

Demonstration of a Technology for Highly Efficient Nitrogen Removal Using Fixed-bed Anammox Process

Implementer: The consortium of Kumamoto City, JS, and TAKUMA CO., LTD.

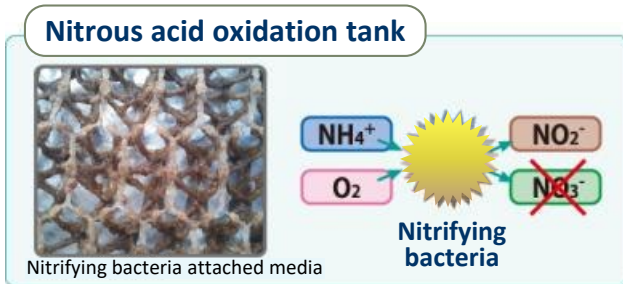
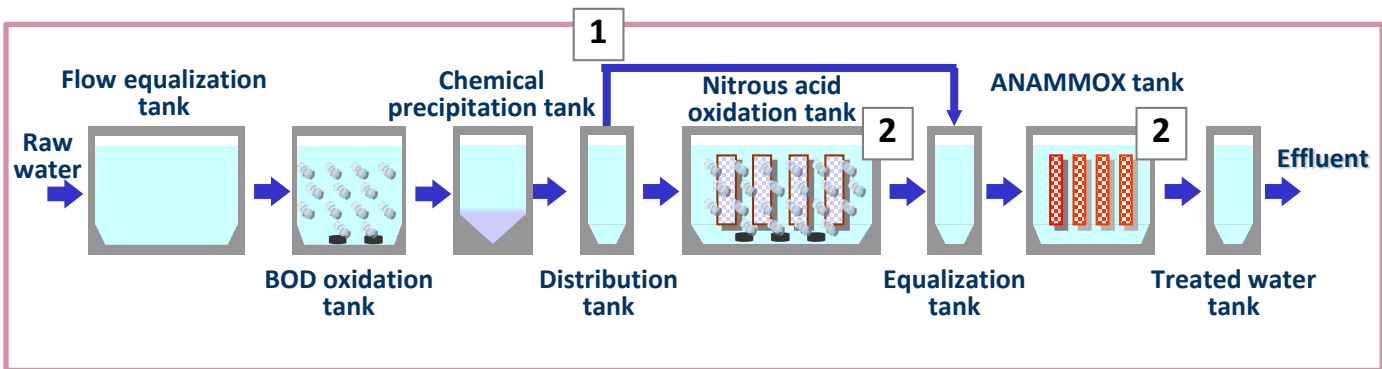
High-efficiency nitrogen removal from filtrate of anaerobically digested sludge at low-cost and energy-saving

Technology Overview

- 1. Bypass method** : Control the concentration ratios of ammonia and nitrate by water amount of bypass.
- 2. Fixed-bed method** : Resistance to a load fluctuation and stable operation.



Treatment flowchart



Achievements

The whole process could **remove more than 80% of nitrogen**. Compared to *Carrier-added step-feed two-stage nitrification denitrification process*, the demonstration technology **reduces***:

- Construction costs **by 20%**
- O&M costs **by 35%**
- LCC **by 27%**
- Energy consumption **by 44%**
- Greenhouse gas emission **by 65%**

*Calculated under the assumption that nitrogen removal facilities for filtrate of anaerobic digested sludge are introduced to WWTP with an anaerobic digestion tank and treatment capacity of 50,000m³/day(7t-DS/day)