

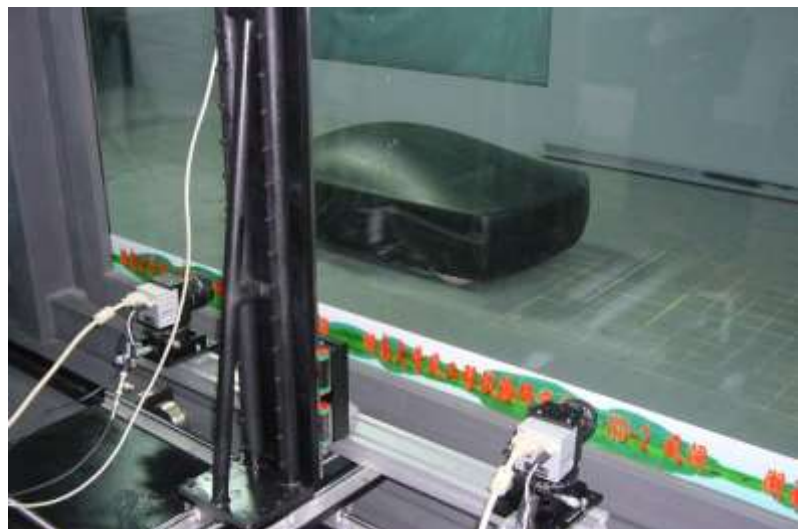
MicroVec 3D PIV System

Stereoscopic PIV imaging with enhanced precision & ease

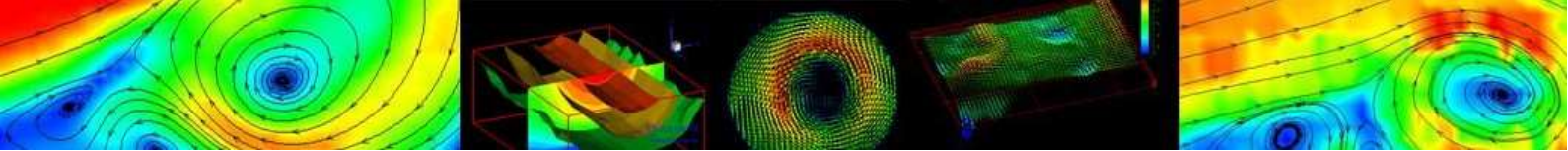
3D PIV system is based on the original 2D PIV system but uses the principle of stereoscopic imaging to add the third dimension. At least two sets of cameras view the test area from different angles and with the two sets of two-dimensional velocity vector components a third velocity vector component can be calculated within the test area. The image is first calibrated, and afterward this third velocity component can be evaluated.



MicroVec 3D PIV software includes camera auto-calibration spot search function, which automatically detects the spot, measures and adjusts the perspective distortion caused by the misaligned orientation of the cameras. The third velocity vector component can be then calculated using a stereoscopic imaging, resulting in 3D velocity vectors for the entire area.



Microvec 3D PIV system offers solution for perfect adjustment of the angle between the cameras and camera lens in order to focus correctly, which deploys the Scheimpflug principle. This is achieved by mounting the cameras on Scheimpflug mounts (angles up to 22.5°). MicroVec 3D PIV software supports patented Scheimpflug principle optical unit as well as Tilt/Shift lenses, which have a full angular adjustment (shifting, rotating and tilting) to make any orientation of the lens to satisfy the Scheimpflug condition. MicroVec 3D PIV system ensures multiple camera synchronization support for image acquisition from two cameras and auto calibration.



