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# Numerical Simulation of Two-Dimensional Porous Cylinder Flow in In-Line Arrangement

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**Abstract :** The flow around three porous cylinders in inline arrangement is investigated in this paper computationally using the commercial code FLUENT. The arrangement generally operates with the dirty gases passing through the porous cylinders, the particulate material being deposited on the outside of the cylinders. However, in a combined cycle power plant, filtration is required to allow the hot exhaust gases to be fed to a turbine without causing any physical damage to the turbine blades. Three cylinder elements are placed in a two-dimensional rectangle duct with fixed face velocity and varying the velocity ratio between the approach and face velocity. Particle trajectories are obtained for a number of particle diameters and different inlet (approach) velocity to face filtration velocity ratios to investigate the behavior of particles around the cylinder.

**Keywords :** porous cylinders, CFD, fluid flow, filtration
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