LIGHT PANTHER

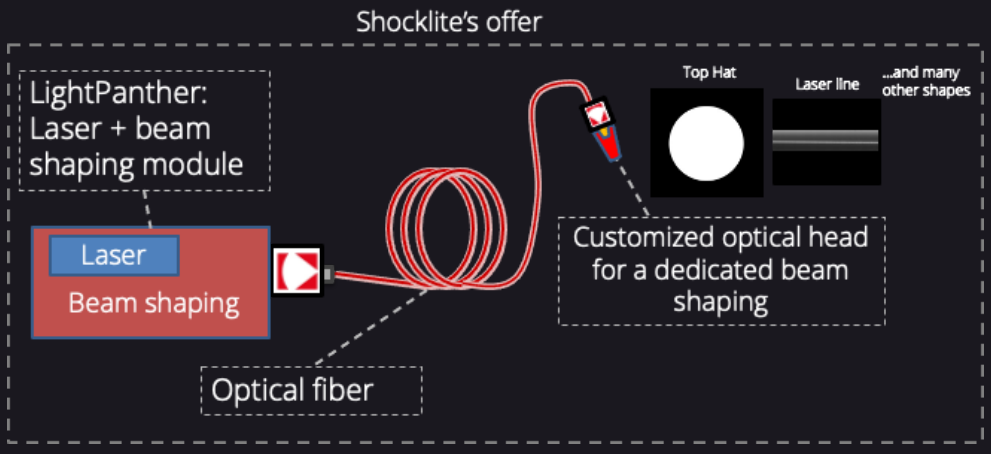
Merge optical fiber's flexibility and a Q-switched laser 's' high energy to get the laser shock tool built for your treatment and analysis processes

UP TO 350 mJ
2 times higher than standard single core fiber injectors

OFF-THE-SHELF SINGLE CORE FIBERS
To reduce replacement costs and lead times

SECURED
Fiber injection by software and hardware

CUSTOMIZED MODULES
To provide the proper laser beam shape on the surface to treat/analyze



MASTER THE COMPLETE OPTICAL PATH :

1. The Light Panther module, comprising a nanosecond laser and the beam-shaping optics to push the limits of nanosecond laser propagation through optical fibers
2. Dedicated optical heads offering a customized beam shaping at the output of the fiber

ADVANTAGES OF SHOCKLITE'S FIBERED LASER SOLUTION

- Increased accessibiliy to confined or underwater areas with low radii of curvature
- No need for disassembly
- Safer deployment with respect to free-space laser propagation
- Allows relocation of the laser to a secured space far from excessive vibrations, sources of heat, dustand moisture
- Cost-effective compared to free-space platforms (mirrors integrated in robotic arms or heavy parts movement)
- Long optical fibers enable treatment of wide surfaces
- Fewer maintenance operations as the beam transportation is provided by passive optical fibers
- Easier implementation in harsh environments characterized by very high heat (> 1000°C), dust or water projections
- Gain in maneuverability in case of manual use
- Reduction in processing time and gain in robustness

HIGH ENERGY APPLICATIONS

- Thanks to its record-breaking energies, the system can address multiple high-energy applications in the nanosecond regime with peak power densities as high as 10 GW/cm2
- The FiberChecker software allows control of the system's output energy helping the user to optimize processing

SPATIAL AND SPECTRAL BEAM SHAPING

- Securing the air-silica interfaces at the fiber ends
- Reduction of the nonlinear fiber losses
- Optimization of the flexibility by minimizing the fiber core diameter

FITTING CUSTOMERS' NEEDS

- Top-hat output beam shaping: circular, square or rectangular
- Possible active beam shaping with varying beam size and working distance
- Fiber-length versatility

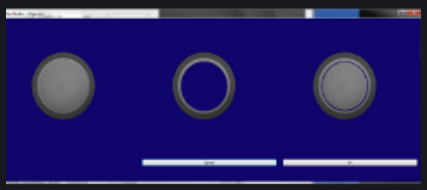
EASE OF USE

- Compatible with off-the-shelf fibers (selected by ShockLite)
- Easy fiber replacement

SECURITY

- Live monitoring of the fiber input and output facets to prevent damage
- Protected from optical feed-back
- Emergency shut down in case of fiber damage or disconnection

