

TRAINING MATERIAL

Title:

Technology for P recovery as pelletized struvite starting from digested sludge and wastewater with "NuReSys" crystallisation process

Training:

What is the technology?

NuReSys technology for biological phosphate removal can be applied on digested sludge or post dewatering. The NuReSys technology wants to tackle these operational problems by controlling the struvite process.

Who is the vendor of the technology?

Nutrients Recovery Systems is a Belgian company founded in 2011 which supplies in particular controlled struvite crystallization technology. It should be clearly mentioned that NuReSys is not a fertilizer company with the sole and main purpose to recovery phosphate as a fertilizer. Their approach is customer driven problem solving related to phosphate problems.

Which other technologies are provided by the vendor?

None.

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

Uncontrolled struvite formation is a major cause of high maintenance costs and downtime on municipal sludge processing lines especially when combined with biological phosphate removal. Advantages are scaling prevention (based on limiting free soluble phosphate) and improvement of dewatering of the bio solids, reducing the phosphorus load returning to the head of the municipal wastewater treatment plants (MWTP). You can find a photo of the plant in Figure 1.

How does the technology work?

The classical application of struvite precipitation is on MWTP at the outlet of the dewatering or on industrial water wastewater treatment plants at the outlet of an UASB reactor. A straight forward stripper/crystalliser combination can be installed. Struvite harvesting is quite simple because the struvite can easily be separated from the effluent. The second approach directly applied on digested sludge is a stripper for pH control and stirred tank reactor with $MgCl_2$ addition to promote active struvite formation.

How/where to use the technology?

The produced struvite, Biostru© is a pure, contaminant free product ready for direct reuse or by preference as commodity product to be blended in with other nutrients to obtain an equilibrated nutrient ratio. Capacity is 0.1-2.5 tons/day. Input is digestate dewatering liquor, digestate, wastewater. Output product(s) are $MgNH_4PO_4 \cdot 6H_2O$ struvite pellets

Which are the authority permits and in which EU countries?

End of waste (Belgium / Flanders).

NF U42-001-01 norm as inorganic NP fertilizer (France).

How much does it cost?

Based on actual commodity P market price +/- 80 -120 €/ton.



Figure 1. Photo of the plant.

For more information: https://nutriman.net/farmer-platform/technology/id_294