

RESEARCH PAPERS

改善气液传质的新型表面曝气装置

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摘要 A novel surface aeration configuration featured with a self-rotating and floating baffle (SRFB) and a Rnshton disk turbine (DT) with a perforated disk has been developed. The SRFB, consisted of 12 fan blades twisted by an angle of 30° to the horizontal plane, is incorporated onto the impeller shaft to improve gas entrainment, bubble breakup, mixing in a $\phi 154$ mm agitated vessel. This new configuration is compared to the conventional DT surface aeration experimentally. The results suggest that the critical impeller speed for onset of gas entrainment is lower for the new configuration and it demands greater power consumption. Moreover, the SRFB system produces 30%-68% higher volumetric mass transfer coefficient per unit power input than that obtained in the conventional DT surface aerator under the same operation conditions.

关键词 [surface aeration](#) [self-rotating and floating baffle](#) [gas-liquid mass transfer](#)

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A Novel Surface Aeration Configuration for Improving Gas-Liquid Mass Transfer

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Abstract A novel surface aeration configuration featured with a self-rotating and floating baffle (SRFB) and a Rnshton disk turbine (DT) with a perforated disk has been developed. The SRFB, consisted of 12 fan blades twisted by an angle of 30° to the horizontal plane, is incorporated onto the impeller shaft to improve gas entrainment, bubble breakup, mixing in a $\phi 154$ mm agitated vessel. This new configuration is compared to the conventional DT surface aeration experimentally. The results suggest that the critical impeller speed for onset of gas entrainment is lower for the new configuration and it demands greater power consumption. Moreover, the SRFB system produces 30%-68% higher volumetric mass transfer coefficient per unit power input than that obtained in the conventional DT surface aerator under the same operation conditions.

Key words [surface aeration](#); [self-rotating and floating baffle](#); [gas-liquid mass transfer](#)

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