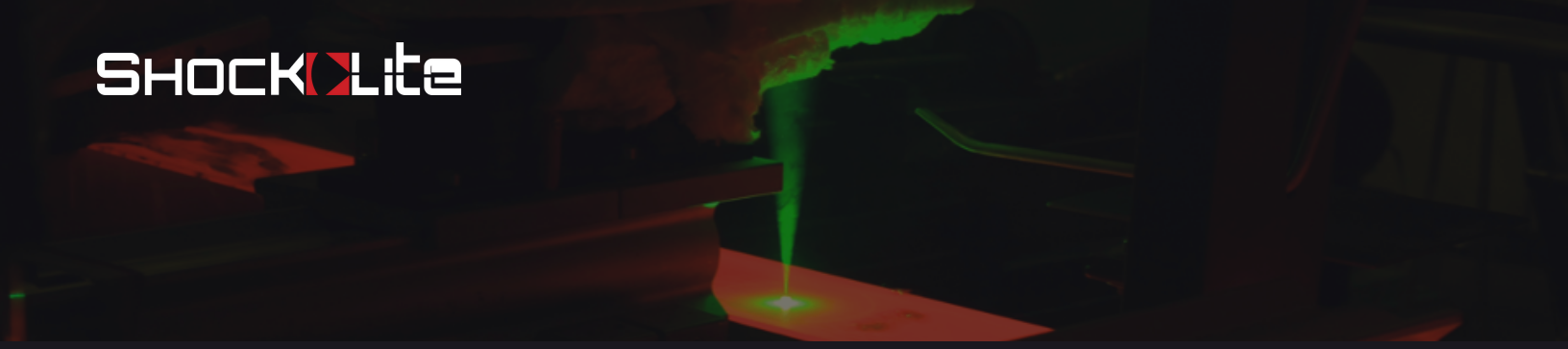
FiberChecker software window



Fiber alignment helper

	532nm		1064nm	
System transmission (%) (1)	66			
Repetition rate (Hz)	10	100	10	100
Pulse duration (ns)	5			
Fiber maximum input energy (mJ) (2)	390	240	390	240
Fiber maximum output energy (mJ) (3)	350	220	350	220
Fiber core diameter (mm) (4)	1.5			
Fiber bending radius (m) (5)	0.4			
NA	0.12			
Fiber length (m)	Up to 25			
Output polarization	Random			
Output intensity profile	Top-hat			
Beam shaping (6)	Circular			
Beam diameter (mm)	<1			
Peak power density (GW/cm^2)	>8.9	>5.6	>8.9	>5.6
System dimensions (mm^3)	1135 x 700 x 210			

(1) Optical transmission between laser output and fiber input
(2) Higher energies can be reached. Contact us for more information
(3) Energy stated for a 5 m fiber
(4) Lower core diameters are available for lower output energies
(5) Lower bending radii are available for lower output energies
(6) Other beam shapes are available: square, rectangular, etc.



APPLICATIONS

LASER SHOCK PEENING

LASER ULTRASONICS

LASER CLEANING

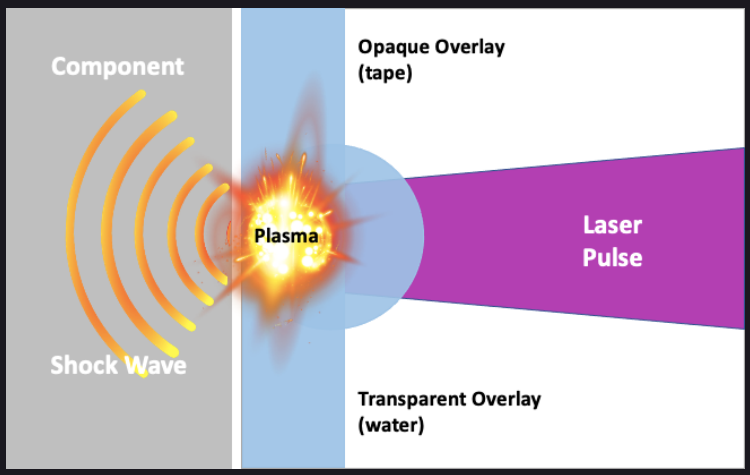
LIBS

... AND MANY MORE NANOSECOND LASER APPLICATIONS

LASER PEENING

WHY USE LASER SHOCK PEENING INSTEAD OF CONVENTIONAL TECHNIQUES

- **L**onger lifetime and greater corrosion resistance
- Better relaxation and less cold work
- More densified material with high residual stress inside the deep layers
- Sharper precision and greater repeatability
- Improved treatment homogeneity
- Reduced surface damage
- More environmentally friendly: no foreign object debris (FOD)
- Treatment of water-immersed parts



APPLICATIONS AND FIELDS OF USE

- The advantages of laser peening can be exploited throughout a part's lifetime: it can be useful during manufacturing (additive and conventional) as well as maintenance.
- Its fields of use include aerospace, the shipbuilding industry, energy, luxury

