

# Demonstration for introducing a microalgae cultivation system with carbon dioxide which captured from digestion gas in the sewage treatment plant

## Members of Demonstration

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## Place of Demonstration

Saga City Sewage Treatment Center

## Abstract of Demonstration

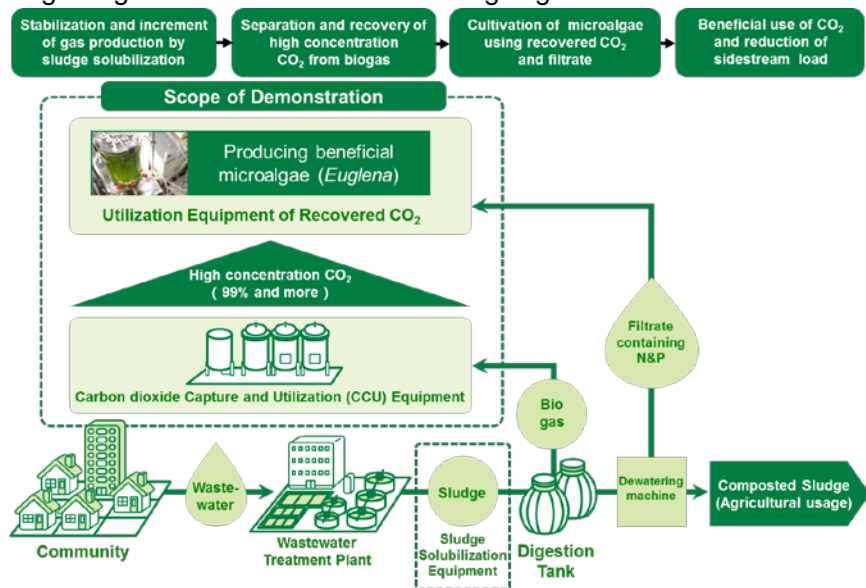
Separation and recovery of CO<sub>2</sub> from biogas, cultivation of microalgae (*Euglena*) using recovered CO<sub>2</sub> and filtrate to verify the following performance.

1. CO<sub>2</sub> separation and recovery, 2. *Euglena* production, 3. N&P removal from filtrate

## Abstract of proposed technology

Proposed technology consists of following main technologies.

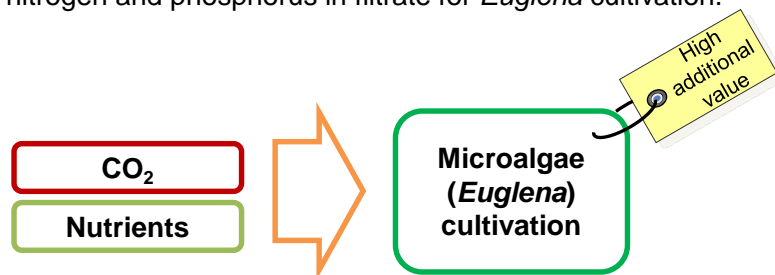
1. Separation and recovery of CH<sub>4</sub> and CO<sub>2</sub> from sewage biogas efficiently.  
⇒ Separation and recovery of CO<sub>2</sub> by PSA method (separate and recover CH<sub>4</sub> and CO<sub>2</sub> continuously by repeating pressurization and depressurization)
2. Cultivating *Euglena* efficiently by using recovered CO<sub>2</sub> and filtrate which contains nitrogen and phosphorus.
3. Solubilizing sludge to stabilize and enhance biogas generation.



## Innovations and merits of proposed technology

### [Innovations]

- ◆ Separation and recovery of high concentration of not only CH<sub>4</sub> but also CO<sub>2</sub> from sewage biogas.
- ◆ Utilizing unused resources like CO<sub>2</sub> from sewage biogas, nitrogen and phosphorus in filtrate for *Euglena* cultivation.



### [Merits]

- ◆ Separated and recovered CO<sub>2</sub> from sewage biogas could be placed in a new resources.
- ◆ High additional value resources such as feed and fertilizer could be produced from cultivated *Euglena*.
- ◆ Environmental load from discharge water could be reduced by removing nutrients (nitrogen, phosphorus) in filtrate.