BRNO UNIVERSITY OF TECHNOLOGY

FACULTY OF MECHANICAL ENGINEERING | energy institute

Photron FASTCAM SA-Z high speed camera

Photron FASTCAM SA-Z is a compact, mobile, autonomous back and white camera suitable for recording very fast and short-period, transitional and/or stochastic processes. Available accessories are: image digitalizer and other equipment for video recording, processing and analysing. The camera is widely applicable in research, equipment design, parts/components and material testing.

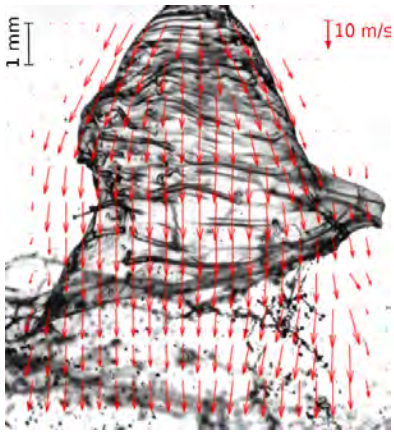
SPECIFICATION

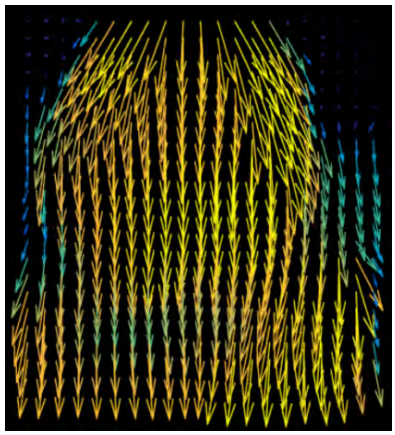
- maximum image resolution 1024 × 1024 at frame rate 20,000 fps
- maximum frame rate 2,100,000 fps at resolution 128 × 8
- data transfer by two gigabit Ethernet cables or direct storage on SD cards
- manual or electronic (TTL 5V) trigger in recording
- sophisticated options of synchronization and timing — programmable delay on selected input and output triggers, 100 ns resolution
- possibility to store the analogue signal in addition to video
- IDT LED lamp (130 W) for supplemental scene illumination
- set of lenses and filters enhance the recording quality

- A high-speed videorecord of artificial casing filling.

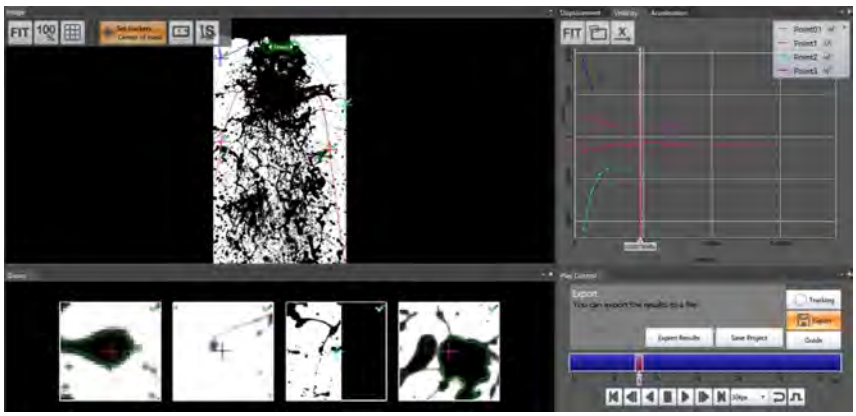
TYPICAL APPLICATIONS

- primary information on flow features in fluid dynamics prior to application of optical measuring methods
- suitable also as the main experimental method for studying fluid flow fields
- air flow visualization in research of room heating, ventilation and air-conditioning
- observation of air/gas discharge from air terminal devices and pipes, nozzle discharge, two-phase flow
- assessment of indoor environment of vehicles
- studies of flow around bodies, mixing of gas jets
- crash tests, fast motion tracking of objects, testing of firearms/ammunition/explosives
- research into biomechanics and biological processes
- evaluation of trajectories of machine mechanisms, robotic production lines, high-speed machining, etc.
- research into combustion processes





- Evaluation of the velocity field of the spray generated by the pressure swirl atomizer using Particle Image Velocimetry algorithms. Operating pressure 235 kPa, camera recording frequency 96,000 fps, shutter 0.25 µs, resolution 768 × 512 pixels.



- Particle tracking software Photron FASTCAM Analysis used for droplets tracking in the spray generated by a twin-fluid atomizer. Operating pressure 70 kPa, gas-to-liquid ratio 5%, recording frequency 42,000 fps, shutter 22.8 µs, resolution 480 × 1024 pixels.

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