Welcome to the invisible world

Laser light

for monitoring and high-speed imaging

Freeze even the fastest terrestrial motion.

Accurate imaging of small and/or fast objects and processes.

See through heat and blinding brightness.

Powerful and versatile lighting for high-speed imaging and monitoring.

Variability through fiber coupling and pulse generation.

CAVITAR

Want to see what you have missed?

Cavitar Ltd is an expert in illumination lasers based on diode laser technology.

We offer versatile products, systems and solutions for end-users of R&D applications and integrators of industrial monitoring systems.

www.cavitar.com

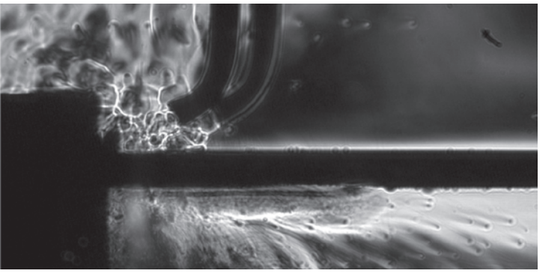
CAVITAR

CAVILUX® Smart

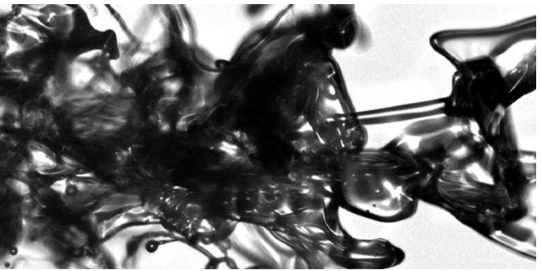
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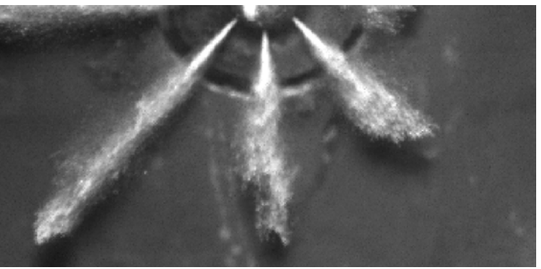




Schlieren image from a laser welding process



Measurement of fluid jets of diesel engines with double-pulse back-illumination microscopy



Fuel injection

CAVILUX® Smart System

Unique advantages

- Powerful and versatile pulsed diode laser light source designed for high-speed imaging and monitoring
- Excellent for ultra-high speed imaging
- Accurate imaging of processes involving extremely small and/or fast objects - without motion blur
- Monitoring of hot and bright objects - without blinding brightness
- Versatility by varying pulse duration and repetition rate
- Possibility to generate up to five pulses per one camera exposure
- Changeable illumination optics provides flexibility
- Efficient lighting of processes even in limited space and hard-to-reach places
- Monochromatic and low-coherence light ensures the best possible image quality – without chromatic aberrations or speckle
- Light is immune to surrounding lighting conditions such as ambient or sunlight, as well as to process vibrations

For visualization of various applications:

- Flows, droplets, sprays and jets
- Shockwave
- Schlieren imaging
- Welding
- Industrial webs
- Ballistics and explosions
- Materials testing

Pulse duration / frequency		
Pulse duration	**Normal mode (1)**	**High-speed mode (2)**
*** 10 ns**	30.000 Hz	100.000 Hz
50 ns	6.000 Hz	20.000 Hz
100 ns	3.000 Hz	10.000 Hz
500 ns	600 Hz	2.000 Hz
1 µs	300 Hz	1000 Hz
10 µs	30 Hz	100 Hz

*with reduced output power • (1) duty cycle 0,3 ‰ without time limit • (2) duty cycle 1 ‰ for 10 s

CAVILUX® Smart System features

CAVILUX Smart System
Consists of a control unit, laser unit(s), control software and illumination optics
One control unit can drive 1…4 laser units (including CAVILUX HF unit) and synchronize 1…4 cameras
Laser unit(s)
Output power options 200 W, 300 W, 400 W and 500 W
Wavelength options 640 nm (visible) and 810 nm (invisible)
Laser class 3B or 4 (depending on the output power and wavelength)
Variability through generation of pulses and pulse patterns
Pulse duration 10 ns … 10 µs
Duty cycle 1 ‰ for max 10 s (also ultra-high-speed mode available)
Continuous mode with 0,3 ‰ duty cycle
Generation of single pulses or bursts of pulses (max. 5 pulses / bursts) at high repetition rate
Stand-alone operation
Versatility through changeable fiber optic illumination
Adjustable illumination with lens (standard solution)
Direct illumination from fiber optics
Uniform back illumination (e.g. shadow imaging)
Line profile illumination (e.g. flow, welding)
Light sheet illumination





