# Unsteady pressure fluctuation for internal flow in a cylinder using LES model

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**ABSTRACT**
Fully developed turbulent flow analysis in cylindrical pipe needs highly accurate turbulence model in the smallest scale. This kind of model will enable us to explore the behaviour of wall pressure fluctuation. This study aims to investigate the pressure fluctuation on a pipe wall using Large Eddy Simulation (LES) model in the fully developed flow region. Case studies with several flow rates and pipe diameters were modelled to determine the relationship under unsteady flow conditions. All flows were assumed to be incompressible in rigid pipe wall. Periodic boundary conditions were imposed for the outlet. All models were solved using FLUENT software. The results clearly show non-uniform pressure distribution on the pipe wall for all cases studied. The results also show nonlinear correlation between flow rates and pressure fluctuations along and around the pipe wall. Overall, the results indicate that smaller pipe diameter can only accommodate small range of flow rates before it reached relatively high maximum pressure.

**KEYWORDS:**
Circular Cylinder; Internal flow; arge Eddy Simulation; LES

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