

CORC

Anaerobic Digestion Workshop

November 17, 2009
Oakland, Ca

Vendor Background Information

BioDiesel International- enbasys ENBAFERM



In addition to BioDiesel plants with proven multi-feedstock technology, **BDI** now also supplies multi-feedstock **BioGas** plants as well. With the **@enbasys ENBAFERM** in house technology it is possible to process industrial and municipal residual and waste materials, such as kitchen waste, packed food waste, municipal solid waste, brewery spent grain, slaughterhouse residues and agricultural residues - BioGas can be produced **all year around** from a multitude of sources.

Maximum possible efficiency and output of energy is guaranteed from any feedstock, no blending or inoculation with other feedstock is necessary.

The **@enbasys ENBAFERM** BioGas technology built around a unique fermenter design ensures a **reliable and stable biotechnological process, fully automated production, up to 3 times higher throughput** and all that at a **very compact footprint**.

The **@enbasys ENBAFERM** technology offering includes substrate management (waste treatment), anaerobic digestion, BioGas treatment, energy conversion and digestate treatment (waste water treatment).

BDI – BioDiesel International AG is one of the world's leading suppliers of complete **BioDiesel and BioGas** production plants. Services include plant planning, construction, start-up and subsequent after-sales service.

BioFerm



Founded in the year 2001, BIOFerm GmbH is an energetic, rapidly growing company in the field of design, construction and operation of biogas plants. With its innovative, patented dry-fermentation process, biomass – i.e. any sort of organic, non-wood waste, whether from households, agriculture or other areas – can be turned into clean, environmentally friendly energy. Skyrocketing prices for agricultural commodities, especially corn and grains, nearly choked the biogas boom in 2007. BIOFerm's systems, however, do not depend on expensive agricultural commodities – they can use any form of organic waste, including that from landscaping and municipalities' waste management.

In the few years since its incorporation, BIOFerm has become the technological leader in its industry and in CO₂-neutral energy generation. In 2007, due to the outstanding potential of BIOFerm's technology, the company became part of the Viessmann International Holding Group. BIOFerm has close partnerships with, amongst others, MAN, Siemens AG, REHAU AG & Co., TÜV Süd, Atzwanger AG, Bozen, enabling the company to provide clients with a comprehensive range of services, from biomass management to heat conduction systems. BIOFerm now delivers comprehensive systems for integrated waste management, composting and energy generation.

Bulk Handling Systems



Bulk Handling Systems (BHS), one of the leading and most innovative manufacturers of recycling processing equipment in the world, has signed an exclusive licensing agreement with the European company Eggersmann Anlagenbau to design and build high solids biogas facilities in North America. The Kompoferm® system utilizes a unique anaerobic digestion system that creates energy from organic waste.

The Kompoferm® system uses a dry fermentation process that is highly efficient, with low investment costs and high biogas yields. The system meets the growing demand for more economy and ecology in the burgeoning waste-to-energy industry. The Kompoferm® system can be used in a stand-alone biogas plant or coupled with the patented BHS Municipal Solid Waste (MSW) processing system that separates recyclables from the waste stream. This system provides the feedstock for the biogas system while the digestate makes an excellent feedstock for the compost process.

Envirco



Jennifer Mitchell is President and CEO of Envirco™.

*Envirco™
Rethink . Recycle . Reuse . Restore . Renew
Sustainable environments for our future.™*

*Envirco is not a composter or anaerobic digestion processor. Envirco has a cost effective technology that can solve the organic solid waste disposal problems (from food sources, agricultural production, landscape trimmings and livestock manure) without impacting ground water sources and without harmful or toxic air emissions. The process, Enhanced Autogenous Thermophilic Aerobic Digestion (EATAD) is patented, and proprietary and uses thermophilic (heat responsive) microbes to process organic waste over a 45 to 72 hour period with zero harmful environmental discharge. **It is completely self-contained with the end-product of clean water and a fertilizer - No gases or VOCs in the air, - No odors, - No leachate into the soils or water table. The end product is a very stable organic fertilizer that promotes increased agriculture production.** The technology is operational around the world for over ten (10) years and is truly, zero waste for a sustainable environment.*



Harvest

Harvest provides industry leading technologies, project development experience, and product marketing capabilities to extract the maximum value from organic waste. We partner with compost facilities and waste managers in North America to build, own and operate next-generation organics recycling facilities. We establish a bridge between waste and raw materials to recycle energy, nutrients and organic matter to provide sustainable solutions for communities. We employ best-of-breed technologies including high solids anaerobic digestion, biomass gasification, and advanced composting to produce renewable energy and high quality compost based products.



