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

**Project Implementer**
JFE Engineering Corporation; Japan Sewage Works Agency and Kawasaki city

**Demonstration Field**
Iriezaki Sludge Center, Kawasaki City

**Demonstration Overview**
Demonstrate the realization of self power supplied incinerator and a great reduction of greenhouse gas (GHG) emissions by the combination of high-efficient power generation technology utilizing unutilized waste heat from sludge incinerator and the spot air injection technology which can add to the existing sludge incinerator.

**Advantages**
The following two technologies realize the self-powered incinerator and the great reduction of GHG (CO$_2$, N$_2$O) emissions. (They can be applied to the existing sludge incinerator)

1. **High-efficient power generation**
   - Realize the high-efficient power generation by applying high-efficient condensing turbine and condenser which utilizes treated wastewater from sewage treatment plant as cooling water to small-scale sludge incinerator which is hard to realize the power generation.

2. **Spot air injection technology**
   - Achieve space saving installation with no complicated ducting of air injection pipeline. Achieves the reduction of N$_2$O emission.

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**Overview of the proposed technology**

- **① High-efficient power generation**
  - Steam → Condensing Turbine → Electricity
  - Exhaust gas → Condenser → Treated wastewater

- **② Spot air injection**
  - Combustion air → Incinerator
  - Dust collector → Flue gas treatment tower → Chimney

- **Control**
  - Scope of the demo

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Sludge cake → Spot air injection

Exhaust gas → Pre-heater → White smoke prevention pre-heater → Flue gas treatment tower → Chimney

Treated wastewater

Exhaust gas (unutilized waste heat)

Dust collector

Flue gas treatment tower

Chimney

Exhaust gas

Spot air injection