

# Particle Image Velocimetry



**Year of Purchase:** 2019

**Cost:** 100.97 Lac

## **Experiment:**

To measure the instantaneous velocity field in a planar cross section of the observed flow.

## **About:**

Particle image velocimetry or PIV is a non-intrusive laser optical method of flow visualization and diagnostics used for processes like combustion, turbulence, spray atomization and microfluidics. It is utilized in scientific and industrial applications to obtain instantaneous velocity measurements and related properties in fluids. The fluid is seeded with tracer particles, which faithfully follow the flow dynamics between two light pulses. The target area in the fluid with embedded particles is illuminated with a light sheet to make particles visible. The motion of particles is then used to calculate speed and direction (velocity field) of the analyzed flow for real-time velocity maps, it is important to select the right cameras and dedicated computing hardware.

## **Typical PIV apparatus consists of:**

- Suitable camera.
- Strobe or laser.
- Optical arrangement like a cylindrical lens (to convert a light beam to a line).
- Synchronizer to act as an external trigger for control of the camera and laser.
- Sometimes a fiber optic cable or liquid light guide connects the lens setup to the laser.
- Special software used for PIV is also required to post-process the optical images.