



Experimental Study of a Resonating Ring Plate Valve

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Abstract:

For more than a century people have been modelling the fluid-structure interaction of automatic valves. The long-term objective of the research presented in this paper is to develop means to determine valve parameters from valve dimensions and flow conditions. In this paper the results are presented of the research on a simple ring plate valve. The objective is the experimental validation of traditional quasi-steady flow theories for unsteady flow conditions.

An experimental method has been designed to measure accurately the instantaneous valve opening, the instantaneous pressure difference across the valve, and the instantaneous volume-flow rate through the valve. Results are presented for: semi-empirical coefficients for both normal- and reverse flow, gas force and flow rate for unsteady flow, collision events for both the ring plate valve and a compressor valve.