

Recovery and utilisation of nutrients for low impact fertiliser



Technology fact sheet – Ammonium stripping

Ammonia fertiliser recovered from digestate

Wastewater contains ammonia in two forms, ammonium ions (NH_4) and ammonia gas (NH_3). Nitrogen in the effluent of an anaerobic reactor treating black water is mainly present as ammonium. For efficient stripping, most of the ammonia has to be present as NH_3 . By increasing the pH through adding a base, sodium hydroxide (NaOH) in Run4Life, the ammonium is converted to readily available ammonia. Stripping of ammonia with air and the later adsorption of ammonia in acid is a common process for selective removal of ammonia from wastewater. The process is based on the principle of mass transfer in which wastewater and air are brought into contact with the purpose of transferring volatile ammonia from wastewater to air. In stripping towers applied for ammonia stripping, the water and gas (usually air) flows in opposite direction and a high contact surface is guaranteed by the presence of packing material in order to maximize ammonia stripping. Dissolved ammonia is stripped out of the water into the air stream. The ammonia rich air can be scrubbed with nitric acid (HNO_3) to obtain ammonium nitrate or sulphuric acid (H_2SO_4) to obtain ammonium sulphate. The end products, ammonium nitrate or ammonium sulphate, can be used to replace artificial fertilisers.

Key facts

- Suitable for N recovery from flows with high ammonium concentrations
- Performance is influenced by temperature and pH
- Often dependent on chemical input for pH control
- Unaffected by toxic compounds

Application in Run4Life demo sites

- Input: UASB digestate, NaOH , H_2SO_4
- Output: ammonium sulphate, liquid effluent
- Applied in Helsingborg



Image by Ekobalans Fenix AB.
A similar stripper is applied in Helsingborg.

