

# PIV Systems

Fluid flow vector analysis systems for research

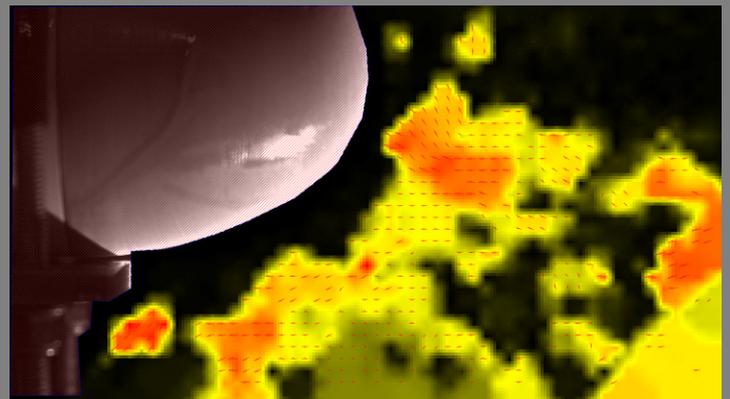
# Application Note

Visivector PIV systems allow you to measure the velocity of fluid flow. Here are some ways that our PIV systems are used in the aerospace industry.

The Firefly laser makes setting up a flow measurement easy. The built-in light-sheet generator means that you just have to point the laser at your experiment to get started. A slow-motion movie of the airflow around a desktop fan shows how pulses of air are generated by each of the blades as they move through the air. The airflow in this case is moving at approximately 5m/s

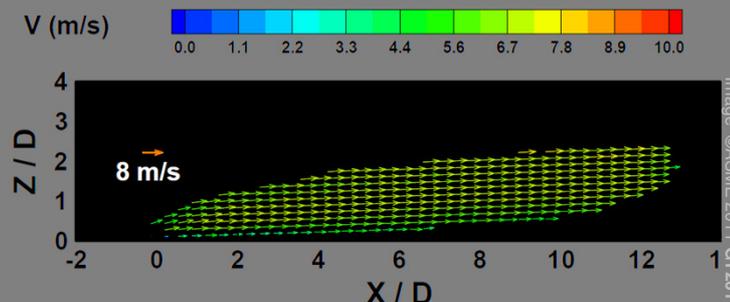


The airflow around a refuelling drogue in an open loop wind tunnel was measured with a Firefly laser and high-speed camera. The recording rate was set to 5000 frames per second, and the laser triggered to produce pairs of images with a short separation. Once the images were captured, they were analysed with PIV software to extract the flow velocities. The maximum airflow velocity was found to be 28m/s.



30 m/s airflow around a sting in an open section wind tunnel. Image captured with a Firefly laser.

Turbine blades in jet engines are cooled with a flow of air over their surface, which is generated from ports on the leading edge of the blade. Images of the airflow were captured, by seeding the flow with small tracer particles, and then analysed to measure the speed of the airflow.



10 m/s airflow from a cooling vent in a turbine fan blade. Image captured with a Firefly laser.

# Systems for every application

High performance fluid flow  
velocity measurement

Intuitive set-up and software

Non-intrusive

Image based – Visualise your  
process



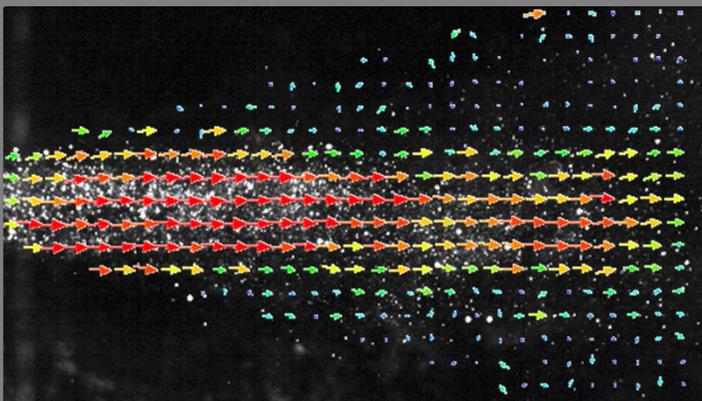
Aerodynamics research and design

Water flow and hydrology

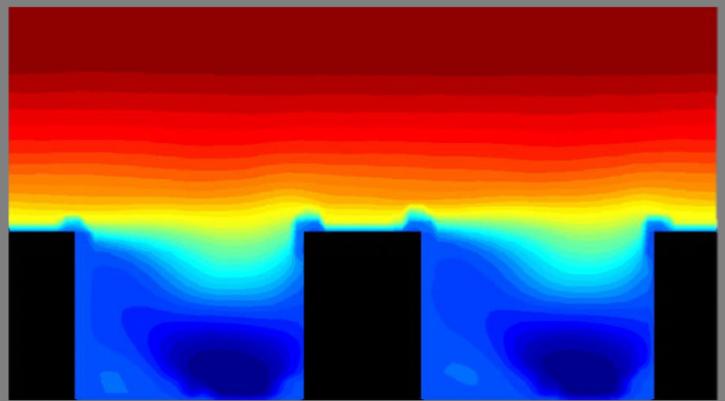
Educational systems

Drug delivery devices and consumer sprays

Automotive sprays



Powder jet from a dry-powder inhaler. Image captured with a Firefly laser as part of a MS500 system



Water flow velocity over series of steps in a laminar flow tank. Image captured with LG30 system

Measure flow velocity, turbulence, shear, vorticity.

Visualise motion within your flow— it's not just a velocity measurement system.

Non-intrusive measurement – collect data without disrupting the flow.

	<b>LS 12</b>	<b>LR 30</b>	<b>LG 30</b>	<b>MS 500</b>	<b>MS 2000</b>	<b>HS 5400</b>
Application	Visualise and analyse flows in a cost-effective package	Analyse complex flows	Analyse high speed complex flows	Analyse complex and turbulent flows	Analyse high speed complex and turbulent flows	Maximum information on complex high speed flows
Camera Resolution	1.3 MP	2 MP (4MP option)	2 MP (4MP option)	0.5MP (1MP option)	0.5MP (1MP option)	1MP
Camera Frame Rate	6 pairs/s	15 pairs/s	15 pairs/s	500 frames/s	2000 frames/s	5400 frames/s
Time Resolved PIV				✓	✓	✓
Laser	Diode	Diode	Nd:YAG	Diode	Diode	Nd:YAG
Laser Pulse Energy	0.2-30mJ *	0.2-30mJ *	15-200mJ	0.2-30mJ *	0.2-30mJ *	10-40mJ
Maximum flow velocity in air or water (50µm particles)	50 m/s	50 m/s	>300 m/s	50 m/s	50 m/s	>300 m/s
Options	3D velocity measurements; additional light sheet optics to suit application; LIF module (LG and HS series only); micro-PIV					

Oxford Lasers Ltd  
Unit 8, Moorbrook Park  
Didcot  
Oxon, OX11 7HP, UK  
Tel: +44 (0) 1235 812255  
Fax: +44 (0) 1235 810060

Oxford Lasers Inc  
D201, 2 Shaker Road  
Shirley, MA 01464  
USA  
Tel: (978) 425 0755  
Fax: (978) 425 4487

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