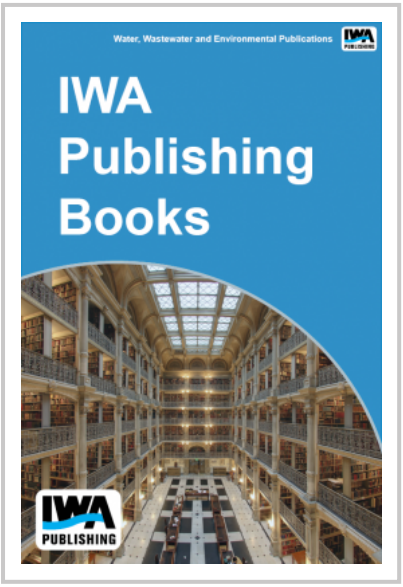
Prefiltration/Clarification via Dynamic Particle Separation



The project seeks to develop a non-fouling medialess inertial particle separator for use in industrial wastewater applications. The device, capable of removing fine particles from a fluid upstream of a media filter, will significantly reduce particle loading, thereby increasing its service life. The self-cleaning particle separator uses boundary layers on rotating disks to dynamically separate entrained particles suspended in fluids. The research specifically addresses potential improvements in the operation of industrial wastewater treatment facilities by enhancing efficiency, reliability and longevity of conventional filtration media.

Fabrication of a closed-loop test rig will allow the operational envelope of a prototype prefilter challenged by ISO fine test sand and colloidal (Latex) microspheres to be parametrically assessed, establishing the influence of operational parameters on particle separation efficiency and pressure differential. Quantitative analyses of the effluent will generate particle size distributions, as well as turbidity reduction measurements. The project will advance the understanding of this separator technology in liquids.

Specific project objectives include:

- Design, fabrication and evaluation of a prototype particle separator
- Operating parameter assessment to achieve maximum particle separation efficiency when challenged by ISO test dust or colloidal particles
- Determine/mitigate conditions leading to onset of cavitation

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