عنوان مقاله:

Effects of Inlet Types and Lengths on the Flow Field of Cyclone Separators

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خلاصه مقاله:

The effect of inlet type and length on the flow field was considered computationally for seven cyclone separators. The turbulent model was described by the Reynolds Stress Model (RSM). The air-water interface in underflow pipe and the spatial distribution of particles were tracked by the Volume of Fluid (VOF) model and Discrete Phase Model (DPM), respectively. Comparison investigations showed that inlet type and length had important impacts on flow field of cyclone. The instability flow field and back mixing phenomena were eliminated in symmetric double-inlet cyclone. The turbulent dissipation is obvious with a short inlet length. When it increased to ۱.۲۵D/۲, the area and intensity of the turbulent dissipation tended to be stable. The optimum cyclone is the symmetric double-inlet with inlet length of ۱.۲۵D/۲. When the particle diameter was larger than ۵ μm, the complete separation could be realized.

کلمات کلیدی:

Cyclone, Inlet type, Inlet length, Flow field