Measurement of Turbulence with PITOT Static Tube in Low Speed Subsonic Wind Tunnel

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Abstract : The Pitot static tube has proven their values and practicability in measuring velocity of fluids for many years. With the aim of extensive usage of such Pitot tube systems, one of the major enabling technologies is to use the design and fabricate a high sensitive pitot tube for the purpose of calibration of the subsonic wind tunnel. Calibration of wind tunnel is carried out by using different instruments to measure variety of parameters. Using too many instruments inside the tunnel may not only affect the fluid flow but also lead to drag or losses. So, it is essential to replace the different system with a single system that would give all the required information. This model of high sensitive Pitot tube has been designed to ease the calibration process. It minimizes the use of different instruments and this single system is capable of calibrating the wind tunnel test section. This Pitot static tube is completely digitalized and so that the velocity data's can be collected directly from the instrument. Since the turbulence factors are dependent on velocity, the data's that are collected from the pitot static tube are then processed and the level of turbulence in the fluid flow is calculated. It is also capable of measuring the pressure distribution inside the wind tunnel and the flow angularity of the fluid. Thus, the well-designed high sensitive Pitot static tube is utilized in calibrating the tunnel and also for the measurement of turbulence.

Keywords : pitot static tube, turbulence, wind tunnel, velocity

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