



Simultaneous mobile nutrient recovery and mobile sludge dewatering on sewage treatment plants. Part II

Phosphorus is very important, but primary phosphorus resources are becoming increasingly scarce. Furthermore, the quality of the phosphorus ores as well as Germany's trade policy dependency cannot be ignored. The quality of the phosphorus ores is severely impaired by contamination with heavy metals, especially cadmium and uranium. Moreover, Germany depends almost exclusively on the import of phosphorus.

The greatest „phosphorus potential“ in Germany is found in organic waste, especially the „waste“ of sewage sludge, which is produced in sewage treatment plants. Soil-based sewage sludge recycling will be discontinued in the future for reasons of preventive soil and water protection and consumer protection. However, the phosphorus contained in the sludge, which exceeds 20 g/kg DM, must be recovered before final disposal.

For sewage sludge dewatering, more and more sewage treatment plant operators are using the services of external providers of mobile sewage sludge dewatering in order to avoid additional investment costs. The innovative approach investigated in this project consists of simultaneous phosphorus recovery during sludge dewatering campaigns using a mobile phosphorus recovery plant. MSE Schlammentwässerung planned and built the mobile plant for phosphorus recovery according to the Stuttgart process. The mobile system consists of two modules or overseas containers. Module 1 accommodates the release reactor and the ultrafiltration plant. The solid/liquid separation takes place outside the modules by means of a mobile chamber filter press (Figure 1, left in the picture). The phosphorus precipitation and end product separation takes place in Module 2. The system is automated and the monitoring room is also located in Module 2.

The mobile phosphorus recovery plant was tested at various wastewater treatment plants from February 2016 to June 2017 and thus achieved good results. It has been shown that the requirements of the new Sewage Sludge Ordinance can be met. In addition, the plant was able to produce a high-quality fertilizer that can be used directly for agricultural purposes. The analyses carried out in accordance with the Fertilizer Ordinance have confirmed this.

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Figure 1: Mobile Phosphorus recovery plant