Manure | Peach Pits |
| Swine Solids | Tobacco Sludges |

INDUSTRIAL WASTE

| | |
|----------------------|--------------------|
| Paper Sludge | PET/ Glycol Liquid |
| Petro. Tanker Sludge | Petro. Coke |
| Polyolefins | Sontara |
| Tire Derived Fuel | Unburned Fuel |
| Cardboard Sludge | Carpet Scraps |
| Cellulose Absorbent | |

FOSSIL FUELS, ETC.

| | |
|----------------|----------------|
| Anthracite | Bituminous |
| Coal Dust | Lignite |
| Sub-bituminous | Sulfite Liquor |

MUNICIPAL WASTE

| |
|------------------------------|
| Refuse Derived Fuel |
| Waste Water Treatment Sludge |
| Grease, Scum & Screenings |

Fuels Continued

| | | | |
|-------------------------------|---------------------|-------------------------|-----------------|
| Bark | Board Plant Waste | Zinc Borate OSB Waste | Softwoods |
| Hardwoods | Planer Shavings | Urban Wood Waste | Woodex Pellets |
| Railroad Ties | Sander Dust | Saw Dust | Slash |
| Charcoal | Dried Paper Sludge | Hospital Waste | Oil Soaked Clay |
| Paper Sludge | PET/ Glycol Liquid | Petroleum Tanker Sludge | Petroleum Coke |
| Polyolefins | Sontara | Tire Derived Fuel | Unburned Fuel |
| Prune Wood | Race Track Shavings | Race Track Straw | Rice Hulls |
| Rice Straw | Safflower Stalks | Sunflower Hulls | Tomato Pomace |
| Walnut Shells | Walnut Wood | Wheat Midds | Wheat Straw |
| Construction/Demolition Waste | | | |

Fuel Feed Options

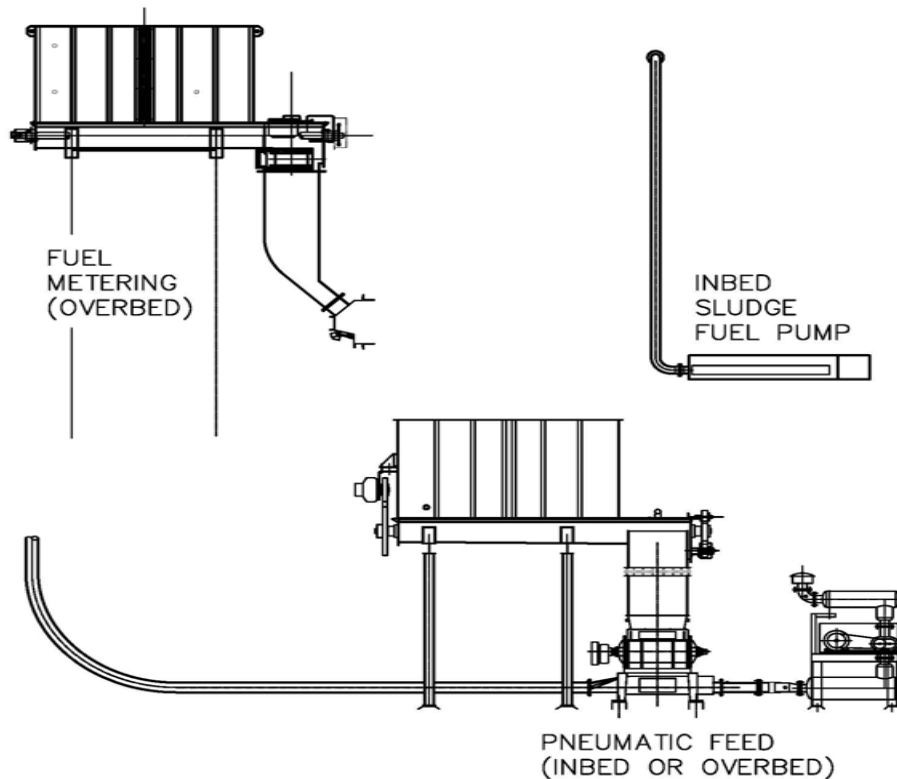


Figure 1



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WE'RE ON THE WEB !

ENERGYPRODUCTS.COM

**TECHNICAL PAPERS?
CHECK OUT OUR WEB SITE !**

Up coming events in marketing:

Patrick Travis is presenting a paper titled "Integrating Biomass & Alternative Fuels Into Today's Ethanol Plants" at the Optimizing Ethanol Plants conference in Minneapolis MN, May 14-16, 2008. Contact EPI if you would like a copy of the paper. Copies of the paper are available after presentation at the conference. If you are in the area or planning to attend this conference, give Patrick a call. He would be glad to set up a personal meeting with you.

Michael Murphy, EPI's Director of Technology, will participate in a panel discussion at the CIBO Fluid Bed Conference on June 2nd-4th in Oak Lawn, Illinois.

EPI is exhibiting at the *2008 International Fuel Ethanol Workshop & Expo* June 16-19, 2008 at the Gaylord Opryland Resort & Convention Center in Nashville, Tennessee. This is a great opportunity to meet the EPI team and discuss your current and future energy needs, even if you are not directly associated with the ethanol industry..



The LBP - 1



WHAT IS IT ?

The LBP-1 is a "One of Kind" EPI Combustor Woodstove. Either side of the air plenum has adjustable dampers while the center section is connected to the manifolds for forced air circulation. Combustion air enters the stove through special nozzles located beneath the refractory lining to promote cleaner burning. Forced air travels through the manifolds, up the rear outer shell and out of the heat exchanger located on top. Extras include a bed cleaning system (ash hoppers) with manually operated slidegate valves, a bucket elevator and access platforms.