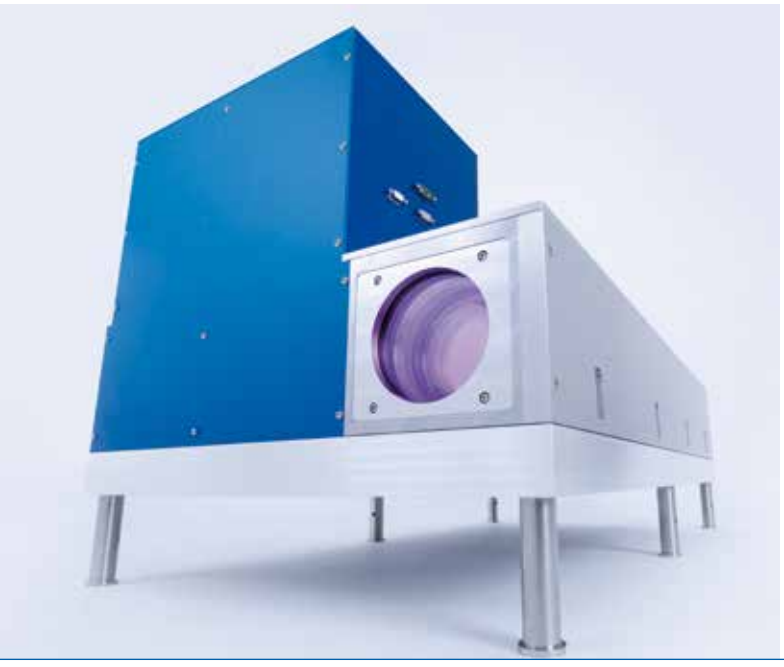
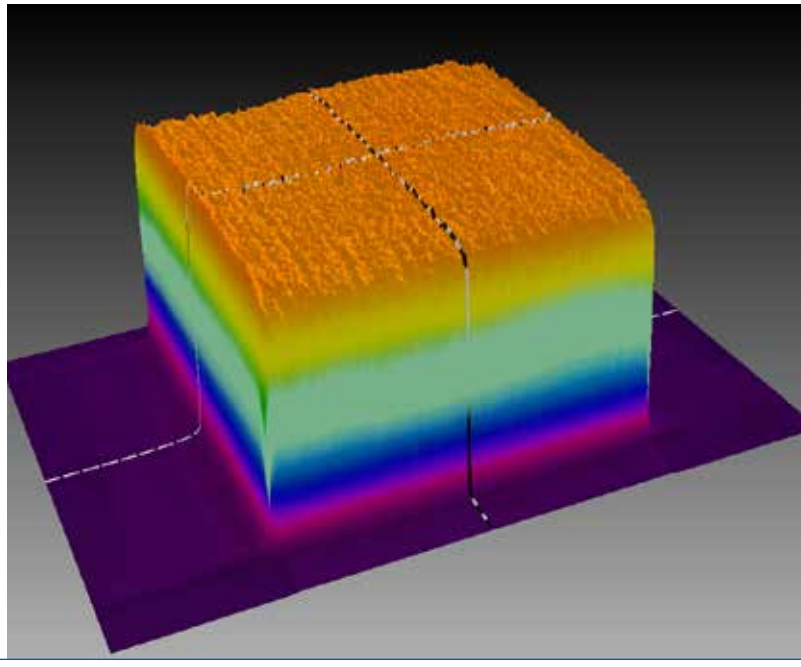
INGENERIC

SCIENTIFIC LASER SYSTEMS





SCIENTIFIC LASER SYSTEMS

The first approach for the development of new processes and the research of scientific effects is the application of standardized laser systems. When the requirements on scientific research advance, they equally rise with regard to the laser systems.

For optimum results in scientific research and development, diode lasers with very precise specifications are indispensable. Operating and monitoring the system with defined and fixed parameters such as the power distribution and wavelength is essential for the accurate collection and evaluation of data and will lead to reliable results.

Provisioning an outright laser system will further enable scientists to effectively focus on their actual research. As complete solution the system can furthermore be directly integrated into the security system, ensuring a safe operation for your team of experts.

