Abstract

Engineering structural usually found using cylinder in various configuration. The cylinder could be configure in tandem, side-by-side, or staggered. Flow passing through cylinder generate fluid forces, like normal force, drag force and friction force. Using narrow channel also contribute to the fluid flow characteristic. That is being the basic of this experiment by using two circular cylinder with tandem arrangement in a narrow channel.

This research is aiming to study flow passing circular cylinder with tandem arrangement in a narrow channel. This research also seek the effect of a disturbance body (ratio d/D = 0.16 & screwed surface) against drag forces reductions. Variation in this experiment are distance ratio L/D = 1.0; 1.5; 2.0; 2.5 and S/D = 2.0. This research was doing experimentally by placed two circular cylinder (D = 25mm) in a narrow channel wind tunnel with rectangular cross section (H = 125mm). The research conducted in wind tunnel with Reynold Number of 52100, 73700, 90200, 116000, 128000, 147000 and 156000. Flow characteristic observed are pressure drop (ΔP), total drag...
coefficient \((C_{DT})\), Pressure coefficient \((C_P)\) and the velocity profile behind a cylinder.

The result shows that the effect of a disturbance body against pressure drop and drag coefficient reduction appear on specific Reynolds number \(<10^5\). The best result appear on distance \(L/D=1.5\) in various Reynolds number, Maximum pressure drop reduction is 23%.

**Key word : Pressure drop, disturbance body, distance ratio \((L/D)\), blockage ratio**