

## RESEARCH NOTES

水力旋流分离器内流动和油水分离的数值模拟

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收稿日期 修回日期 网络版发布日期 接受日期

**摘要** The fluid flow and oil-water separation were simulated using a Reynolds stress transport equation model of turbulence in water flow and a stochastic model of oil droplet motion. Simulation results give the axial and tangential velocity components, the pressure and turbulence intensity distribution and droplet trajectories for a hydrocyclone of F type and a hydrocyclone proposed by the present authors. The flow field predictions are in qualitative agreement with the LDV measurements. The results show that the proposed hydrocyclone has better performance than the hydrocyclone of F type due to creating stronger centrifugal force and lower axial velocity.

**关键词** [hydrocyclones](#) [oil-water separation](#) [numerical simulation](#)

分类号

**DOI:**

### Numerical Simulation of Fluid Flow and Oil-Water Separation in Hydrocyclones

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Received Revised Online Accepted

**Abstract** The fluid flow and oil-water separation were simulated using a Reynolds stress transport equation model of turbulence in water flow and a stochastic model of oil droplet motion. Simulation results give the axial and tangential velocity components, the pressure and turbulence intensity distribution and droplet trajectories for a hydrocyclone of F type and a hydrocyclone proposed by the present authors. The flow field predictions are in qualitative agreement with the LDV measurements. The results show that the proposed hydrocyclone has better performance than the hydrocyclone of F type due to creating stronger centrifugal force and lower axial velocity.

**Key words** [hydrocyclones](#); [oil-water separation](#); [numerical simulation](#)

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