NEWS LETTER ILA GMBH 10 04

Welcome to the seventh edition of our Newsletter for highlights on some of ILA's most recent developments

Standard PIV System Range

Over the last few years, PIV has become an accepted standard in flow measurement. Both the technique and the equipment have matured and converged to well-defined configurations. At the same time, the cost of integration has decreased and ILA is passing this saving to customers by launching a standard range of PIV systems, comprising five generic configurations covering the majority of PIV applications:

- 2D PIV
- 2D Notebook PIV
- 3D PIV
- Micro-PIV
- High-Speed PIV

Prices start at € 36,500 for a complete 2D PIV system based on a 2 x 15 mJ New Wave laser and a PCO PixelFly camera, an excellent candidate for low-to-medium flow velocity applications in air or water. All systems in the Standard range can be upgraded with a more powerful laser if desired. Several camera options are available in certain configurations.

3D extension: the standard 2D system can be upgraded simply to a 3D stereo PIV configuration with the help of a 3D extension kit including a second camera, a pair of Scheimpflug tilt adapters, the necessary calibration equipment and software.

Notebook version: based on the pco.1600 camera, this configuration combines high resolution and maximum portability. The camera is linked to the notebook computer via a high-speed Firewire data and control link.

Standard 2D PIV System

Standard 2D PIV System in Notebook Configuration. Includes pco.1600 PIV Camera, connected via Firewire link

Micro-PIV version: contrary to what is often repeated, quality micro-PIV results can be achieved without an inverted microscope. This system is based on the fixed stage upright Olympus microscope, combining high quality optics to an impressive array of accessories. The microscope is coupled to a 2 x 15 mJ PIV NewWave laser, using ILA's own optical coupler, and images are captured by the PCO SensiCamQE camera, known for its excellent Quantum Efficiency.

High-Speed PIV version: even High-Speed PIV is becoming more affordable. This system is capable of image acquisition rates up to 5 kHz, at a resolution of 512 x 512 pixel, but can easily be upgraded to higher resolutions if desired.

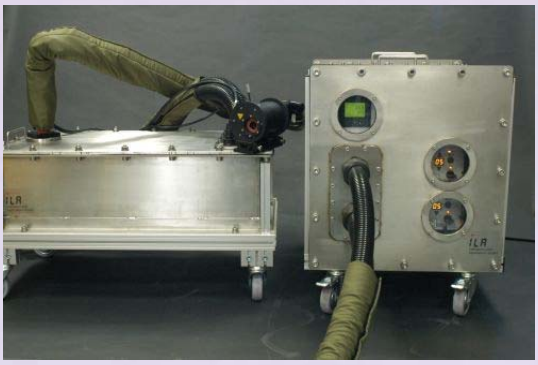
Custom-Engineered Laser System for CIRA's Icing Wind Tunnel

CIRA (Italy) recently gave a vote of confidence to ILA's engineering know-how by choosing us to develop a very special PIV illumination system for their icing wind tunnel facility, comprising the laser head and power supplies, the articulated mirror arm and light sheet optics.

The challenge was to produce a system that would operate over a range of extreme environmental conditions: temperatures from -40 to +40 deg.C, pressure from 0.7 to 1.3 bar, and finally up to 100% relative humidity. Moreover, all the adjustments and settings had to be remotely controllable, because the complete assembly must be permanently sited in the sealed plenum chamber of the wind tunnel.

ILA designed a turnkey solution to CIRA's specifications, using two temperature- and pressure-controlled enclosures linked by a heated umbilical. All the optical adjust-ments and operating parameters of the laser, light arm and light sheet optics are remote-controlled via a wireless datalink.

The new IDT XS-4 high-speed camera used in the High-Speed PIV configuration can achieve **over 5000 frames per second at 512 x 512 pixel resolution**



Meet CARLA, a temperature and pressure controlled laser light sheet delivery system, specially designed for CIRA's icing wind tunnel

PDA software interface for controlling laser operation

Intelligent Laser Applications GmbH

ILA GmbH
Karl-Heinz-Beckurts-Straße 13
D-52428 Jülich
Tel: +49 (0) 2461 / 690 430
Fax: +49 (0) 2461 / 690 439
E-Mail: info@ila.de
Web: www.ila.de

Remote Control Function on PIV System

In certain PIV applications, for instance wind tunnels, it is necessary to control the image acquisition and electro-optical components from a distance, as the operator cannot remain close to the system during the experiments. To answer this requirement, ILA have adapted wireless LAN technology to enable users to control several functions remotely:

