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Membrane bioreactors and activated sludge processes: a comparative study based on municipal wastewater treatment in China

Membraantehnoloogia ja aktiivmudaprotsess:
võrdlusuuring Hiina asulareovee puhastamise näitel

MASTER THESIS

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Abstract

A comparative study was carried out to assess the operational performance and status of municipal wastewater treatment plants and its processes in China. In the case study, both processes of A/A/O, Oxidation ditch, SBR and MBR were discussed. By 2014, there were 4,436 sets of municipal wastewater treatment plants brought into operation, about 60.69% of these plants were distributing with disposal capacity between 10,000 and 50,000 m^3/d. During the past decade, A/A/O and its modified processes, Oxidation ditch, SBR and MBR became the most popularity option of treatment processes. The 'large-scale' wastewater treatment plants with disposal capacity over 20×10^4 m^3/d tend to adopt activated sludge and A/A/O processes as their priority choice for treatment system. For 'small-medium scale' plants with disposal capacity below 20×10^4 m^3/d, A/A/O and its modified processes and oxidation ditch processes would be the primary choice for the treatment system. At present stage, the application of MBR process could not replace even catch up with activated sludge processes in the field of municipal wastewater treatment, due to expensive costs and membrane fouling issues.

Keywords: Municipal wastewater treatment; A/A/O; Oxidation ditch; SBR; MBR