

Gasification

UZELAC
INDUSTRIES INC.
DRYING SYSTEMS



Gasification is a chemical reaction caused by heating material in an oxygen-starved environment, resulting in incomplete combustion that drives off carbon-rich gases. These gasses are then combusted in a thermal oxidizer with the addition of air. Gasification is often confused with incineration, although they are totally different processes. Incineration is the actual combustion or burning of solid fuels, which takes place at higher temperatures, combusts the material completely, and does not produce a carbon-rich biochar.

Uzelac Dryers are a key part to a gasification system. The Uzelac dryer dries the raw product (such as poultry, cattle or hog manure, sludge, or biosolids). It is then fed into the gasifier to be converted into biochar and energy, which in turn provides heat for the dryer. The char is an odorless, solid, carbon-rich material that is frequently used for soil amendment, animal bedding, animal feed ingredients, or water and soil filtration.

Gasification provides an array of benefits. These include:

- The ability to turn by-products and out-of-spec materials into revenue streams
- Reducing or eliminating costs now associated with non-product material disposal
- Formulating various grades of Biochar from a variety of fuel sources, with those from animal manures having especially high value
- Greater potential for sale of by-products in more stable form
- Significant reduction of mass of original material decreases transportation costs
- Control over energy production
- Freedom from escalating energy prices and foreign control
- Destruction of odors as part of the gasification process
- Meeting regulatory requirements with an alternative solution
- Halting the release of non-beneficial nutrients to waterways as a result of runoff from farm fields and storage piles

Earth Care LLC

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Project Location: Krasnobor, Tula Russia Roskar, Pervomayskoye Russia	Project Completion Date: August 2018	System Size: TPD-10000BB	Finished Product: Biochar
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Earthcare's primary goals are to improve the environment by eliminating byproducts from industrial and agricultural applications, create alternative disposal options, and provide benefits from fuels that what would otherwise be a cost for the customer. There are very few actual waste products in the world; the key is recognizing their potential. Earthcare takes by products of minimal value and create revenue streams that benefit their customers and the environment.

The products coming out of Earthcare's technology are energy and Ecochar. The energy is in the form of hot air and can be used in a variety of applications (steam, building heat, power, etc.). Ecochar, the solid product, is a combination of carbon and mineral ash from the feed material. This valuable byproduct can be used in many applications - soil amendments, soil/water remediation, and animal bedding, just to list a few. Earthcare has developed a formulated fertilizer (Vital Force) utilizing all natural products, including Ecochar as a primary component in the blend.

Uzelac Industries Drying System consists of, a Uzelac Industries triple pass drum, 10'-9 1/4" diameter X 30' long, with the heat source for the dryer being supplied from hot gasses from the gasifier. The system is designed to process 13.5 tons per hour of chicken litter and manure at 50% moisture content and dry them to 10% moisture content.

The system is primarily stainless steel construction.

"The Uzelac dryer was ideal for drying the raw product prior to entering our gasifier. The team at Uzelac was easy to work with, and have extensive knowledge on drying a wide variety of substances."

- Mike McGolden, Earthcare LLC

