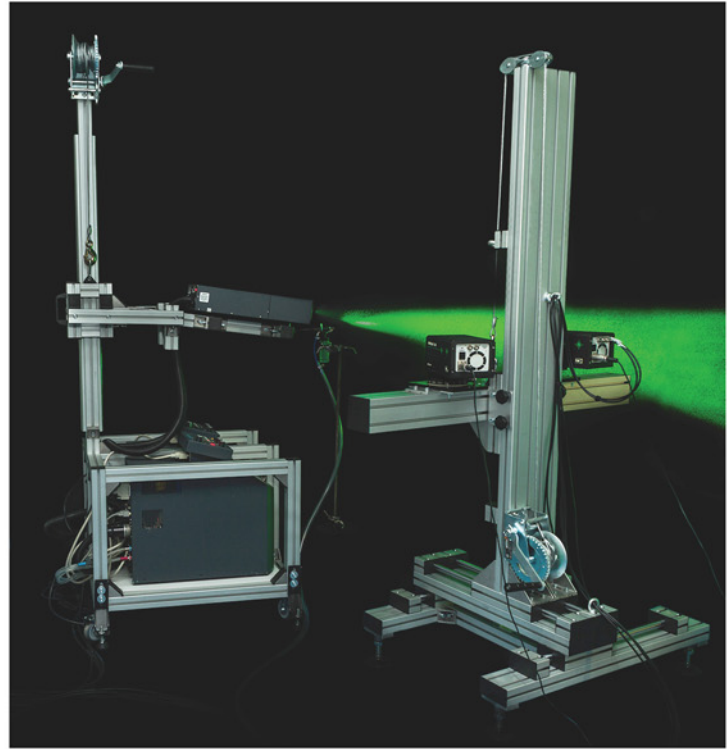
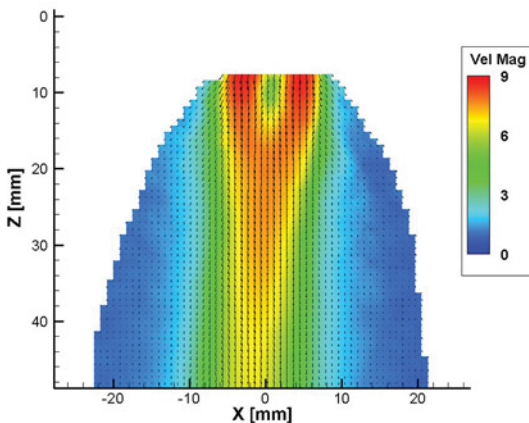


Particle Image Velocimetry (PIV) by TSI Inc.

Particle Image Velocimetry is an advanced optical visualization and measuring method for research and diagnostics of fluid flow under laboratory or field operating conditions. It makes use of a laser light sheet that illuminates the investigated region where the fluid flow is visualized by introducing particles into the fluid. A velocity vector map is evaluated from two CCD camera taken images of the highlighted particles in a defined time shift. The department runs a high performance, custom-made PIV system and a small size, portable standard system; both by TSI Incorporated.

SPECIFICATION

- high energy pulse Nd:YAG laser, beam energy 250 mJ at 532 nm
- light sheet thickness between 0.5 and 5 mm
- stereoscopic camera arrangement with Scheimpflug lens, resolution 1280×1024 pixels
- observable area from 5×5 cm² to 2×2 m²
- two/three-component velocity within a plane (2D2C ÷ 2D3C), no need for velocity calibration
- image capture frequency up to 10 Hz
- recording of cyclic and phase-resolved phenomena

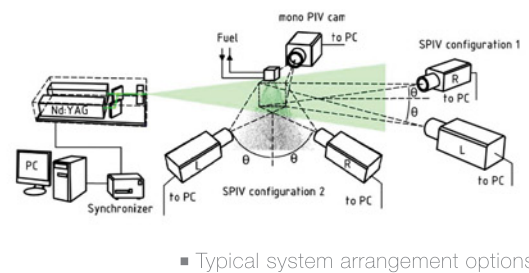


TYPICAL APPLICATIONS

- research on fluid dynamics and turbulence, sprays and combustion processes, jet mixing, boundary layer flow
- studies of aerodynamics and hydrodynamics in free/unbounded environment and transparent models
- single-phase fluid flow, two-phase (liquid-gas, liquid-solid particles, sprays) flow
- method is suitable for unsteady flow exhibiting changes in flow direction
- experimental validation of computer models (CFD)

PROVIDED OUTCOMES

- 2C – 3C velocity vectors of flow in a plane, sequential scanning for complete 3D investigated domain measurement
- instantaneous and averaged flow patterns
- advanced flow pattern processing
 - average and rms velocity components in the plane, turbulence intensity
 - turbulence visualization, vorticity distribution, streamlines, lines of constant speed, particle trajectory, shear stress and other spatial characteristics
- possibility to evaluate mass flow rate of the liquid when combined with Laser-Induced Fluorescence method



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