

Come visit **MSE** at booth 107 for a demonstration of the miniLDV™ and flowLab™



Three velocimeters, from boundary layer to free stream

MSE offers three optical velocity sensors that cover the gamut from boundary layers and microchannels to free-stream facility and field measurements. The miniLDV is a compact laser Doppler velocimeter unlike any other on the market today and features standard standoff distances* from 33 to 240 mm (1.3 to 9.4 inches). The microV is a unique time-of-flight sensor which, with a standoff distance* of just 7.4 mm (0.29 inches) can perform measurements in tight spaces where the miniLDV is simply too big. The microS, another technology exclusive to MSE, uses diverging interference fringes to directly measure the velocity profile extremely close to a surface—at distances* of either 75 or 135 μm . All three sensors can measure speed and direction simultaneously. No external laser is necessary, and all three sensors are self-aligning and can optionally be battery-operated.

Tap into MSE's extensive experience and have a custom solution designed to your specifications employing combinations of standard or custom versions of the three velocimeters.



A custom cylindrical enclosure containing a traversing miniLDV and two microS for flow separation studies.

*Distance from sensor face to measurement volume in air.



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miniPCS™, a field-ready particle sizer

The miniPCS is a Mie-scattering-based particle sizer and counter developed for the field. The field unit pictured at left includes the miniPCS optics and acquisition hardware (featuring a 14-bit digital to analog converter with a logarithmic amplifier), GPS receiver, pump, filter, and battery pack. The device can be triggered and monitored wirelessly. The on-board electronics record data to an on-board MMC card and will run unattended until the card is full or the device is instructed to stop. The GPS signal is used for both position and time synchronization, assuring data from multiple devices is perfectly coordinated during analysis.

The miniPCS can measure particles as small as 500 nm in concentrations in excess of 10,000 particles per cubic centimeter. For the laboratory, a wired version is also available.

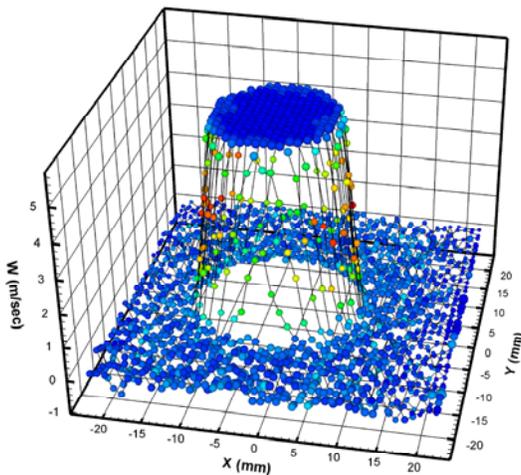


flowLab™, a complete flow facility

MSE's flowLab is a compact water tunnel perfectly suited for small-scale research projects or classroom demonstrations. It measures just 1320 mm long by 560 mm deep by 890 mm tall (52 by 22 by 35 inches) and can sit on a sturdy table when full. Flow from the built-in 1/3-horsepower pump is adjusted with a valve up to a maximum of 40 gallons per minute.

The facility can be ordered with a miniLDV system with traverses designed to cover the test section dimensions. A dye injection system (shown at left) can be used for flow visualization.

Several interchangeable 50 mm square (2 by 2 inches) test sections are available: a clear test section with a removable model-mounting plug, including a cylinder and airfoil model (shown at left), a turbulent jet, a flat plate, and a hydraulic jump. A Wier plenum is standard, but a free one is also available (and required for the hydraulic jump).



Flow mapping with the miniLDV™

Using the flowLab's turbulent jet test section, a 2-D traversing system and the miniLDV, this data (on the left) was taken in less than 4 hours. No calibration or alignment was needed. It shows the out-of-plane velocity component through the cross section of the jet close to the nozzle. The color of the data point indicates the turbulent intensity (blue is low, red is high).