OUTOTEC SOLUTION CUTS SLUDGE LANDFILL IN BAD VÖSLAU, AUSTRIA

Turnkey thermal sludge incineration plant combined with a solar-thermal drying plant enables environmentally friendly and economically viable treatment of sludges from various sources.

Completed in 2005, the Outotec Sewage Sludge Incineration Plant treats municipal and industrial sewage sludge from several local wastewater treatment plants (WWTP). Its thermal sludge treatment based on fluidized bed (FB) technology – an environmentally friendly and economically viable solution for treating sludge without additional fuel consumption. The plant is self-sustaining in terms of heat energy input, and surplus energy can be diverted in the form of heat. The only residue of the process is a dry ash, reduced to approximately 12% of the original sludge volume, which can be sent to landfill or used in the cement industry.

CHALLENGES

- Cease direct landfilling of sewage sludge
- Independency of sludge sources
- Strict emissions limits due to plant location in spa town

SOLUTION

- Solar-thermal drying plant combined with fluidized bed technology based on Outotec patents
- Turnkey solution including state-of-the-art flue gas treatment
- Afterburner chamber to guarantee required residence time

BENEFITS

- Minimal environmental emissions from process
- No auxiliary fuel required for treatment during normal operation
- Excess energy supplied to district heating network

OUTOTEC SLUDGE INCINERATION PLANT PROCESS

Sewage sludge from both the on-site WWTP and other local sites is dried using solar power and additional low thermal heat depending on the ambient temperature. To increase the evaporation, the sludge is automatically turned regularly.

The dried sludge is fed into the rectangular fluidized bed (FB) incinerator using a screw. A second fuel input allows the dosing of screenings from the WWTP. The FB incinerator is equipped with an overflow and ash recirculation, and natural gas is only required for start-up or part-load operation.

The hot flue gases from the FB incinerator flow to an afterburner chamber equipped with a standby gas burner to guarantee the required residence time above 850°C. The flue gases then enter a thermal oil boiler for heat recovery.

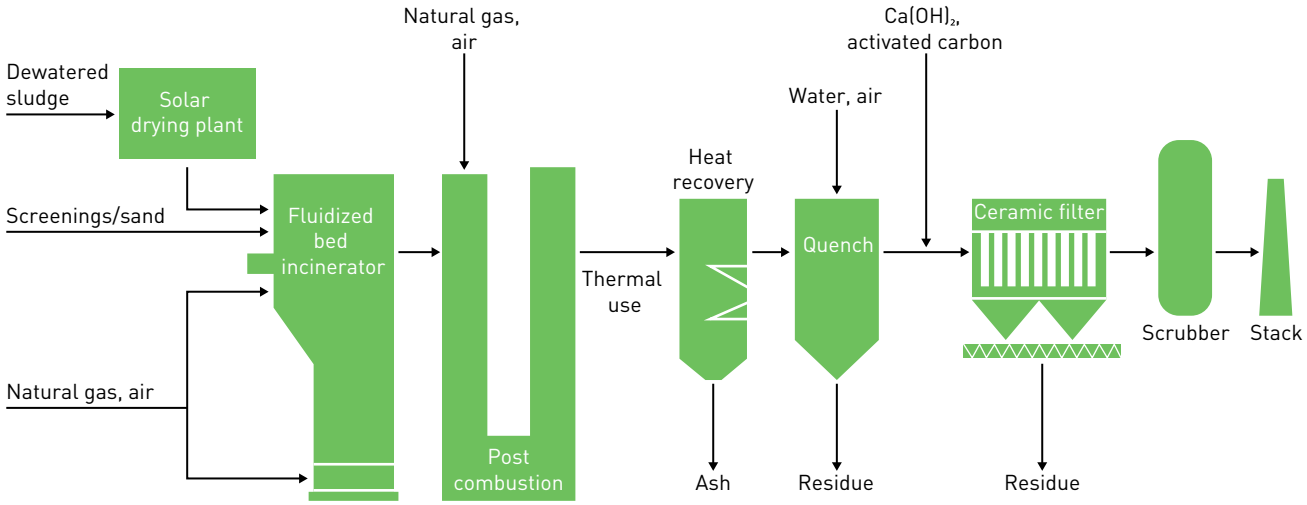
The flue gas cleaning system comprises an evaporation cooler followed by a dry sorption system which injects hydrated lime and activated carbon, and then filters through a multiple ceramic tube filter. The cleaned gas exits the plant through the stack, passing a continuous emission monitoring system.

Project scope

Outotec's was responsible for the design, manufacture, and supply of all equipment. The project scope also included installation and commissioning activities. Outotec also provided the operator with additional ongoing support following the plant's commissioning.

DESIGN DATA

Throughput	14,000 t/y (sewage sludge) 3,500 tDS/y (DS - dry substance)
Solar-thermal drying plant	
Drying area	6 x 500 m^2
Inlet DS content	20-30%
Outlet DS content	60-80%
Fluidized bed incinerator	
Throughput	850 kg/h at >60% DS
Incinterator head temperature	850-900°C
Fluidizing air	1,100 Nm^3/h at 40°C
Heat recovery boiler	
Thermal oil	230/180°C
Excess available heat	max. 800 kW at 90°C
Flue gas cleaning	
Flue gas quantity wet	5,600 m^3/h
Flue gas outlet temperature	60°C
Emissions (acc. AVV standards) (STP)	
Dust	<10 mg/m^3
HCl	<10 mg/m^3
SO^2	<50 mg/m^3
NOx (as NO_2)	<150 mg/m^3
CO	<50 mg/m^3



Outotec Sewage Sludge Incineration Plant