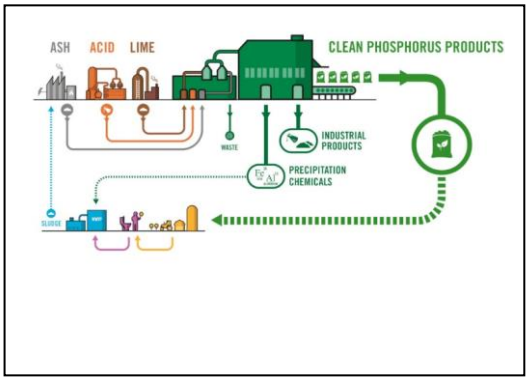
TECHNOLOGY FOR P RECOVERY AS CALCIUM-PHOSPHATE STARTING FROM SEWAGE SLUDGE ASHES WITH "ASH2PHOS" PROCESS

Keywords: *Sewage sludge ash • Clean phosphorus products • Chemical P recovery*

Key facts:

- → **Category of the technology**: Chemical recovery from ashes
- → **Input:** Sewage sludge ashes
- → **Output product(s):** Calcium phosphate
- → **Available capacity:** 30000 t ash/y
- → **Focusing geographical areas**: Global (production in Sweden and Germany)
- → **Technology status:** TRL 8
- → **EC/MS Authority permits:** Sweden



Summary of the technology:

EasyMining is focused on creating circular material flows from waste. Via the food cycle, phosphorus ends up in sewage sludge. Incineration of this sludge is today mainly used as a method to reduce the amount of waste to land fill, or destruction if the sludge quality is too low for other uses. The phosphorus content of ash from incinerated sewage sludge is high, and through this unique patented process, we are able to extract clean commercial phosphorus products from the ash. The Ash2Phos process can transform the sludge ash into raw material for phosphorus extraction and thereby be a part of a circular solution for phosphorus management. The process consists of 3 sequential steps: a first acidic step, a second alkaline step (where intermediate products are produced), and finally a conversion step where the intermediates are processed into final products. The process consists of several successive chemical reactions undertaken at room temperature (though one process step may benefit from a temperature of 40°C). There is no need for pressurized vessels or for exceptional materials to be used for the equipment. The mass balance of the process is favourable, since all input chemicals become part of the products.
Pilots are running in Sweden (Helsingborg and Uppsala, 600 and 50 kg ash per day). Permit application is ongoing for the full scale plant in Sweden (30000 ton ash per year) and Germany (ChemPark Bitterfeld-Wolfen, 60000-90000 ton ash per year).

Competitive position and advantages:

- → Clean phosphorus products (< 1 mg Cd/kg P)
- → Low energy consumption: 30 kton ash plant requires energy equivalent to approximately 80 households
- → Favourable mass balance
- → More than 90% recovery rate of P from ash
- → Can use waste acid from incineration plants
- → Low labor intensity
- → Recovery of iron & aluminium as precipitation chemicals

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818470