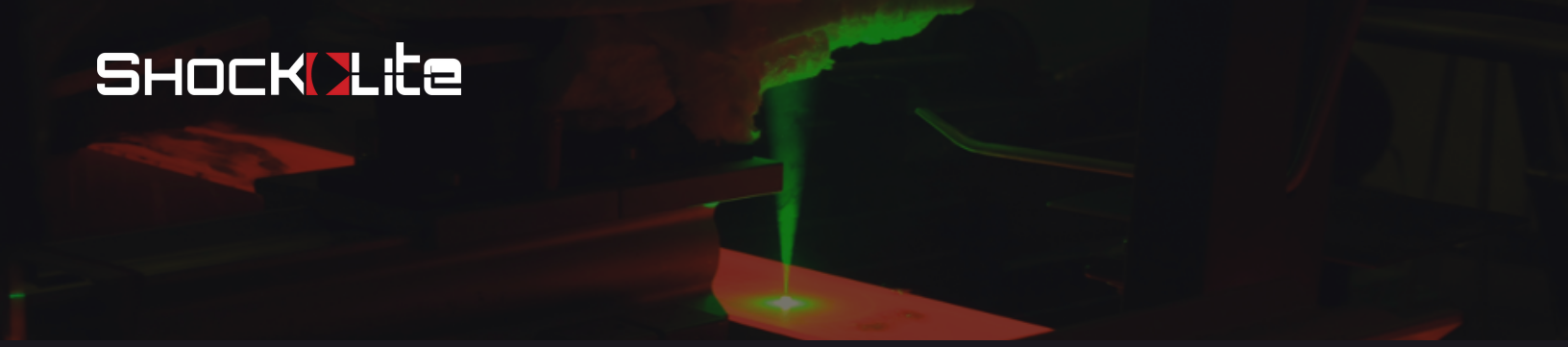
LASER CLEANING

WHY USE LASER CLEANING INSTEAD OF CONVENTIONAL TECHNIQUES

- No chemical pollutants
- Nonabrasive and noncontact process
- Simpler logistics

APPLICATIONS AND FIELDS OF USE

- Its fields of use include industrial cleaning, heritage restoration



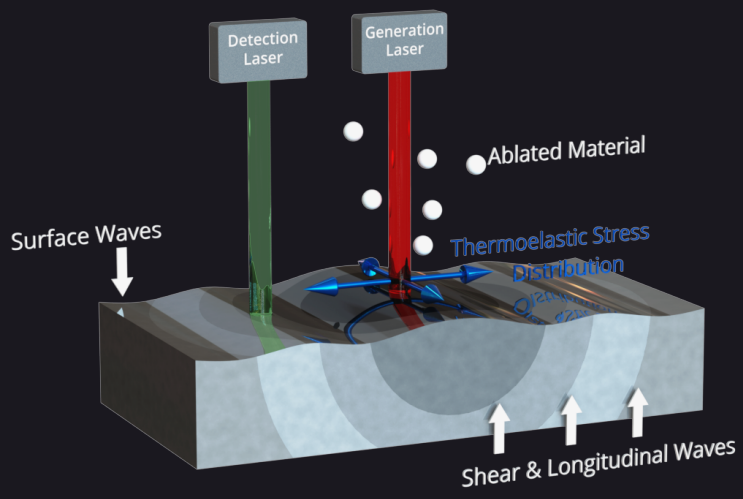
LASER ULTRASONICS

WHY USE LASER ULTRASONICS INSTEAD OF CONVENTIONAL TECHNIQUES

- Sharper precision and greater repeatability
- Non-contact and long working distance because piezoelectric, air-coupled and electromagnetic acoustic transducers are replaced by high-energy generation lasers
- Broad choice of beam shapes in order to generate a tailored ultrasonic wave in the analyzed part
- Wider range of generated ultrasonic wave frequencies

APPLICATIONS AND FIELDS OF USE

- Laser ultrasonics find their benefits in flaw detection as well as parts characterization (thickness, grain size, phase transformation etc.)
- Its fields of use include metallurgy, energy, aerospace, environment



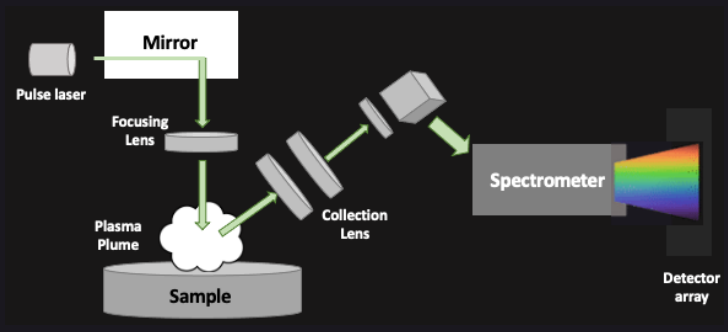
LIBS

WHY USE LIBS INSTEAD OF CONVENTIONAL TECHNIQUES

- Increased safety in case of dangerous media analysis
- Tiny part sampling

APPLICATIONS AND FIELDS OF USE

- Its fields of use include archeology, biomedical research, process monitoring, agronomy



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