

VOLUMETRIC 3-COMPONENT VELOCIMETRY (V3V)

BRINGING FLOW MEASUREMENTS TO THE NEXT DIMENSION

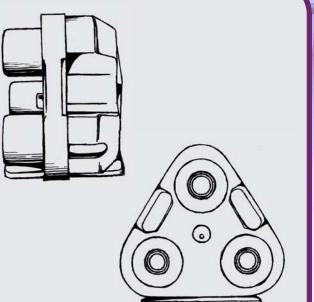
The Volumetric 3-Component Velocimetry (V3V) System measures the instantaneous 3-Dimensional 3-Component (3D3C) velocity field within a truly volumetric region of the flow.

ILLUMINATION

- A laser beam is drawn into a cone of light.
- Two laser pulses are fired in rapid succession, separated by a known time, Δt .
- The volumetric measurement region is illuminated by the laser pulses.

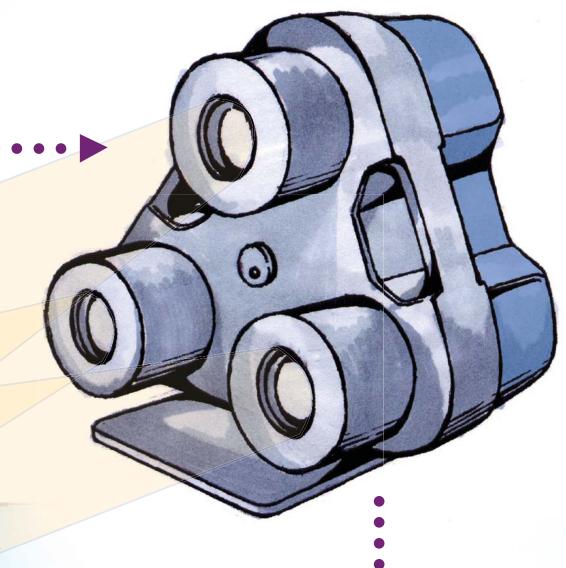
V3V CAMERA PROBE

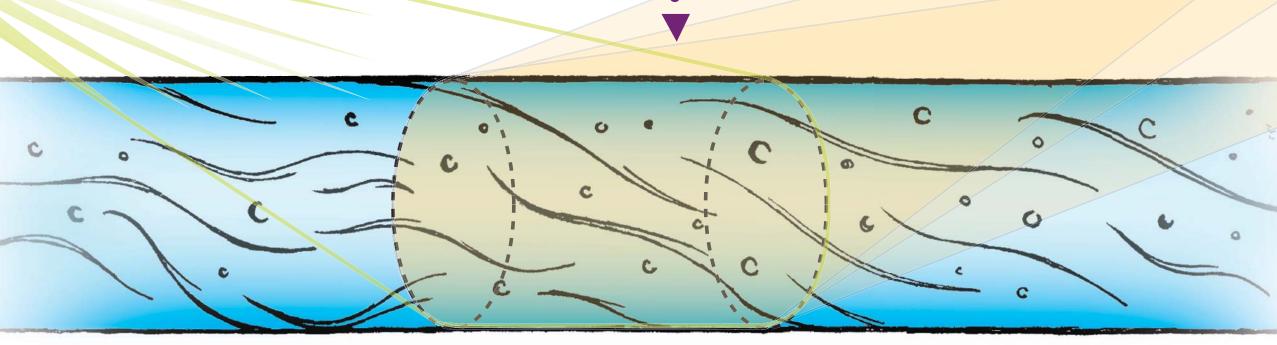
- The scattered light is collected by the patented V3V Camera Probe*, with three independent imaging apertures.
- Separate images of scattered light are recorded from each of the two laser pulses.
- Images are transferred to the HyperStreaming[™] Computer System at full camera frame rate for up to 17 minutes of continuous capture.





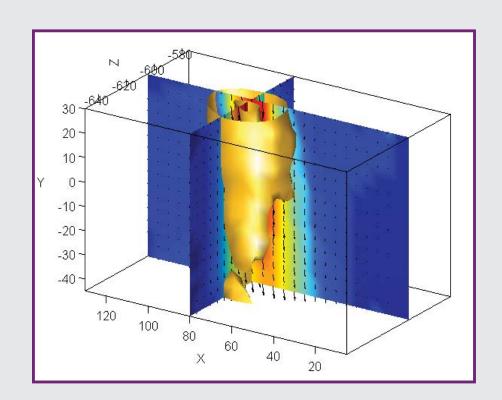
- Small tracer particles are used to follow the fluid flow through the measurement region.
- Light is scattered from the tracer particles during each laser pulse.

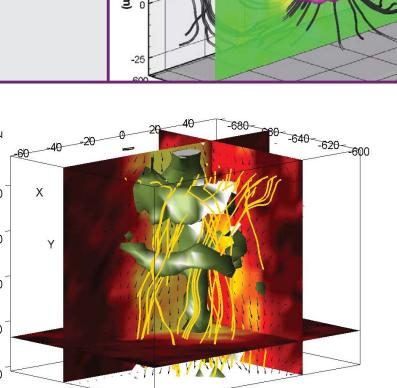




V3V RESULTS

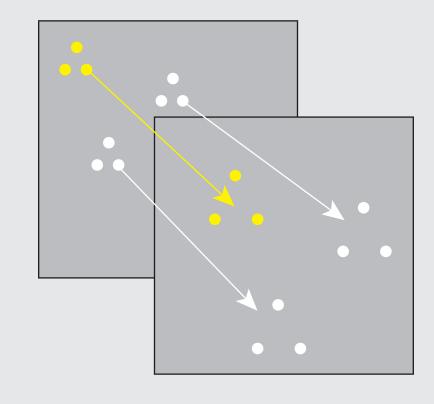
- Volumetric Velocity Plots
- Volumetric Iso-Surface Contours
- Volumetric Stream Lines
- 3D graphics and data analysis
- Higher order quantities such as vorticity
- Movie generation and export





PROCESSING ALGORITHMS

- Information from the 3 apertures is used to determine the 3-dimensional particle locations.
- i. <20 micron uncertainty in the x-y plane ii. <80 micron uncertainty in the z plane
- Particle displacements are calculated between the two laser pulses, giving the local 3-Dimensional 3-Component (3D3C) fluid flow velocity.













P/N 5001079 Rev B

*Patent Number 7006132

*Patent Number 6278847

Contact your local TSI Distributor or visit our website for more detailed specifications Copyright © 2007 by TSI Incorporated

TSI Germany - www.tsiinc.de

TSI France - www.tsiinc.fr

TSI Incorporated - 500 Cardigan Road, Shoreview, MN 55126-3996 USA

Tel: 1.800.874.2811 E-mail: fluid@tsi.com Website: www.tsi.com

TSI Sweden - www.tsi.se

TSI UK - www.tsiinc.co.uk