

TRAINING MATERIAL

Title:

Technology for P recovery as biomass ashes from low plant available phosphorus compounds with "AshDec®" thermochemical process (ID:398)

Training:

What is the technology?

AshDec® is a thermochemical process designed to convert the low plant available phosphorus compound (e.g. $\text{Ca}_3(\text{PO}_4)_2$) biomass ashes (preferably sewage sludge ash) to the highly plant available compound Rhenania-Phosphate (CaNaPO_4).

Who is the vendor of the technology?

The AshDec® process was developed and is offered by Metso Outotec.

Which other product/technologies are provided by the vendor?

Sustainable technologies, end-to-end solutions and services for the minerals processing, aggregates, metals refining and recycling industries globally.

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

The AshDec process is a robust technology to convert low plant available phosphorus compounds in biomass ashes (e.g. sewage sludge ash) to highly plant available phosphorus compounds. No hazardous input materials are used in this process. In the same time, no to very little amounts of residues and no by-products are produced. The product has a low content of contaminants, e.g. heavy metals (Cd, U, As, Pb), has no organic compounds and is free of pathogens. More than 95 % of the phosphorus in the input ash can be recovered.

How does the technology work?

The core process encompasses feeding ash to a rotary kiln where it is mixed with sodium compounds (e.g. Na_2CO_3). The material is treated at around 900 °C for 15-20 min. In the process, the low plant available compounds are converted into the highly plant available Calcium-Sodium-Phosphate (CaNaPO_4), also known as Rhenania Phosphate. A reducing agent (preferably sewage sludge) can be added to reduce the heavy metal content.

How/where to use the technology?

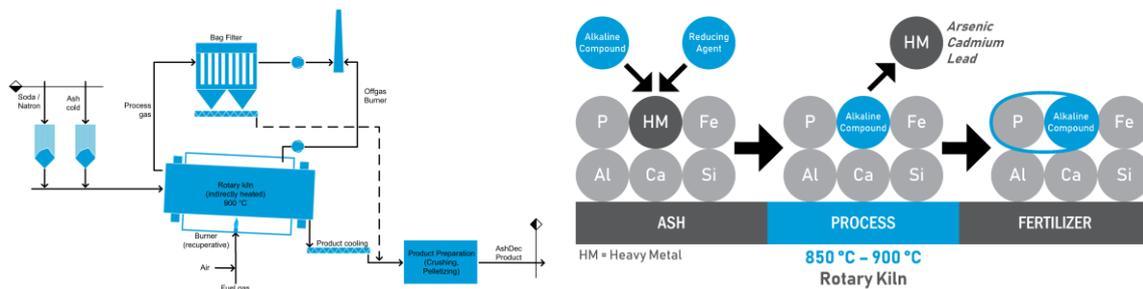
A precondition for applying the AshDec technology is the mono-incineration of e.g. sewage sludge. The availability of phosphorus in these ashes is generally low. The AshDec® technology is used to convert the phosphorus content into a more plant-available form. As result, the treated biomass ash can be used as a fertilizer.

Which are the authority permits and in which EU countries?

The construction of an Ash Dec plant is subjected to regional regulations for construction law and the emission protection law.

How much does it cost?

The costs (OPEX and CAPEX) depend on a wide range of factors (e.g. capacity, P-content, location, financing, funding, quality of input ashes, price for additives).



For more information: https://nutriman.net/farmer-platform/technology/id_398