

Nitrogen Removal Using ANAMMOX

Technology background

Anaerobic digestion process generates returned water from sewage sludge with a high load of nitrogen that prevents adoption of the technology. Efficient and inexpensive nitrogen removal technology is required.

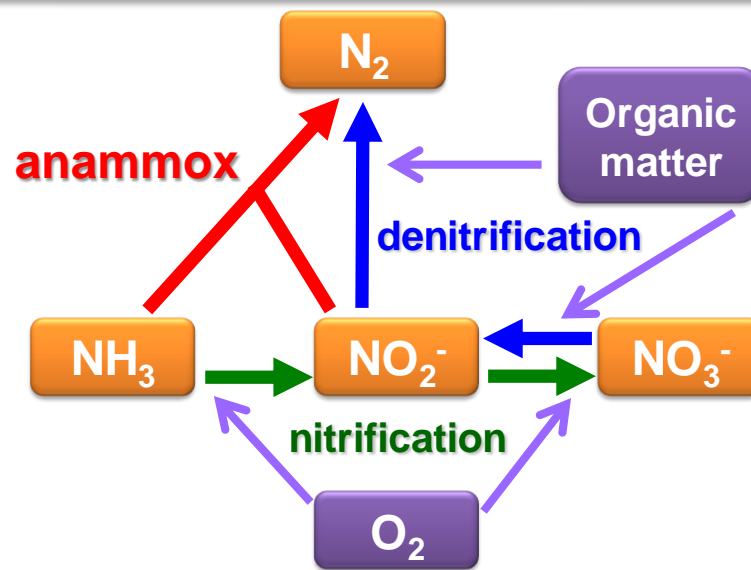
Technology outline

ANAMMOX is a technology using newly discovered anammox reaction (anaerobic ammonium oxidation), which is a nitrogen conversion. The technology aims to remove nitrogen with energy/resource saving process.

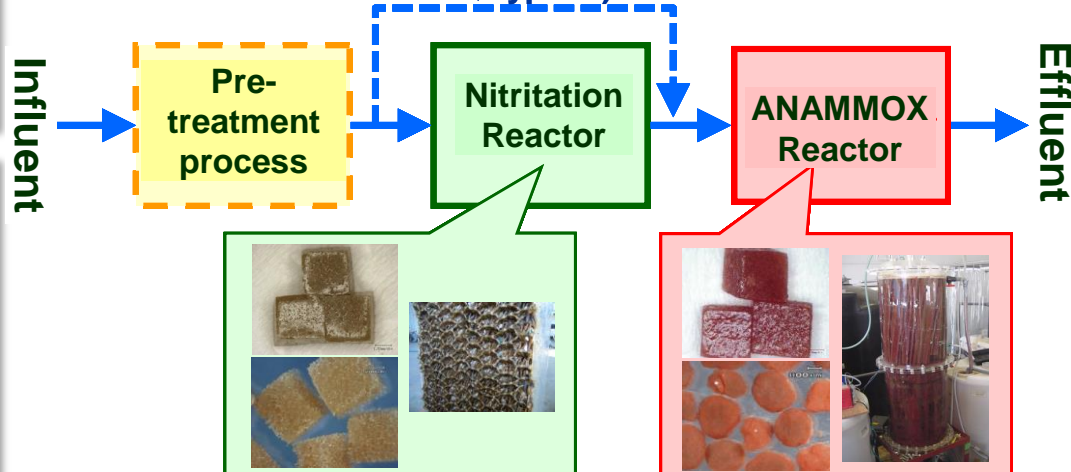
Benefits of the technology

ANAMMOX process allows:

- Encourage to adopt anaerobic digestion process
- Improve treated water quality at existing anaerobic digestion process
- Reduce utility cost and greenhouse gas emission by more than 24%

