

### EIP-AGRI practice abstract

#### Short title:

Technology for N recovery as mineral concentrate, ammonia water and ammonium sulphate from manure/digestate by VP-Hobe manure and digestate valorisation system

#### Summary:

The VP-Hobe manure and digestate valorisation system is a robust proven technology operated at own processing plants. It achieves lowest possible operational costs (energy, additives) while produces several fertilizers, e.g. mineral- and potassium-concentrate, NH<sub>3</sub>-water, Ammonium sulphate, as well as clean dischargeable water.

The input manure is separated in a flotation unit and in a belt filter press which results in a liquid and a solid fraction of 30% dry matter (DM). The solid fraction is dried on a belt dryer to 90% DM. The liquid fraction (1,7% DM) goes to a reverse osmosis (RO) process where a retentate concentrated-N/K<sub>2</sub>O product (3,4% DM) and a permeate are produced. The RO-concentrate or thin fraction will be further de-watered in an evaporator. The liquid passes through a falling film evaporator with mechanical vapour recompression. Heating the liquid in the evaporator causes water to evaporate. A vacuum lowers the boiling point, less energy is needed than when evaporating at normal atmospheric pressure. The ammonia in the incoming liquid is removed from the product flow by stripping and concentrated into NH<sub>3</sub>-water (14% N). The evaporator further produces a potassium concentrate (25% DM) and an ammonium sulphate solution by scrubbing the vapour coming out of the evaporator. The condensate from the Evaporator/Stripper/Scrubber (ESS) unit and the permeate from the RO is cleaned in the RO water polisher and the ion exchanger (RO-IE) to achieve the right quality for discharge into surface waters.

The capacity of the technology is scalable: 50.000, 125.000, 250.000 ton input/year.

For more information: [https://nutriman.net/farmer-platform/technology/id\\_669](https://nutriman.net/farmer-platform/technology/id_669)