

Abstract Submitted
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Unsteady pressures on a blunt trailing edge measured with an embedded pressure scanner JONATHAN NAUGHTON, University of Wyoming, POURYA NIKOUEEYAN, MICHAEL HIND , JOHN STRIKE, Resono Pressure Systems, MATZ DAHLAND, STEVEN KEETER, Measurement Specialties, Inc., a TE Connectivity company — Development of direct-mount pressure scanners can decrease the pneumatic tubing length required to connect the measurement ports to the scanner manifold resulting in improved dynamic range for unsteady pressure measurements. In this work, the performance of a direct-mount pressure scanner for time-resolved pressure measurement is demonstrated in a well-established flow; the pressure fluctuations near the base of flat plate is considered. The additive manufactured model is instrumented with a pressure scanner and flush-mounted high-speed pressure transducers. The configuration of the ports on the model allows for side-by-side comparison of the pressures measured via embedded pneumatic tubing routed to a pressure scanner with that measured by high-speed transducers. Prior to testing, the dynamic response of each embedded pressure port is dynamically calibrated via an in-situ calibration technique. Pressure data is then acquired for fixed angle-of-attack and different dynamic pitching conditions. The dynamic range of the measurements acquired via direct-mount scanner will be compared to those acquired by the high speed transducers for both static and dynamic pitching configurations. The uncertainties associated with Weiner deconvolution are also quantified for the measurements.

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