

TRAINING MATERIAL

Title:

Technology for N recovery as inorganic fertilizer starting from liquid fraction of manure, digestate or other waste streams with "Detricon" stripping and scrubbing process (ID:296)

Training:

What is the technology?

Detricon stripping/scrubbing recovers ammonia from liquid fraction of manure, digestate or other liquid waste streams with more than 0.1% ammonia nitrogen. The aim of stripping/scrubbing is to greatly reduce nitrogen (N) from the manure, and have it concentrated in a single fertilizing product, of which the N is more precisely known than in the raw manure.

Who is the vendor of the technology?

Detricon is a Belgian SME constructing environmental technologies for the valorisation of organic waste streams. The focus lies on the nutrient recovery out of manure and digestate, producing 'Green Fertilizers' for local use. It aims to reduce the energy consumed for fertilizer production and transportation, giving farmers a cost equivalent alternative for making their land fertile.

Which other technologies are provided by the vendor?

None.

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

The aim of stripping/scrubbing is to greatly reduce nitrogen (N) from the manure, and have it concentrated in a single fertilizing product, of which the N is more precisely known than in the raw manure. The technology produces a technical pure-end product, ammonium nitrate. The concentration of ammonium nitrate is determined by the initial amount of water in the scrubber and the amount of nitric acid added during the process. In the Detricon process the concentration is set to 52 mass% ammonium nitrate which corresponds to 18 mass% N. After the ammonia in the scrubber is chemically bound, the ammonia-poor (<20 ppm NH₃) air goes back to the stripper.

How does the technology work?

First, the manure needs to be mechanically separated, then the liquid fraction is transferred to the stripper/scrubber. Under the influence of pH and temperature, the ratio ammonia/ammonium can be increased so that the ammoniacal nitrogen can volatilize more quickly. By blowing in air, the volatile ammonia is removed from the liquid fraction and the nitrogen can be recovered. The air from the stripper, enriched with ammonia, is chemically bound to ammonium nitrate by nitric acid in the scrubber. (If sulphuric acid is used, the resulting product is ammonium sulphate.) The concentration of ammonium nitrate (or sulphate) is determined by the initial amount of water in the scrubber and the amount of nitric acid (or sulphuric acid) added during the production process.

How/where to use the technology?

Stripping/scrubbing by Detricon is an energy efficient and economic interesting technology to produce locally a pure nitrogen fertilizer without other nutrients. It is an example of circular economy. Input material(s) specs, input material availability in economical industrial scale, logistics and cost/ton: liquid fraction of either pig manure or digestate. At minimum economical industrial scale: 5.000 ton/year and scale up options: 200.000 ton/year. OUTPUT = INPUT – recovered nitrogen.

Which are the authority permits and in which EU countries?

Detricon has a EU patent pending of their stripping/scrubbing technology.

How much does it cost?

3 m³/h stripping/scrubbing: 300.000 euro ; 8 m³/h stripping/scrubbing: 550.000 euro; operational: 0,9-1,2 euro/ton depending on the market value of the produced liquid ammonium nitrate.



DETRICON



For more information: https://nutriman.net/farmer-platform/technology/id_296