

Ishikawa Prefecture

Promoting methane fermentation technology for small-scale sewage plants



Situation

- Methane gas generated by sewage sludge is a greenhouse gas believed to be about 21 times more powerful than carbon dioxide. This project aims to utilise methane gas as a renewable energy source to generate electricity and heat and help curb global warming.
- Large-scale sewage plants widely use methane fermentation to reduce the amount of sludge and utilise methane gas as an energy source. But in the absence of methane fermentation technology suitable for small-scale sewage plants, they release methane gas into the atmosphere through sludge landfills, and the gas is not effectively utilised.

Intervention

- An industry-government-academia joint initiative aiming to commercialise methane fermentation technology for small-scale sewage plants.
- The development of technology to churn highly concentrated sewage sludge helped reduce the size of fermenting tanks by one-fifth.
- Processing other biomass, including human excrement and food waste, together with sewage sludge can increase the financial feasibility of a methane fermentation facility by consolidating waste disposal plants and making waste disposal more efficient.
- Microwave processing increases the biological degradability of sewage sludge generated in the oxidation ditch process.

Impact

- The newly developed fermentation-accelerating technology involves the use of microwaves to modify sludge structure, which helps make methane fermentation more efficient. As a result, costs can be lowered through a reduction in the amount of sludge.
- The use of renewable energy source methane gas to generate electricity and heat helps lower operating costs while helping reduce global warming.
- Sludge that remains after methane fermentation is processed into fertiliser to use resources in a cyclical manner.