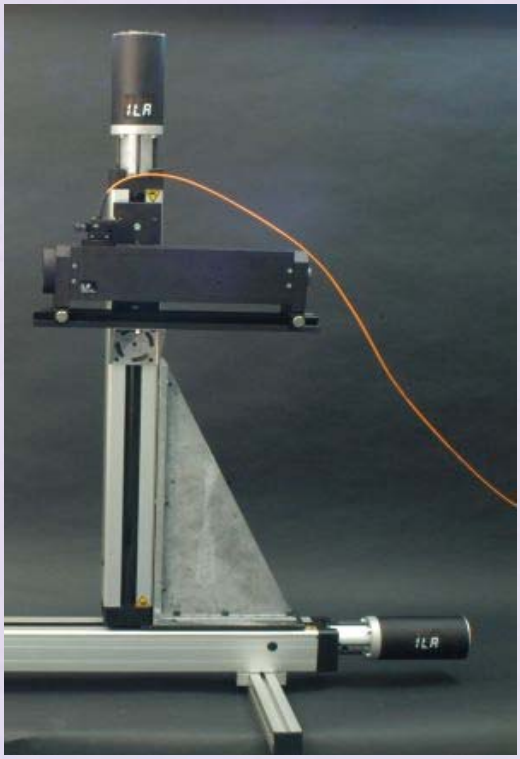
- Camera and Laser synchronisation parameters
- Laser pulse energy
- Light sheet focussing
- Motorized mirrors
- Scheimpflug tilt angle, camera angle and lens focus

The above parameters are programmed remotely via a PDA device running client software under the Microsoft PocketPC 2003 operating system, while the server-side communication software is running on the local PC workstation in charge of image capture and system synchronisation. Any electro-optical component that can be configured via a serial port is a suitable candidate for this option.

Wireless Control System for Motorised Traversing Stage

New Range of Traversing Systems

ILA recently redesigned the main control components of their traversing systems. The new range covers displacements from 300 mm to over 2000 mm, with the option of closed-loop control for applications where maximum positioning accuracy is required. Controller electronics come in 19 Inch Rack Units. Each unit controls up to 3 axes, and several units can be linked together if more than 3 axes is needed.



fp50-YAG LDV Probe mounted on 2-Axis Traversing System

Intelligent Laser Applications GmbH

ILA GmbH
Karl-Heinz-Beckurts-Straße 13
D-52428 Jülich
Tel: +49 (0) 2461 / 690 430
Fax: +49 (0) 2461 / 690 439
E-Mail: info@ila.de
Web: www.ila.de

MiniPIV-Syncronizer

For customers who do not need the standalone control features of the original ILA Syncronizer, the new MiniPIV synchronisation device is a very attractively priced alternative. The MiniPIV can be controlled from any PC workstation running the PIVSync software (included). All the essential functionalities needed for high quality PIV experiments are present:

- 4 laser outputs,
- 1 camera output,
- 1 external trigger input,
- Direct control via PIVSync of laser pulse energy, interframing time and trigger delay

Two firmware options are available, respectively for standard and high-speed PIV.

This MiniPIV-Syncronizer is reprogrammable, via its built-in USB port, for the addition of optional features and upgrade of the firmware.

MiniPIV-Syncronizer front panel with status LEDs

Back panel with I/O and power sockets and USB port

VidPIV 4.6XP Support for the new pco.xx00 Camera Range

VidPIV 4.6XP now supports the direct acquisition of images from PCO's new pco.xx00 camera range. The pco.family includes both: standard and high-speed PIV models with resolution up to 10 Megapixels for the pco.4000. All the cameras have programmable interframing times down to 180ns, on-board memory of up to 4 GB, and a high-speed Firewire link for transferring data to the host computer.

The new pco.family cameras

Learn more about ILA´s VidPIV Software

Our new PIV/LIF software brochure is ready and full of information about VidPIV's functionalities and benefits, including an update on version 4.6's latest features and algorithms. The document is aimed at existing and prospective users of PIV and LIF techniques. Download it from the ILA web site at
http://www.ila.de/Assets/pdfs/PIV%20Datasheets/VidPIV/VidPIV_46_brochure_R041027.pdf

Intelligent Laser Applications GmbH

ILA GmbH
Karl-Heinz-Beckurts-Straße 13
D-52428 Jülich
Tel: +49 (0) 2461 / 690 430
Fax: +49 (0) 2461 / 690 439
E-Mail: info@ila.de
Web: www.ila.de