

Master thesis/Internship

Sustainable waste management and resources recovery from hydrothermal gasification of sewage sludge

TreaTech is an EPFL start-up that developed a catalytic hydrothermal gasification (HTG) system capable of producing renewable gas from sewage sludge (SS). The HTG technology exploits supercritical conditions to transform SS into biogas, process water, and a phosphorus-enriched solid residue. Despite the high technological readiness level already achieved in the HTG, the process water and the solid residues remain waste streams that are not yet been fully investigated for further exploitation as nutrients source (i.e. phosphorus (P) and nitrogen).

On this regard, the revised Swiss waste ordinance (ADWO) requires the implementation of a P recovery strategy for processes applied to SS disposal, such as the HTG from TreaTech. TreaTech is currently collaborating with the Environmental, and Water technologies Group (UWT) of FHNW to develop one comprehensive waste management strategy for the waste streams of the HTG, with a strong focus on implementing a P recovery technology. In the recent years, UWT group has gained great experience in process development for P recovery from sewage sludge and alternative sources (Pyrophos, PASSAGE). The group also supported phosphorus recycling by process evaluation (LCA, LCC), market evaluation, networking and communication on EU and national level (P-REX, Phos4You, PNRW).

Within the project, one experimental plan is designed to identify, and optimize processes that are suitable for the treatment of the solid residues and the wastewater streams of the HTG for further recovery of nutrients (i.e. P and N). The master thesis/internship will focus on the performance of laboratory works. The major tasks are to perform experimental works at laboratory and bench scale (i.e. acid leaching of the solids, membrane processes for the purification of the leachate containing P), analytical works for the characterization of the solids (i.e. ICP-OES, TOC) and the leachate before and after purification (ICP-OES, ICP-MS), and data evaluation. The work will be conducted in the laboratories of the FHNW in Muttenz under the supervision of the UWT group.

Duration: ~6 months

Starting time: Feb 2021 or spring 2021 at the latest

If you are interested or have questions, please contact

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