INGENERIC HIGH ENERGY LASER SYSTEMS FOR SCIENCE AND RESEARCH

For your scientists to concentrate on their actual research, INGENERIC has specialized to provide complete laser systems, optimized for your application. We excel in developing systems with highest peak-power and a firmly defined beam shape.

Our team of experts in the fields of optical, mechanical and electronical engineering enables us to implement your requirements into a ready-to-use system in a short period of time. They are supported by state-of-the-art equipment as well as software tools to guarantee high precision and a reliable quality in the design and mounting phase.

At INGENERIC we further benefit from a network of strong partners. In close cooperation we develop the design of the ideal layout for your specific application and ensure that the diodes will be conducted with the optimum power source. All specific customer requirements with regard to controlling and monitoring will be realized.

Based on the platforms of already realized products, we are capable of covering a wide range of parameters. Contact us to learn more!

> We modify your light in any dimension
> – spectral, spatial and temporal at high pulse energy

EXPERTISE

In world-wide tenders INGENERIC was selected to supply laser systems for high-energy research facilities, such as HiLASE in Prague and DESY in Hamburg.

With the latest X-Fel-Project DESY the total of the installed base has already risen to 1200 kW.

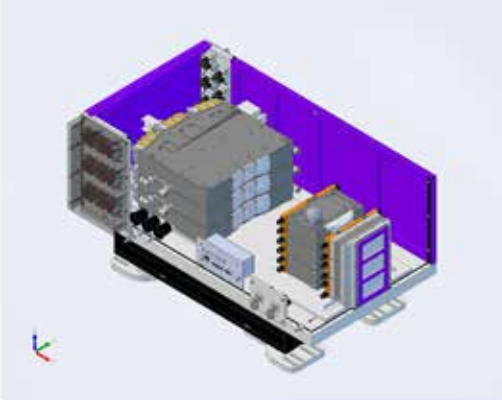
ADVANTAGES

- a team of experts in all relevant fields
- strong cooperation partners
- application specific design
- application specific control and monitor unit
- ready-to-use laser system
- scalable and robust design
- benefit from our product platform to customize your solution

REALIZED PROJECTS

INGnite250 – The Diode Pump Laser

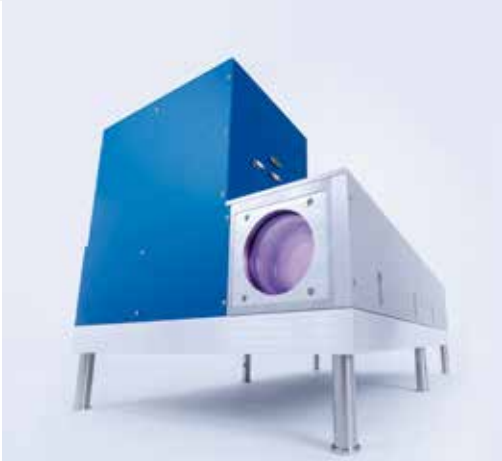
The INGnite250 is a high-power diode laser system which is designed for pumping applications with special focus on high energy DPSSL systems.
The laser system generates a top-hat profile of 78 x 78 mm² in a working distance of 5.0 m with a unique homogeneity tolerance of < 7 %. Steep flanks of the profile guarantee an efficient pumping. The pulsed power of up to 270 kW can be tuned with respect to pulse duration and repetition rate. The wavelength of 939.5 nm is controlled within a range of ± 0.1 nm. The system is delivered with power supplies, cooling units and computer- based control system.



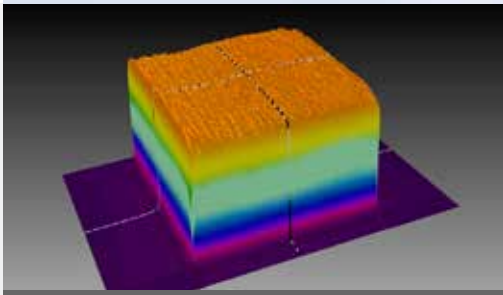
Features:

