The Gas Hold-up in Sparged Multi-impeller Vessel

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This paper deals with an experimental study of a gas hold up in a sparged mechanically agitated vessel. The experiments were done in the cylindrical vessels with an inner diameter of 0.297 m and 0.48 m equipped with four vertical wall baffles. The values of gas hold-up and power input were measured in the tanks stirred by two or three stirrers placed on the same shaft. Two types of impellers were used: pitch blade turbine with downward pumping effect and Chemineer BT-6. The stirred speed varied from 3 to 8 s⁻¹ and the superficial gas velocity was in the range 0.002 – 0.02 m/s. The used gas was air. The liquid was either water (coalescing system) or solution of sodium sulphate (non-coalescing system). The higher gas hold up was observed in non-coalescing system than in coalescing and also in the three-impeller system is the gas hold up usually higher than in the two-impeller system. The parameters of empirical correlations are presented as well.