

TRAINING MATERIAL

Title:

Technology for N recovery as ammonia and grit-poor manure ready for mono/co-fermentation starting from poultry manure with "Poul-AR®" stripping and acidic washing process (ID:282).

Training:

What is the technology?

Poul-AR® pre-treats chicken manure before going into a digester.

Who is the vendor of the technology?

The intellectual property on the "Poul-AR®" technology producing the ammonia sulphate/nitrate on the basis of poultry manure is owned by Colsen (NL) (www.colsen.nl). Founded in 1989 Colsen has grown in recent years to become an international expert in the field of water, sustainable energy and environment.

Which other technologies are provided by the vendor?

With offices in the Netherlands, Italy, Spain and South Africa and a worldwide network of partners Colsen offers local support whether in the field of anaerobic digestion of manure including pre-treatment steps, digestate treatment, water treatment or soil/environmental advice.

Which are the advantages of the technology and the problems addressed?

The treatment consists of mixing poultry manure and digestate from the digester, whereby grit, other contaminants as well as the ammoniacal nitrogen are removed from the mixture. The end product can then be fed to a (thermophilic) manure digester – generating energy – without causing anaerobic digestion problems. In addition, in terms of biogas production, chicken manure is comparable to maize. Replacing maize with chicken manure can therefore bring considerable economic and ecological benefits.

How does the technology work?

The Poul-AR pre-treatment consists of 2 steps: (1) the ammonification, a batch process (24h) in which the ammonia is set free from the manure. (2) the de-ammonification, where the ammonia is stripped from the manure and washed with an acid to produce N-fertilizers. In this way up to 80% of the N is removed before digesting/is recuperated as an N-fertiliser. The treated chicken manure is then finally fed into a CSTR, thermophile digester.

How/where to use the technology?

With the Poul-AR® installation up to 80% of the nitrogen is removed, making the substrate useable in a mono-poultry manure digester (or a co-fermenter). This makes the system interesting for large poultry farms or clusters thereof. The economic minimal input per day is approx. 15 ton dry matter (all manure is diluted to 15 – 20 % DM). The process works with batches of 24 hours, so once a day the 15 tons should be fed to the process.

Which are the authority permits and in which EU countries?

At least an environmental license/permit for installing this technology will have to be asked & obtained from the local authorities. This legislation and authority depends on the specific EU region. For example in Flanders an 'omgevingsvergunning' will be required from the Department of Environment, taking into account BAT (best available technologies) guidelines and recommendations of other advisory bodies.

How much does it cost?

CAPEX: EUR 2,500,000 for the 15 tons DM/day | 1 MWe (excl. digester and CHP). OPEX: Approx. EUR 500.000 per year, depending on local prices for chemicals and salaries





For more information: https://nutriman.net/farmer-platform/technology/id_282