

## 新型竖流气浮反应器工作性能与应用研究

### Performances and application of a novel vertical current flotation reactor

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中文摘要:

根据紊流气浮理论, 开发了一种新型竖流气浮反应器, 试验研究了它的工作性能以及实际应用效果。该反应器采用气液混合泵作为溶气设备, 分离区内原水与溶气水逆向流动, 采用水力方式排渣。试验结果表明, 溶气效率随工作压力和吸气量的增大而增大, 但同时大气泡也会随之增多; 试验条件下微气泡平均尺寸为50 $\mu\text{m}$ 左右, 工作压力对释放的微气泡尺寸影响不大; 分离区高度影响气泡-絮体共聚悬浮层的厚度和稳定性, 进而影响处理效果。应用新型竖流气浮反应器处理实际的乳品废水和机械加工废水, COD去除率分别达到50%和75%以上, SS去除率超过85

英文摘要:

A novel vertical current flotation reactor was developed based on turbulent flotation theory. Its operation performances and application were evaluated by wastewater treatment. The gas-liquid mixed pump was applied as air-dissolved apparatus in the flotation reactor. Raw water and air-dissolved water flow adversely in the separation zone and the scum was removed by hydraulic power. The experimental results show that the saturation efficiency increases with the increases of operational pressure and air mass. The enhanced operational pressure and air mass induced the formation of large-size bubbles; the operational pressure had no significant effect on the micro bubble size, which had an average diameter of 50 $\mu\text{m}$ , released from recycle water; the height of separation zone could influence the thickness and stabilization of bubble-floc aggregate blanket, and then influence the removal efficiency of turbidity. The novel vertical current flotation reactor was employed to purify the wastewater from dairy industry and mechanical industry. The removal rate of COD could reach up to 50% and 75%, respectively, and the SS removal rate could be up to 85% in both treatment processes. This study shows that the novel vertical current flotation reactor would be a promising equipment for water and wastewater treatment.

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