

Finding the Free Stream Velocity Using Flow Generated Sound

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Abstract : Sound processing is one the subjects that newly attracts a lot of researchers. It is efficient and usually less expensive than other methods. In this paper the flow generated sound is used to estimate the flow speed of free flows. Many sound samples are gathered. After analyzing the data, a parameter named wave power is chosen. For all samples, the wave power is calculated and averaged for each flow speed. A curve is fitted to the averaged data and a correlation between the wave power and flow speed is founded. Test data are used to validate the method and errors for all test data were under 10 percent. The speed of the flow can be estimated by calculating the wave power of the flow generated sound and using the proposed correlation.

Keywords : the flow generated sound, free stream, sound processing, speed, wave power

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