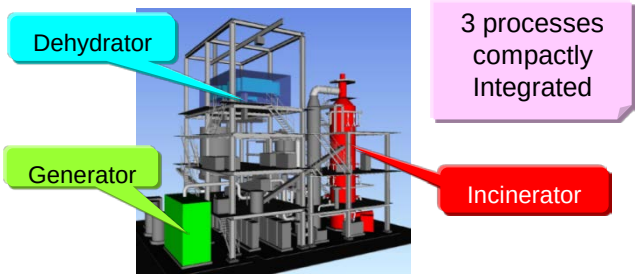
Pilot Research Work for an Innovative Energy-conversion System through Total Optimization of Sludge Dehydration, Combustion and Electricity Generation

Executed by METAWATER and Ikeda City at Ikeda City wastewater treatment plant

[Objective] To maximize the effect of energy-saving, cost reduction and power generation of the total sludge treatment system by means of (1)using the advanced and more efficient dewatering, incineration and power generation processes as well as (2)automatically adjusting their operation by mutually referring to the operational data of other process, aiming at shifting sludge treatment plant from “conventional energy-intensive system“ to ”innovative energy generation system”.



Advanced dehydrator

- Low-power centrifugal dewatering process
- Reduction of supplemental fuel by highly dewatered sludge (Autothermal combustion)
- Reduction of sludge transporting energy as well as total footprint because of more close installation to the incineration process.

Combustion at lower excess air ratio

- Achieving excellent lower excess air ratio due to a modified model expectation control method, proven through lots of experience with multi-layered burning incinerator (MLBI)
- Power and fuel saving in a compact furnace
- Easy to modify from the existing incinerators

Efficient generation from waste heat

- Efficient binary power generation from low temperature gap
- Even utilizing the latent heat in sludge by binary cycle with 2 different heat sources
- Able to apply for small combustion processes