



SMART-Plant

*Scale-up of low-carbon footprint
material recovery techniques in existing
wastewater treatment plants*



SCENA-THP *Energy-efficient Nitrogen Removal from Sludge Liquor after Thermal Hydrolysis*

Sludge liquor from dewatering of digested sludge is heavily loaded with nitrogen and phosphorus, especially when the sludge is pre-treated by thermal pressure hydrolysis (THP) before digestion. Hence, wastewater treatment plants (WWTPs) using THP exhibit a high fraction of N and P return load, putting an additional load on the mainline and limiting the overall treatment capacity of the plant. Moreover, sludge liquor after THP contains a low fraction of biodegradable organic carbon, so that conventional biological processes for nutrient removal in sludge liquor have to be operated with costly addition of an external carbon source.

The SCENA process can remove nitrogen and phosphorus from sludge liquors with low energy demand and using an internal carbon

source such as supernatant from primary sludge thickening or VFA from fermentation of sludge. In the SMART-Plant project, this process is demonstrated at pilot scale (2 m³/d) at the Psyttalia WWTP in Athens (Greece), which operates a THP for the treatment of 50% of the excess sludge.



