

Simultaneous mobile nutrient recovery and mobile sludge dewatering on sewage treatment plants; Part 1

The industrialisation of agriculture and a steadily growing population have significantly increased our need for phosphorus. However, phosphorus will become increasingly scarce over the coming decades because it is almost exclusively obtained through the unsustainable practice of mining geogenic phosphorus deposits. Furthermore, contamination through heavy metals such as cadmium and uranium is reducing the quality of phosphorus ores. The necessity for phosphorus recovery results also from the commercial and economic dependence of the country. Germany is 100% dependent on the import of phosphorus.

Although sewage sludge has the greatest phosphorus recovery potential of all organic waste in Germany, concerns relating to the protection of soil and water have made the agricultural use of sewage sludge controversial and have initiated a search for alternative phosphorus recovery methods. In order to deal with phosphorus reserves sustainably, the Federal Ministry of the Environment is developing a new regulation for phosphorus recovery. The main aim is to prohibit the burning of sewage sludge if it contains a certain amount of phosphorus.

Increasingly, operators of sewage treatment plants turn to external service providers for mobile sludge dewatering in order to save additional CAPEX. A mobile sludge dewatering campaign could represent an approach to developing the potential for phosphorus recovery. The aim of the project is to develop a mobile system that enables the recovery of nutrients, particularly phosphorus, contained within wastewater and sewage sludge. This mobile nutrient recovery system should be linked to mobile sludge dewatering but should also be suitable for stationary dewatering.

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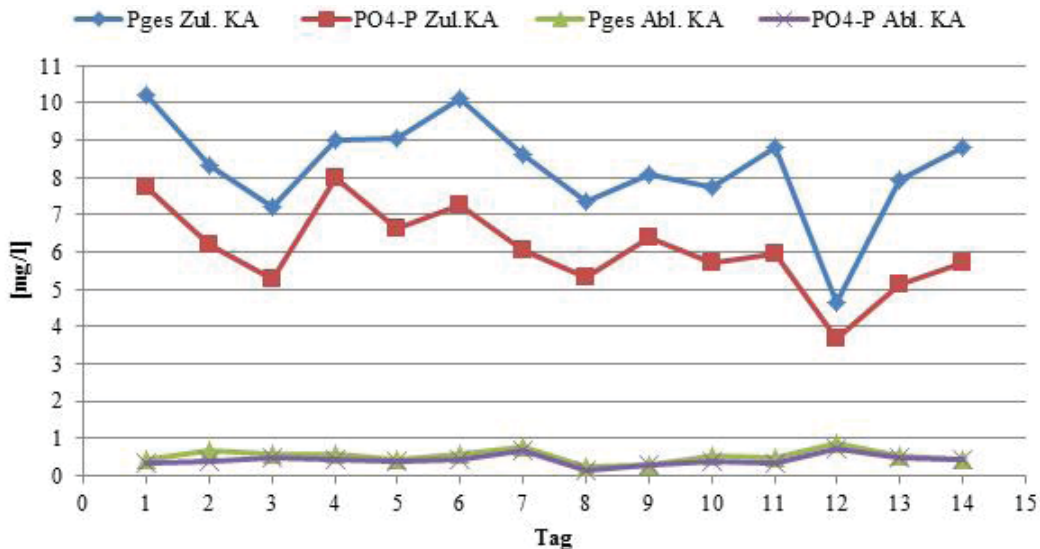


Figure: Daily concentrations of total phosphorus and orthophosphate phosphorus in inflow and outflow of a municipal wastewater treatment plant determined during a measuring campaign