

Optimization of Anammox Control Factors for Wastewater Treatment process

윤다희, 오세희, 윤좌문¹, 조환철², Alam Nawaz, 이문용[†]
영남대학교; ¹셀파스페이스; ²두산중공업
(mynlee@ynu.ac.kr[†])

Anaerobic ammonium oxidation (Anammox) is a process of the nitrogen cycle that converts ammonium at the expense of nitrate (NO₃⁻) to nitrogen involving bacteria. In recent decades, Anammox is utilized to process ammonium in wastewater plant. But, it has several weaknesses which long processing time and high sensitivity to disturbances are. In this study, control factor and operation technology are studied to overcome the aforementioned challenges. A sequencing batch reactor (SBR) is modeled using the activated sludge model (ASM). In real operation, the concentration of NO₃⁻, which is crucial to control, is hard to measure. Therefore, a soft-sensor is used such as conductivity and pH must be incorporated in the developmental model to reconstruct such a relationship and thus also to estimate the NO₃⁻. Because ASM can be applied for optimization, also nutrients in the effluent, a lab-scale plant is used to verify and validate the developed model parameter. This work was supported by Doosan Heavy Industries and Construction grant (Y16031).