Standard Components

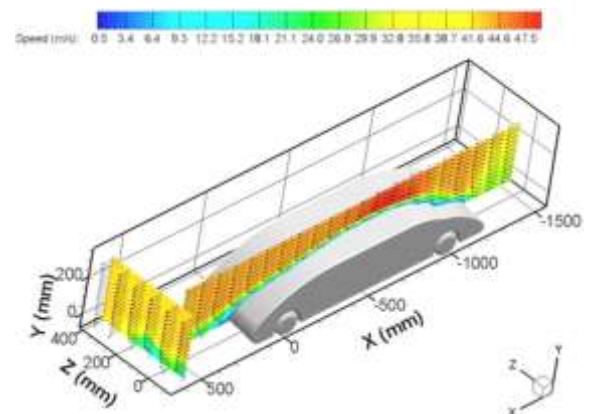
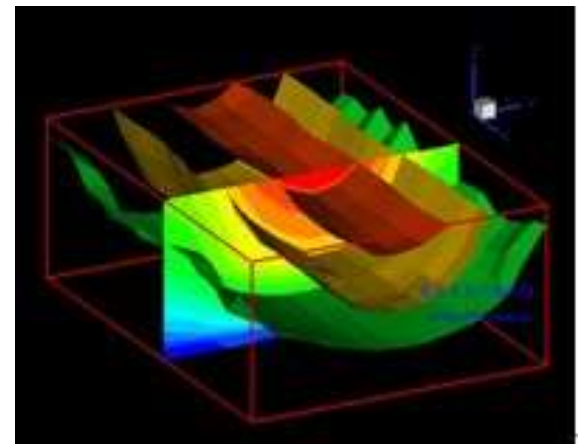
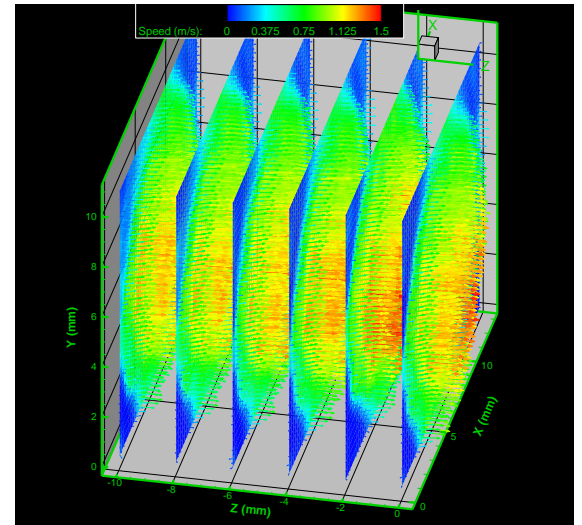
- **PIV laser:** 2x70mJ/15Hz, 2x145mJ/15Hz, 2x200mJ/15Hz, 2x380mJ/10Hz, 2x500mJ/10Hz
- **CCD cameras:** including lens, all interface cables and camera frame grabber: VGA/800 fps, 1.4MP/30 fps, 2MP/54 fps, 5MP/16 fps, 6MP/25 fps, 8MP/21 fps, 9MP/17 fps,
- **Synchronizer:** 8 input, 2 output channels TTL control, 0.25ns jitter, USB controlled
- **MicroCap PIV Image Acquisition Module & 3D high precision MicroVec software** with multi-grid and multi-pass, window deformation and GPU support, includes auto-calibration function for 3D image creation, supports patented Scheimpflug Principle optical unit or Tilt/Shift lenses

Features

- Software ready to run for image-acquisition and image-processing control
- Integrated and easy control of all hardware components: cameras, laser, synchronizer, external trigger
- Support multiple image files: TIFF, BMP, JPG and AVI
- 3D calibrating spot auto search and identify function (auto create 3D calibrating data and saving setting)
- 3D image auto calibration and combination function (supporting Scheimpflug image capture)
- Support 3D data deduction from 2D PIV data
- 3D GPU data process function for multicore and parallel processing
- Uncertainty quantification
- Support with MACROS for 3D Tecplot, MatLab and Origin data interface

Applications

- Wind tunnels
- Water tanks
- Aerospace and aeronautics
- Micro electromechanical systems (MEMS)
- Chemical Mixing Equipment
- 3D vortex flow
- Compressors, turbines, fans, pumps, sprays



Application: PIV in automotive wind tunnel