Demonstration of the practical application of power generation type sewage sludge incineration technology for greenhouse gas reduction

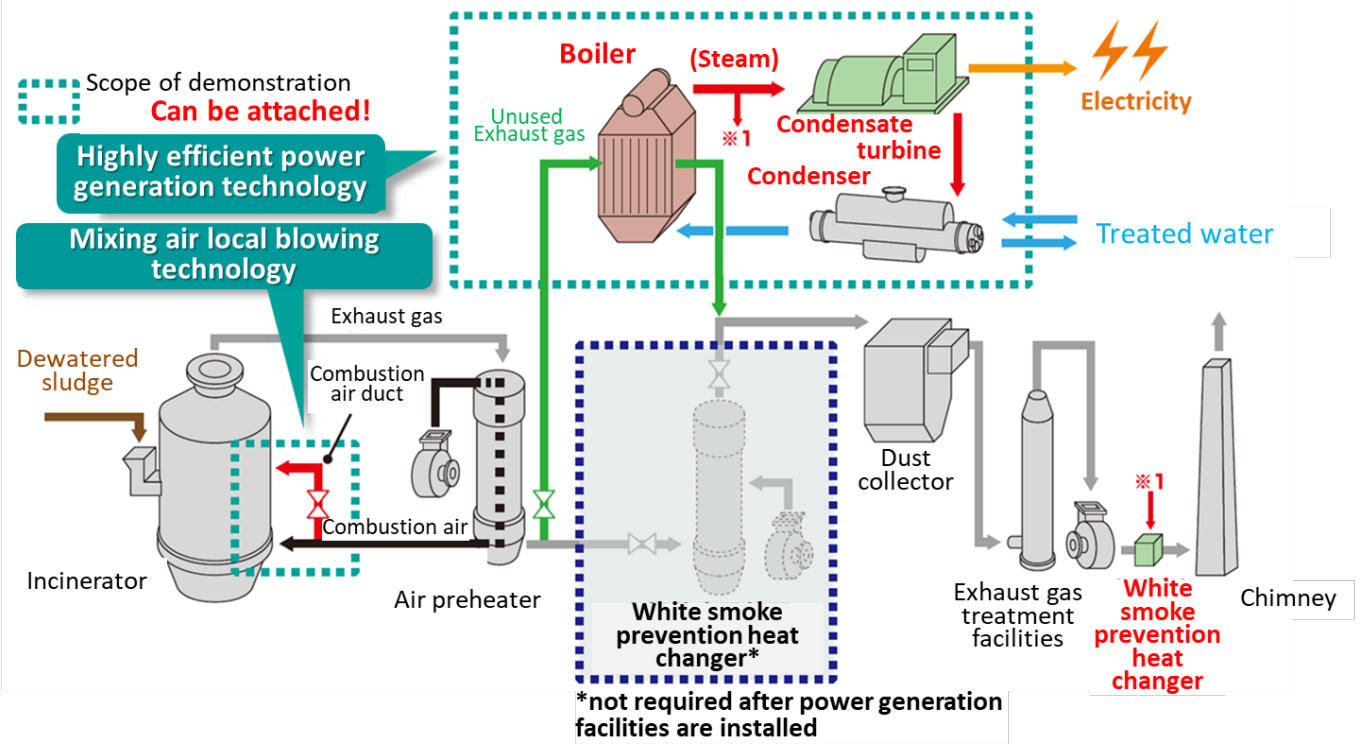
Implementer: The consortium of JFE Engineering Corporation, JS and Kawasaki City

Massively reduce N_2O emission in the sludge combustion process, and high-efficiency power generation utilizing treated wastewater contributes to global warming prevention

Technology Overview

① High-efficiency power generation technology: Boiler recovering waste heat from incineration, and condensate turbine utilizing treated wastewater as cooling water achieve highly efficient power generation of 150-1500kW.

② Mixing air local blowing technology: Space-saving, low-cost air blow into the freeboard of furnace reduces N_2O and NO_x emissions together.



Achievements

*Installed a demonstration facility with a fluidized-bed incinerator of 150 watts/day

- Generated an average of **1.4 times,** which is 230-771kWh, electricity as much as the target value of 59× H-574(H: heat input to furnace, GJ/h) In a specific condition*1, **electricity self-sufficiency***2 was verified.
- Achieved the reduction of N_2O and NO_x by **50% or more***3 at the same time.

*1: For mixed sludge of 150wet-t/day: water content of 72% or installation in more than 2 furnaces with 150 wet-t/day, For digestion sludge of 150wet-t/day: use digestion gas as supplemental fuel

*2: Power generation (kWh) > Energy consumption of single-row incineration facility and demonstration facilities

*3: With no mixing air local blowing technology, Case when the sludge disposal volume of the incineration facility is greater than the rated load