

# Demonstration of a technology for highly efficient nitrogen removal using fixed-bed anammox process

## Research Consortium

Consortium between Kumamoto City, Japan Sewage Works Agency and Takuma Co., Ltd.

## Demonstration Field

Tobu Wastewater Treatment Plant, Kumamoto City

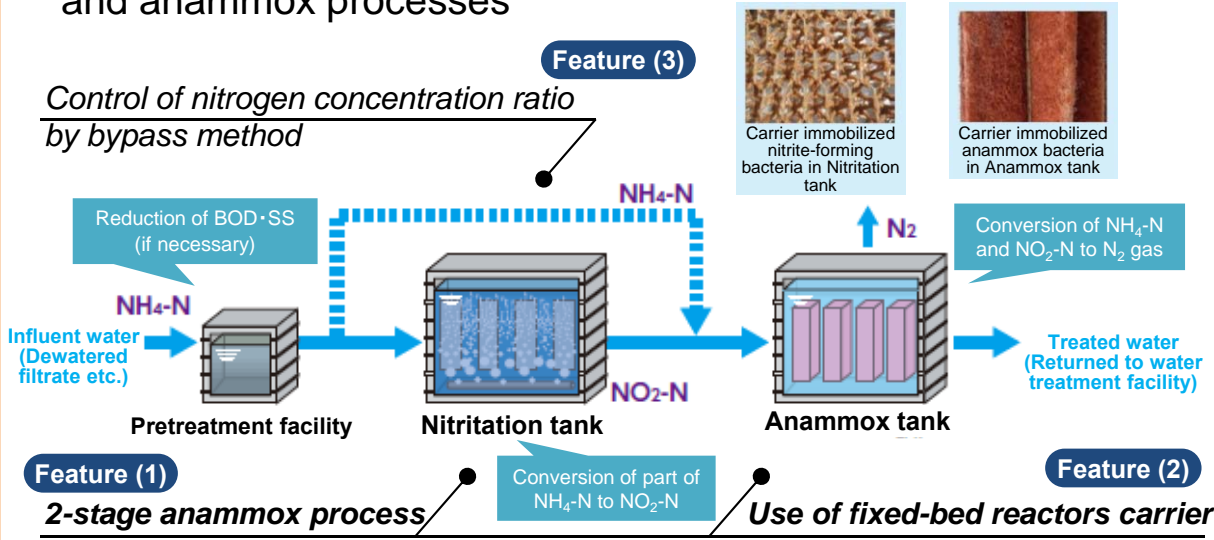
## Project Outline

By applying highly efficient anammox process using the fixed-bed system for the removal of nitrogen from the reject water of sludge treatment (dewatering of anaerobic digestion sludge), continuous operation of a full-scale demonstration plant was performed. Cost and energy saving effects, as well as nitrogen removal performance were demonstrated.



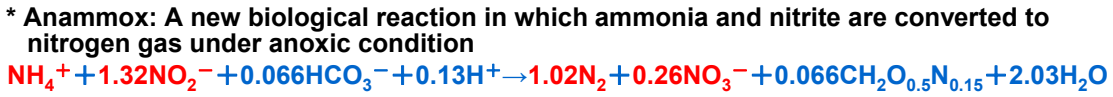
## Outline of Technology

### ◆ Nitrogen removal technology combining partial nitritation and anammox processes



Schematic flow of demonstration

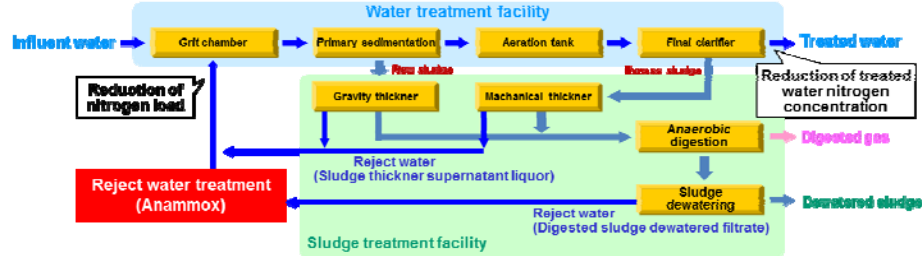
- ◆ Nitrogen removal efficiency: Approx. 80%
- ◆ Stable nitrogen removal performance, easy O&M



## Features of Demonstration Technology

### [Features]

- Low-cost and energy-saving nitrogen removal technology using anammox reaction
- To be applied to reject water treatment in order to reduce the nitrogen load and effluent nitrogen concentration in mainstream wastewater treatment.



Overview of installation of anammox process to municipal WWTP

### [Advantages]

- In comparison with conventional nitrogen removal technology (biological nitrification-denitrification processes)
  - (1) Reduced aeration Energy saving
  - (2) No organic matter addition for denitrification Low cost
  - (3) Reduced footprint Low cost
  - (4) Reduced sludge generation Energy saving Low cost