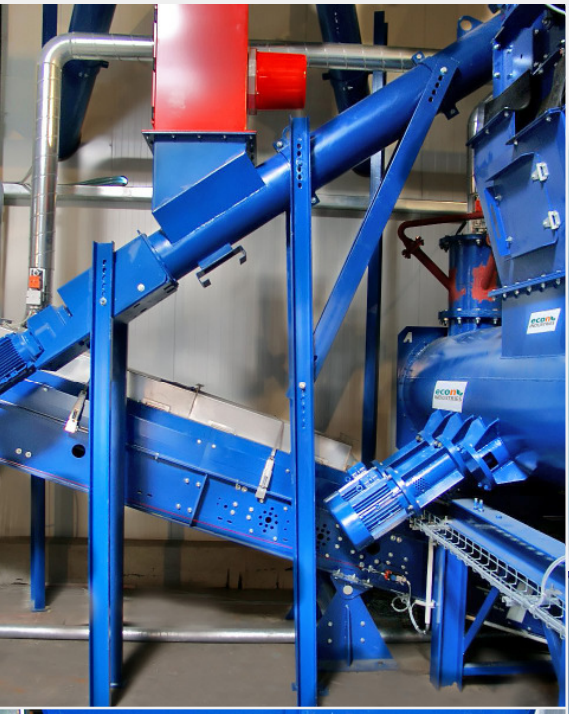
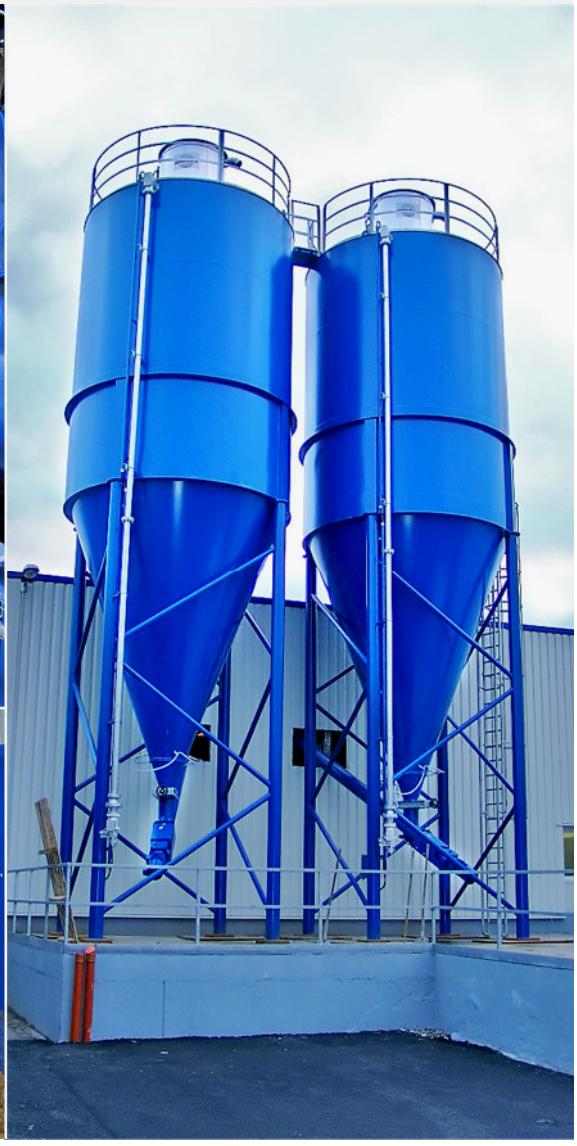
econ INDUSTRIES

Case Study

Solidification/Immobilisation of sludge from physical-chemical WWT process





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Imagine – Zero industrial waste … !

Solidification / Immobilisation of sludge

by econ industries Turbulent Mixing Technology

In 2003 econ industries received an inquiry from a service company operating an industrial waste water treatment plant. At the end of the physical-chemical WWT process this client generated metal-hydroxide sludge from his chamber filter presses. Originally he discharged the sludge into skips and brought it to a hazardous waste landfill. At this landfill, a solidification process was used to stabilise the waste for final disposal.

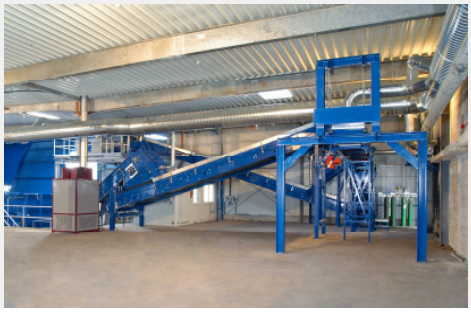
Instead of using external stabilisation, the client wanted to be able to operate an own solidification plant. One reason for this was that he would be able to operate the stabilisation in the most economic way exactly according to his own specific wastes. A second reason was that he wanted to prepare the waste in a special way for final disposal in a salt mine. (Salt mine disposal in Germany is usually cheaper because of the positive geological benefit of this disposal method.)

A major design challenge was that it was necessary to build the plant without odour emissions, as the facility itself had to be placed close to a residential area, including a food production facility. In the end, econ industries completed this project within 6 months of signing the order. The complete treatment plant was placed inside an existing building and has been operated successfully since 2004.

Performance data

- Continuous mixer: 1,000, including vapour filter and H_2 measuring
- Throughput capacity: 50 m³/h; approx. 50% sludge and 50% dry solids, 1 shift/day
- Output consistency: Dust-free, non-sticky, granules up to 30mm grain size, direct loading to truck
- Feeding dry solids: Silos with 80 m³ each; including screw conveyors for fly ashes, lime, etc.
- Feeding WWT sludge: 40 m³ bunker unit each; operated by hydraulic agitators, loaded by truck

View from the silo bunker to the residual area



Position inside the building with conveying systems

Direct conveying from discharge

Design characteristics

- Very economic, continuously working turbulent mixing process with accelerated torque
- Sludge handling by direct feeding from truck to storage bunker, sludge does not touch the ground
- After mixing direct loading to truck, no intermediate handling, no ground floor pollution
- Turn-key delivery including control unit and explosion protection by automated H_2 measuring
- Fully automated PC controlled system including remote control from central office building
- Almost maintenance free mixing and conveying equipment, all service work can be done by own staff