BRNO UNIVERSITY OF TECHNOLOGY

FACULTY OF MECHANICAL ENGINEERING

ENERGY INSTITUTE
Dept. of Thermodynamics and Environmental Engineering

Flow Explorer Mini LDA Laser Doppler anemometer by Dantec Dynamics

The anemometer is a compact and portable device for contactless measurement of fluid flow or particle speed (aerosol, droplets, bubbles, seeding particles). It is a non-intrusive optical method for time and space resolved measurement within single or two-phase environment based on light reflection and refraction. The apparatus performs a single-point measurement of high spatial resolution; by traversing in 2 or 3 dimensions, the entire domain can be observed.

SPECIFICATION

- measurement of single or two mutually perpendicular components of velocity vector up to ±180 m/s (synchronous 2D measurement)
- measuring frequency up to 100,000 samples/sec
- typical size of measuring volume smaller than 1 mm^3
- high speed synchronous measurement of another 4 quantities in addition to LDA signals
- cyclic processes recording, measurement triggered in by external event
- when combined with 3D positioning system, complete flow domain measurement
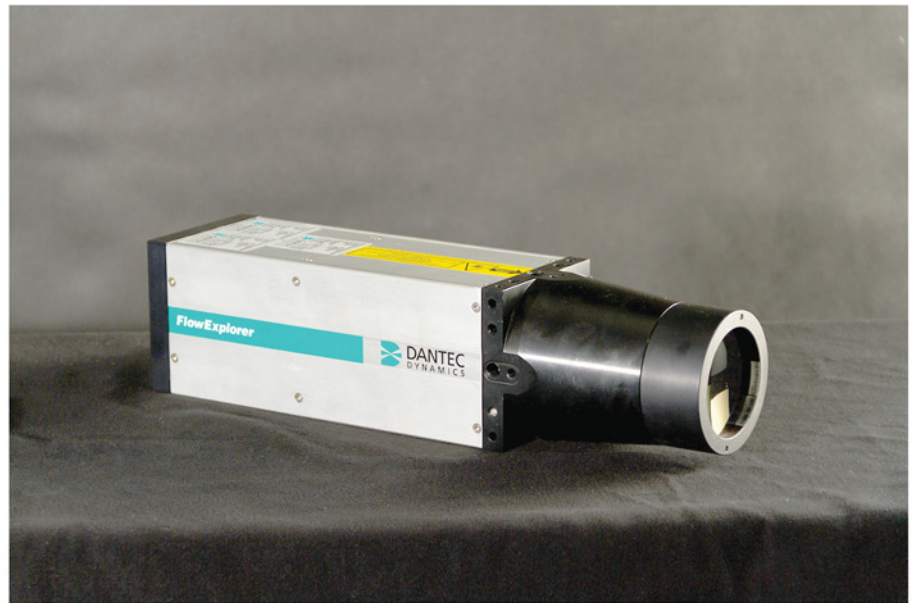- no need for calibration of measured velocity due to calibration certificate
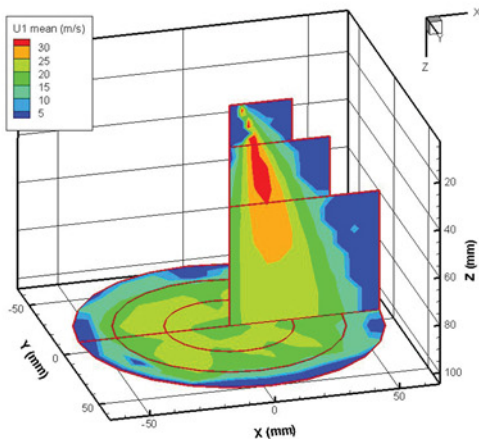
■ Spray droplet speed
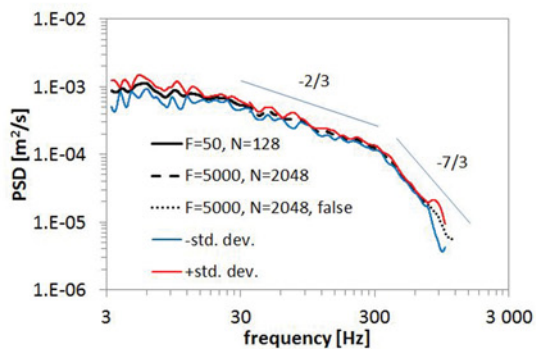
■ Power spectral density of velocity fluctuations

■ Dantec Dynamics FlowExplorer Mini LDA

TYPICAL APPLICATIONS

- studies of flow patterns of two-phase flow – bubble flow, aerosols and sprays
- studies of aerodynamics and hydrodynamics in free/unbounded environment and/or transparent models (pipe and mini/micro-channel flow, air terminal device and nozzle jet flow, flow in rooms)
- studies on fluid dynamics, turbulence, boundary layer flow
- flowmeter and anemometer calibration
- measurement in cases featured by changes in flow direction and at speeds fluctuating about zero, cyclic and transition flow
- boundary conditions and input data for numerical simulations

PROVIDED OUTCOMES

- histograms of velocity and detection (transit) time of particles
- velocity statistics, mean and rms velocities, calculation of other derived quantities
- turbulence intensity, estimation of turbulence spectrum

Ing. Jan Jedelský, Ph.D.
tel: +420 541 143 266 | e-mail: jedelsky@fme.vutbr.cz

Department of Thermodynamics and Environmental Engineering
Faculty of Mechanical Engineering, Brno University of Technology
Technická 2896/2, Brno 616 69, Czech Republic
tel: +420 541 143 280 | e-mail: ottp@fme.vutbr.cz | www.eu.fme.vutbr.cz