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Review

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Thermophilic Membrane Bioreactors: A Review

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Abstract

This study undertakes a state-of-the-art review on thermophilic membrane bioreactors (ThMBRs). Thermophilic aerobic membrane bioreactors (ThAeMBR) and thermophilic anaerobic membrane bioreactors (ThAnMBR) have been widely tested for various high-temperature industrial wastewater treatments at lab- and pilot-scale studies and full-scale applications. The biological and membrane performances of the ThAeMBRs and ThAnMBRs could be better, comparable or poorer, as compared to the mesophilic ones. In general, sludge yield was much lower, biodegradation kinetic was higher, and microbial community was less diversity in the ThAeMBR and ThAnMBR systems. The results from the literature show that ThMBR technology has demonstrated many advantages and is a promising technology for industrial wastewater treatment and sludge digestion. Furthermore, challenges and opportunities of various ThMBRs for industrial applications are identified and discussed.

Keywords: *Thermophilic membrane bioreactor; thermophilic aerobic membrane bioreactor; thermophilic anaerobic membrane bioreactor; thermophilic membrane aerated biofilm reactor; membrane fouling; thermophilic wastewater treatment.*

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