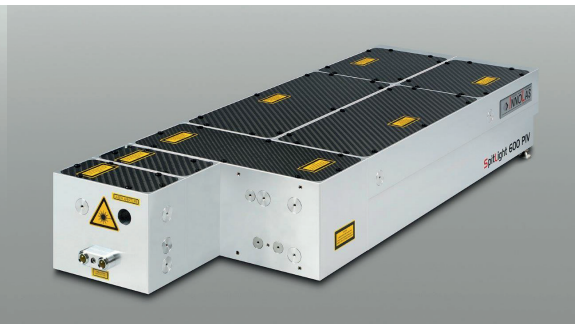
InnoLas Laser sources for Particle Image Velocimetry (PIV)

High Energy PIV Lasers: SpitLight PIV Compact and Standard

The vast majority of PIV users trusts in InnoLas Laser's SpitLight PIV Compact and Standard series. With up to two times 500 mJ double pulses in the green the ultra-compact and robust 10 Hz flash lamp or 100 Hz diode pumped lasers are the base for flexible PIV experiments where the velocity fields are recorded at video rate.

Timing and pulse energy of the laser double pulses is freely tunable for flexible experiments. The beam quality is near diffraction limit with minimum intensity modulations and low divergence to assure a thin homogenous light sheet over long distances.

The SpitLight PIV Compact DPSS with 2 x 50 mJ at 100 Hz is perfected for high frame rates.



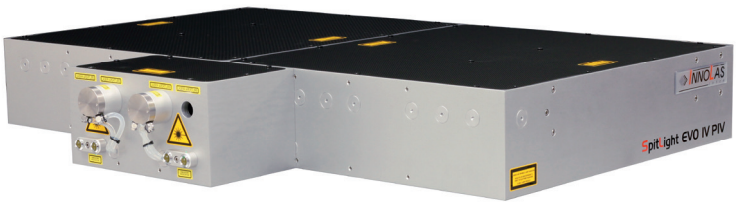
The SpitLight 1000 PIV is ideal for large light sheets with 2 x 500 mJ at 10 Hz video rate.

Dual-rail solutions: Customized High Energy / High Power PIV Systems

Dual-rail laser head with double pulse option for each laser cavity.

- Our lamp pumped lasers up to 2 x 1,2J @ 532nm and 10Hz (SpitLight 2500 PIV)
- Our diode pumped lasers up to 2 x 500mJ @ 532nm and 100Hz (SpitLight EVO IV PIV)

The SpitLight EVO IV PIV is with 100 W average power in the green is the most powerful PIV laser in its class. Diode pumped - it delivers 2 x 500 mJ double pulses at 100 Hz: suitable for both, big illumination areas and high frame rates (100 Hz / < 10ns). The long diode lifetime makes the SpitLight EVO almost maintenance free.

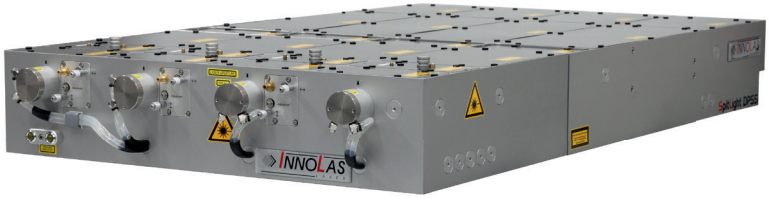


Four-Pulse PIV Solutions

InnoLas has several options to generate four high power laser pulses:

- Single laser head with "Pulse Train Option" (see next section)
- Dual-rail laser head with double pulse option for each laser cavity: Since 15 years InnoLas offers the double pulse option to obtain two balanced pulses with separation times down to 100ns. Combined with two independent pulsing lasers it offers high flexibility with low costs

- Quad-rail lasers: four independent lasers combined to one single output (flash lamp pumped or diode pumped): E.g. Customized quad rail laser: According to special customer needs a four cavity system was realized (see image below).



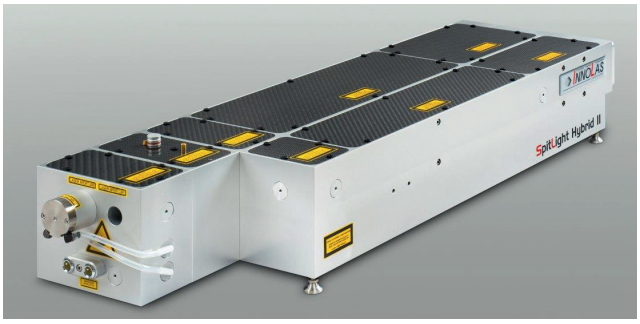
Combination of four SpitLight DPSS 250: 4 x 100 mJ at 200 Hz, 80 W

By combining four independent SpitLight DPSS 250 / 200 Hz into one monolithic housing and sophisticated internal beam overlapping quadruple pulses in the green are generated at an energy of 4 x 100 mJ in the green. The quadruple pulses are completely independent in timing and energy.

Pulse Train Option

For even more pulses the InnoLas "Pulse Train Option" provides a pulse train with very narrow pumped pulses. The overall frequency is controlled by adding a rest period after every pulse train to keep the overall frequency constant.

This option fits very well with our Hybrid system (diode pumped oscillator, flash lamp pumped amplifier) but can be implemented in almost all of our lasers. The "Pulse Train Option" allows a very high energy and repetition rate for "low repetition rate" price.



SpitLight Hybrid with "Pulse Train Option": 100mJ @ 532nm split into 8 pulses with 300 µs separation time (corresponding to 3,3kHz for 8 pulses), overall frequency 100 pulses per second, adjustable separation time, 10 kHz under development, TEM00 for excellent beam quality.

Customization to the requirements of our users

If your laser needs are not present here: InnoLas Laser can answer flexible to individual customer requirements and is experienced in tailoring laser output parameters to customer needs. Please contact us with your special laser source specifications !

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