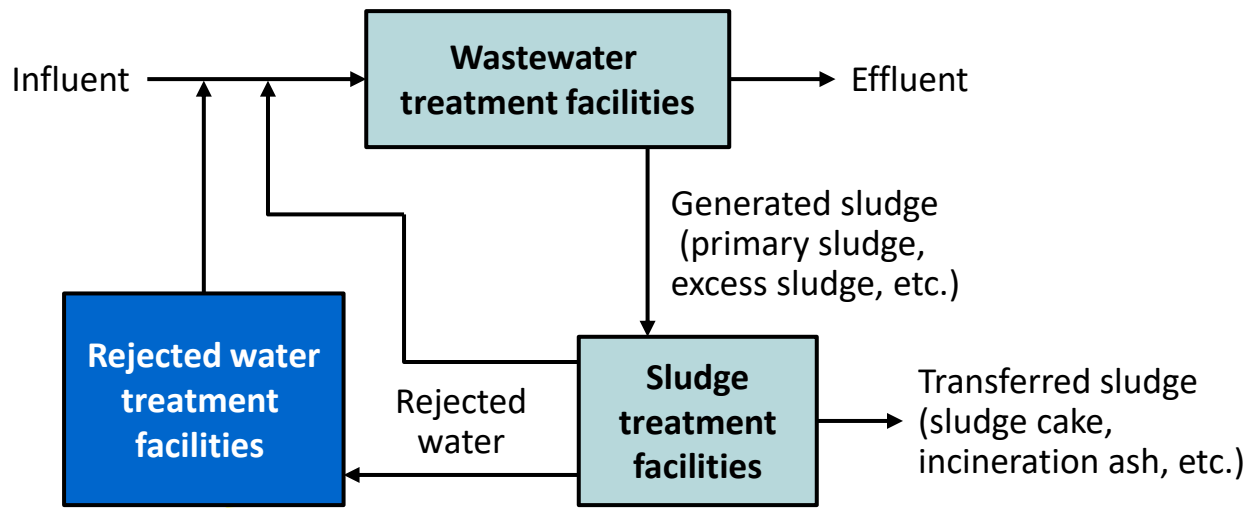


Mechanism of nitrogen conversion
(Bypass)



Treatment flowchart of nitrogen removal technology using ANAMMOX

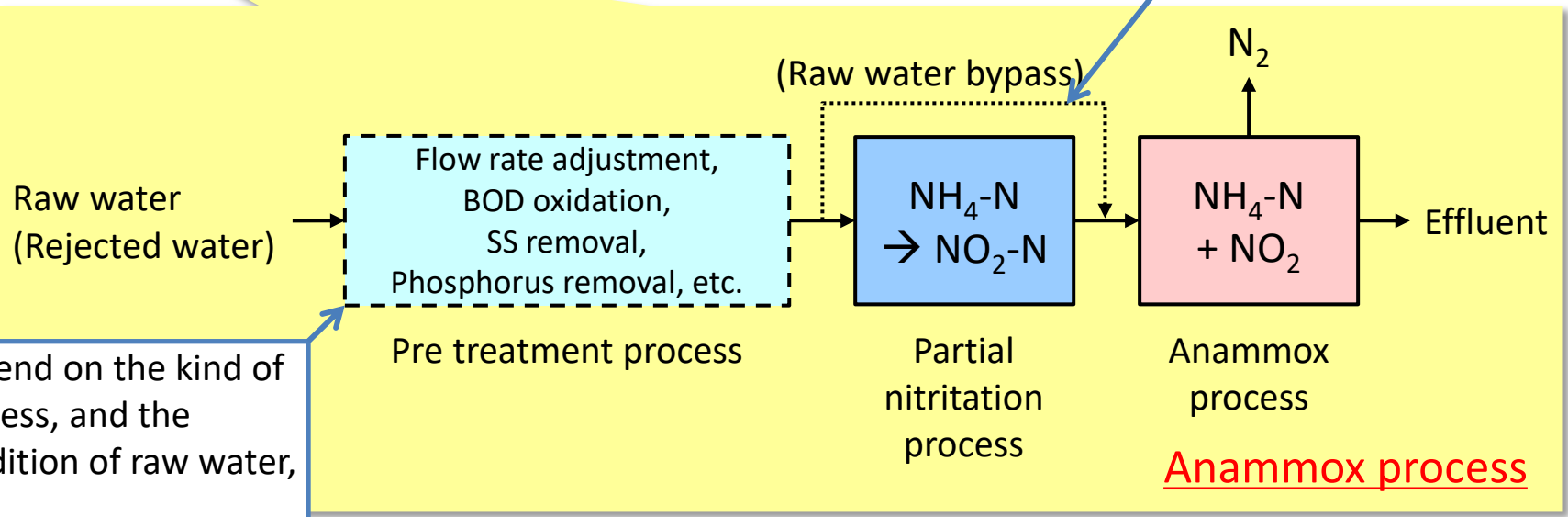
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ANAMMOX proceeds
 $\text{NH}_4\text{-N} : \text{NO}_2\text{-N} = 1 : 1.32$
where $\text{NH}_4\text{-N}$: ammonium-nitrogen
 $\text{NO}_2\text{-N}$: nitrite-nitrogen

↓

Because rejected water mainly consists of ammonium-nitrogen, the system needs **partial nitrification**.



Depend on the kind of process, and the condition of raw water, etc.