

FY2015 Feasibility Studies with the Aim of Developing a
Joint Crediting Mechanism

Feasibility Study for Developing an Energy Saving and Heat Recovering Waste Treatment System in Indonesia

New Energy and Industrial Technology Development Organization (NEDO)

Dowa Eco-System Co., Ltd. / Yachiyo Engineering Co., Ltd.

Feasibility Study for Developing an Energy Saving and Heat Recovering Waste Treatment System in Indonesia

Conducted by: Dowa Eco-System Co., Ltd. / Yachiyo Engineering Co., Ltd.

Study Summary

This study verifies the feasibility of introducing an energy saving and heat recovering waste treatment system for the first time in Indonesia at PPLi, a group company of Dowa Eco-System which is engaged in industrial waste treatment. The study is also being conducted to prepare for a pilot project.

Study Items

- ① Study of flammable waste for substitute fuel
- ② Study of gas components generated in the landfill at PPLi
- ③ Study of the energy usage circumstances
- ④ Study of the deployment of facilities including incinerators
- ⑤ Measurement, Report and Verification (MRV) methodology development

Partner/Site

- Partner: PPLi
- Site: Bogor Regency, West Java Province, The Republic of Indonesia



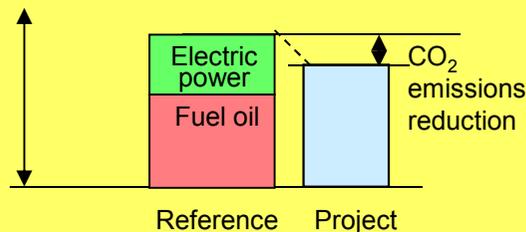
Estimated Reduction Amount

Reduction amount: 1,668–3,147 tons CO₂/year

Reference Emissions

- The incinerator introduced is assumed to be used only for incineration of industrial waste.

CO₂ emissions



Project Emissions

- Heat is to be recovered from waste (reducing the purchase of electricity).
- Methane generated in the landfill is to be recovered and used as fuel (reducing fossil fuel consumption).
- HFCs are to be used as fuel (reducing fossil fuel consumption).

Monitored items:

- Power generation with recovered heat
- Record of fuel consumption

Summary of Introduced Technology

Below are the advantages of an energy saving and heat recovering waste treatment system compared to conventional industrial waste incinerators that have a treatment capacity of 50 tons/day.

Vertical Combustor

- Waste is retained in the primary combustion chamber for a long period of time, therefore the heating value of the waste is utilized efficiently in this type of combustor. This high efficiency enables self-sustained combustion with a heat of combustion value of approximately 2,000 kcal/kg, allowing fuel use to be reduced.
- The low air-fuel ratio prevents abnormal combustion in the primary combustion chamber, so wear and tear on refractory materials is mitigated.
- This type of combustor is composed of a small number of parts, therefore the maintenance costs remain fixed.
- Heat can be recovered in the form of heated water (at 75–90°C) from the water-cooling jacket.
- Electricity can be generated by recovering exhaust heat.

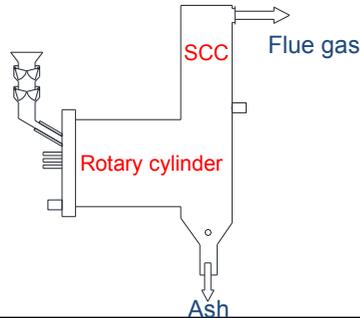
Precoated Bag Filter

- It complies with EU standards for exhaust gas emissions from waste incinerators.
- It is particularly effective in reducing dioxins in exhaust.

Summary of Introduced Technology

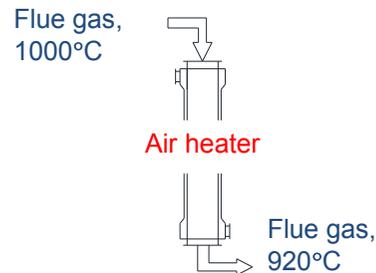
Below are the advantages of energy saving and heat recovering waste treatment system compared to conventional industrial waste incinerators that have a treatment capacity of 50 tons/day.

Rotary kiln



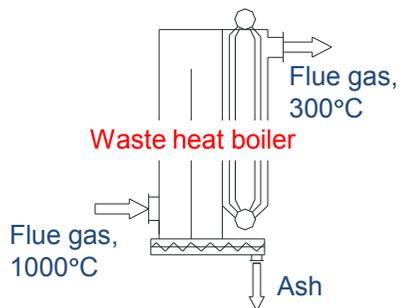
- The use of fuel additives can be reduced by preheating the air with waste heat.
- The system can be used for the disposal of a wide variety of industrial waste, including sludge, solid waste, and moist waste.
- If the total energy generated from the waste is large enough, a boiler and power generation facilities can be installed.

Air heater



- The use of fuel can be reduced because the air in the primary combustion chamber will be heated up to 210°C by heat exchange with flue gas from the secondary combustion chamber.
- Because this mechanism reduces the temperature of the flue gas, the consumption of cooling water will also be reduced.

Waste heat boiler



- Steam at 31 kgf/cm² and 235°C is recovered by heat exchange with flue gas in this boiler. The recovered steam is transferred to steam turbines to generate electric power.
- Because the temperature of the flue gas is reduced in the boiler, the consumption of cooling water will also be reduced significantly.

Case 1

