

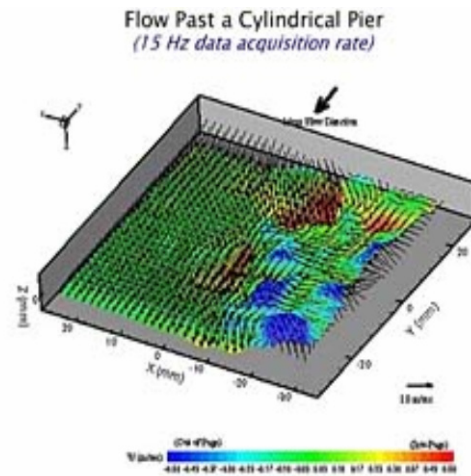
Water Flow Downstream of a Body

Application Note StereoPIV-007

Flow disturbances and fields created by bodies present in a flow have always been of great interest in fluid mechanics. To study these types of situations, the flow field downstream of a cylindrical body with a circular cross-section was measured using a PowerView™ Stereoscopic PIV system.

The light sheet generated by a mini-YAG laser-based TSI Stereoscopic PIV System was oriented in the horizontal plane. All three components of velocity in this horizontal plane were measured using the PIV system. The two-camera system (two PIVCAM 10-30 cameras, $1k \times 1k$ resolution) using the optimum Scheimpflug configuration was set up in the vertical plane to make three-component velocity measurements. Data was collected at the maximum frame rate of the cameras to get a 15 Hz sampling rate of the velocity field. TSI's INSIGHT™ Stereo Acquisition and Analysis Software package exploits the power of the Windows® NT platform to provide on-line analysis of the images, and display of the velocity vector field.

The figure shows the vector field at one instant in time. The instantaneous vector directions are also shown. The w -component of velocity (velocity normal to the plane of the light sheet) is also clearly displayed. Spatial gradients including vorticity and strain rates obtained from the instantaneous measurements can be animated to visualize the evolution of the flow field.



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(Flash Movie - 1.37 MB)

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