Orbit Energy, Inc

Orbit Energy, Inc. owns a proprietary renewable energy technology that converts a wide variety of solid organic wastes into biogas and compost/organic fertilizer. The technology referred to as High Solids Anaerobic Digestion (HSAD), was originally developed at the U.S. Department of Energy's National Renewable Energy Laboratory during the 1990's. Orbit's business model is to build, own and operate its HSAD plants. Orbit Energy currently has offices in Raleigh, North Carolina, an HSAD facility in Clinton, North Carolina, and is planning to begin construction on 4 additional plants in North Carolina and California.

HSAD can process organic wastes with up to 45% solids.

Some examples include food waste, yard waste, food processing wastes, animal wastes, and the organic fraction of municipal solid waste. These organic wastes are best suited for our HSAD technology and can be processed without any waste streams, including waste water.

For further information please contact Jim Bailey (919) 882-3906 jbailey@orbitenergyinc.com or visit our website orbitenergyinc.com

Organic Energy Corporation

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CORPORATION**

Organic Energy Corporation has exclusive rights to the Induced Blanket Reactor (IBR) Digester. The development of the IBR was a collaboration of university academics, practicing engineers working in the field of anaerobic digestion, and food processors. The result is a vibrant bacteriological environment producing a stable digestate. The continuous process accepts high solids, requires no mechanical mixing, needs about 15 minutes of operator attention per day, and has a hydraulic retention time (HRT) of less than 5 days. The IBR provides an optimum balance of capital cost, operational cost and simplicity, with a very small footprint.

RosRoca



ROS ROCA envirotec is an international company providing worldwide engineering, procurement, construction and commissioning solutions for waste and biomass treatment plants. Numerous waste treatment plants designed by ROS ROCA are successfully operated throughout Europe, handling a variety of organic waste streams, with different capacities.

ROS ROCA envirotec has built more than 20 anaerobic digestion plants using its own technology which treat around 950,000 tons of waste per year. Furthermore Ros Roca offers biogas upgrading plants that produce bio methane with natural gas quality. It can be injected directly in natural gas grid or used as bio fuels. CNG and LNG technologies supplement Ros Roca's technologies. Moreover, Ros Roca has also built 29 composting plants throughout Europe (tunnels, drums and corridors) with a total capacity of around 1,400,000 tones per year of waste treated.

*As a global solution, Ros Roca envirotec offers the MBT that integrate several processes commonly found in other waste management technologies such as **mechanical sorting, anaerobic digestion (AD), biogas utilization and composting plants**. A ROS ROCA MBT plant can incorporate a number of different modular processes in a variety of combinations adapted to the amount and quality of the plant input.*

Valorga – Urbaser



The Valorga process is an anaerobic biological treatment process for both source-separated waste organics, and the organic fraction separated from mixed municipal solid waste (MSW).

Valorga digesters are vertical cylindrical reactors specifically designed to operate as a horizontal, plug-flow type process. The vessels contain a vertical interior baffle wall on approximately 2/3 of their diameter. The orifices for introducing and extracting the matter are located on either side of the wall. The interior wall forces the fermenting matter to flow in a circular pathway, and to contact the whole surface of the reactor. Together with the vertical mixing, this design ensures a controlled retention time inside the reactor which is of particular importance for sanitizing the organic matter.

Exhibiting Only



RealEnergy was founded in 2000 by real estate and energy professionals, and has developed, built, owned and operated more clean onsite power plants than any independent power producer in North America. These systems run up to 24 hours per day providing safe and reliable power. Natural gas engines, turbines and solar photovoltaic's are located close to the user to capture waste heat for heating and cooling resulting in lower cost, 'cleaner than grid' power. In 2004, the fleet was sold to ArcLight/John Hancock, followed by a management buyout in 2005.

RealEnergy, LLC is laser focused on developing a portfolio of renewable gas plants serving the gas and electric grid and CNG vehicles using organic waste and energy crops in North America. Two \$14m projects have completed the pre development phase and are shovel-ready for the development phase. Over 20 sites have been selected for pre development.