

Mavitec Environmental introduces a new way of solving manure issues

Reduce CO₂ and save the planet

Animal manure has become a modern pollution problem, worldwide. Where to dispose the tons of manure produced per day and how to reduce production of CO₂? Mavitec Environmental – part of Mavitec Group, a leader in the rendering industry – has developed an innovative gasification system that converts various kinds of manure into green energy and high value EcoChar: a powerful soil improver which can be used as fertiliser or animal bedding. The gasification process ensures a smaller footprint and will be one of the answers to our future energy needs.

Complete solution

Animal manure is the modern pollution problem. Until now there was no real cost-effective way to either use the surplus of manure/litter or biosolids

productively or dispose of it. While government regulation and better manure and/or litter management practices can make a difference, animal manure is and will continue to be an issue. This also applies to a large amount of biosolids. For this issue Mavitec has the answer: gasification is the best economic, ecologic and ergonomic way of handling manure, litter and organic waste. Mavitec Environmental has developed a complete solution to gasify organic products into an energy source suitable for many applications such as steam, electricity, hot water and hot air. Besides the energy source a high quality biochar, called EcoChar, is produced. This is another big benefit of the gasification process.

How it works

Gasification is a chemical reaction caused by heating material in an oxygen-

starved environment by utilising the energy from the product itself. The input of the gasifier is a fuel with a moisture content of maximum 20-30%. Pre-dried manure or other compatible fuel is inserted and heated in an oxygen-starved environment, which produces a syngas and a solid. This solid is a char that still contains the minerals from the inserted input, called EcoChar. The syngas consists of mostly CO, that will be oxidised and combusted to generate a very hot air stream. Gasification offers a lot of advantages: volume reduction, renewable energy, reduction of CO₂ and the production of high valuable EcoChar, a highly valuable nutrient soil improver with significant economic and environmental value. For example, EcoChar can be used as soil improver, animal bedding, animal feed ingredient, water filtration and (heavy) metal remediation.

Volume reduction and green energy

The gasification process ensures a volume reduction up to 85%. Based on an input of 2300 kg/h pre-dried manure or other compatible fuel (75-80% dry solids, not wet manure), the gasification system produces 5.5-6.1 MWth at 1000°C energy. This heat is suitable for various purposes such as steam (up to 7700 kg/hr at 10 bar (g)), hot water (heat up 75.000 litres water per hour to 80°C), electricity (up to 1.1 MW net) and hot air (e.g. pre-drying).

High value EcoChar

According to the latest Strubias proposal, EcoChar is a high nutrient char. The EcoChar produced by the gasifier contains carbon (27,2-31,3% C-organic), is dry and free from pathogens, can retain up to 2.5 times its own weight with moisture, guarantees less soak-away and



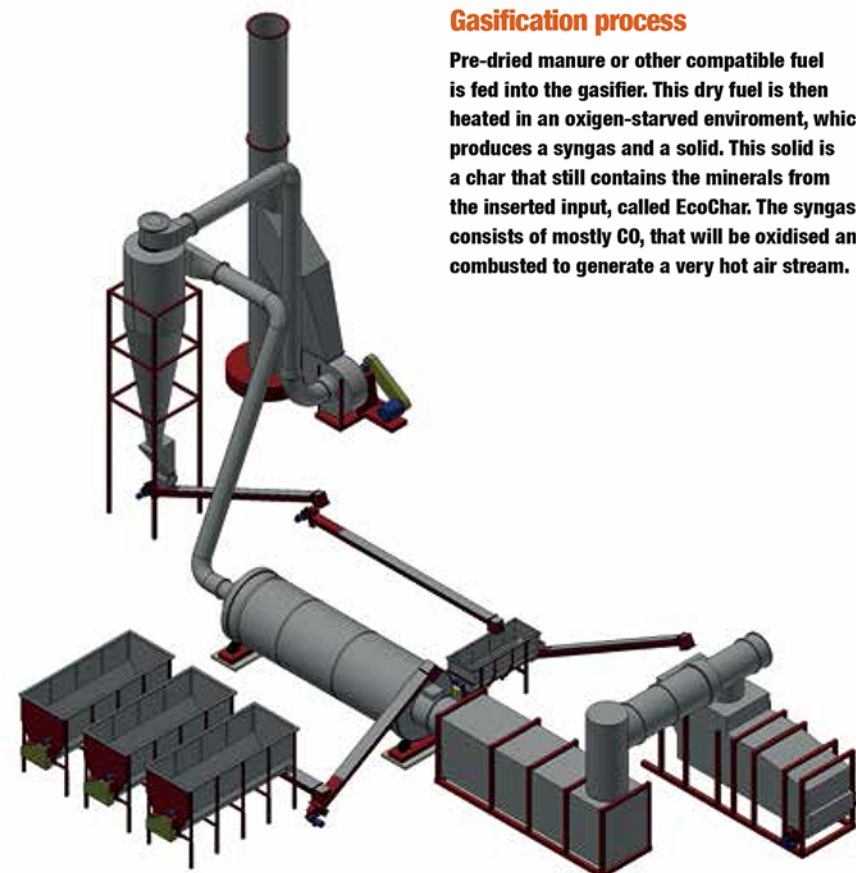
EcoChar offers environmental and economic advantages

is odourless. EcoChar from manure also contains valuable nutrients: 5,4 % P (phosphorus) and 3,4 % K (potassium) from pig manure, for example. The Dutch Wageningen University has been researching the properties and uses of EcoChar and the promising results have been providing input

to the EU Fertilisers Regulation / Strubias process. The desk study, funded and initiated by Mavitec Environmental, has been published on technical perspectives of EcoChar in Europe and includes the results of chemical analysis of Mavitec EcoChar from pig and turkey manures.

Gasification process

Pre-dried manure or other compatible fuel is fed into the gasifier. This dry fuel is then heated in an oxygen-starved environment, which produces a syngas and a solid. This solid is a char that still contains the minerals from the inserted input, called EcoChar. The syngas consists of mostly CO, that will be oxidised and combusted to generate a very hot air stream.



Mavitec's gasification system

Advantages of gasification

- Solves litter/manure/organic waste and litter/sludge challenges
- Reduces volumes up to 85%
- Reduces CO₂ emissions to improve carbon footprint
- Handles up to 55 tonnes of litter/manure per single unit per day (20-30% moisture)
- Generates 5.5-6.1MWth at 1000°C as hot air flow
- High energy content of the hot air can be used for various purposes
- Possibility of high capacity steam generation (7.7 tonnes steam at 10 bar)
- Possibility of electricity generation (up to 1.1MW)
- Produces 350-600kg/hr high quality EcoChar as end product

EcoChar properties

- High content of P, K, Ca and Mg
- Dry and free from pathogens
- Holds 2.5 times its own weight with moisture
- Guarantees less “soak-away” from high quality nutrients
- Odourless

Main uses

- Soil amendment / improver (fertiliser)
- Animal bedding (absorbent)
- Animal feed ingredient
- Water and active coal filtration
- (Heavy) metal remediation
- Air treatment

Gasification is the future

Together with its American partner EarthCare, Mavitec Environmental continues to develop gasification systems on various products and offers complete solutions to gasify organic streams into usable energy forms. The company today has full scale plants operating in the United States and The Netherlands. Two installations are under construction in Russia and many projects are pending in the near future. ●

For more information:

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Mavitec's gasifier in Nebraska