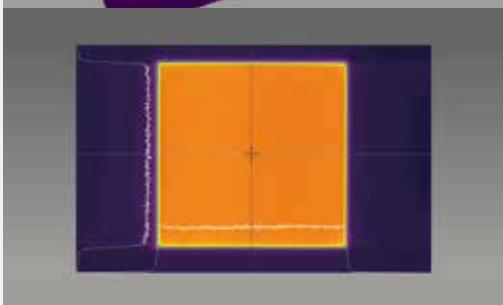
Power:	250 kW, 1.0-1.2 ms, 10 Hz
Beam Profile:	78 x 78 mm², Top Hat
Amplitude contrast:	< 7%
Divergence:	2.5° (H) x 5.0° (V)
Wavelength:	939.5 nm ± 0.1 nm

INGnite25 - High-Energy Laser System



The INGnite25 with a pulsed power of 25 kW is part of the product line of high-power diode laser systems designed for pumping applications with special focus on high energy DPSSL systems. The pulse duration and repetition rate can be tuned. The design approach is slightly different compared to the INGnite250, as the power supplies are integrated in the housing. The complete system includes a cooler and a computer–based control system. The laser system generates a top-hat profile of 24 x 24 mm² in a working distance of 600 mm with a unique homogeneity tolerance of < 5 %. High edge steepness of the profile guarantees an efficient pumping. The wavelength of 939.5 nm is controlled within a range of ± 0.1 nm.





Features:

Power:	25 kW, 1 ms, 10 Hz
Beam Profile:	24 x 24 mm², Top Hat
Homogeneity:	< 5%
Wavelength:	939.5 nm ± 0.1 nm

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SCIENTIFIC LASER SYSTEMS The INGnite-Series

SPECIFICATION DATA

Product		INGnite 250	Options			
Optical data *						
Pulsed - nominal output-power	kW	250	180	90	30	10
Center wavelength	nm	939.5	930 - 1000 nm			
Center wavelength variation (@ 25 °C)	nm	± 0.1		–		
Spectral bandwidth (FW80%)	nm	< 6		–		
Intensity profile		Top-Hat		–		
Intensity profile dimension	mm²	78 x 78	64 x 64	45 x 45	26 x 26	15 x 15
Amplitude contrast	%	< 7		–		
Slope Width	%	5		–		
Plateau Dimension (FWHM)	%	95		–		
Divergence (95%)	°	2.5(H) x 5.0(V)	2.8(H) x 2.8(V)	3.9(H) x 1.2(V)	2.1(H) x 1.2(V)	0.9(H) x 1.2(V)
Power source to target	m	5.0	4.0	2.8	1.2	1.0
Polarization (TE)	%	> 93		–		
Electrical data						
Pulse duration	ms	0.2 … 1.5		–		
Pulse rise/fall time	µs	50		–		
Repetition rate	Hz	0.1 …10		–		
Typical operation current	A	550		–		
Maximum operation current	A	600		–		
Maximum operation voltage	V	< 50		–		
Thermal data						
Operating temperature	°C	20 … 30		–		
Typical base plate temperature	°C	25		–		
Storage temperature	°C	5 … 60		–		
Other specifications						
Expected lifetime	month	> 24		–		
Operating conditions		non-condensing atmosphere		–		
Length x Width	mm²	1000 x 540		– **		
Height	mm	520	400	350	350	350
Weight (app.)	kg	150	115	100	100	100
RoHS 2002/95EC compliant		yes	yes			

**based on existing platform - customized dimensions on request

*Further options with regard to optical data

Power: A peak power of up to 750 W per bar, depended on pulse duration and duty cycle (typical maximum value: 550W - 1 ms - 2 %)

Pulse duration: up to 5 ms, dependent on the pulse power and duty cycle

Pulse repetition rate: dependent on pulse power and pulse duration

Safety

This is a laser class IV product according to IEC 60825-1:2014. The laser light emitted from this laser diode is invisible and/or visible and is harmful to the human eye. The safety regulations for eye and personell protection included in the IEC Standard must be observed to avoid any harm to operating personnel. Avoid direct exposure and looking into the laser diode, into the collimated beam or into the fiber when it is linked to the module.

Storage and shipping

Store and ship the diode laser with shortened electrical contacts, in a clean and dry atmosphere and in a temperature range of 5°C to 60°C.

Operation and handling

Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured. During handling personnel has to wear wrist straps. Grounded work surfaces and additional antistatic techniques are mandatory during handling. Device failure and safety hazard are caused by operation in excess of maximum ratings. Exceeding output power and temperature specification will result in accelerated device ageing.