SHOCKLITE

# LIGHT PANTHER

## FIBER-DELIVERED HIGH-ENERGY LASER SOURCE

- ENHANCED SAFETY
- HIGH PRECISION
- INDUSTRIAL INTEGRATION
- COMPACT & MODULAR ARCHITECTURE




NANOSECOND LASER
INDUSTRIAL APPLICATIONS

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BROCHURE

**The LightPanther relies on a unique optical architecture that enables high-energy nanosecond laser pulses to be delivered through optical fibers while preserving pulse energy and duration.**

By reducing the spatial coherence of the laser beam, the LightPanther achieves reliable delivery through silica optical fibers with high laser-induced damage thresholds.

## APPLICATIONS

The LightPanther is particularly well suited to applications requiring the flexible generation of nanosecond laser-induced mechanical shocks in confined or harsh environments.

These include:



### Laser Shock Peening (LSP)

Generates shockwaves to strengthen and harden metal surfaces



### Laser Shock Cleaning (LSC)

Removes surface contaminants using controlled laser energy



### Laser Ultrasonics (LUS)

Generates and detects ultrasonic waves for material inspection



### Laser Induced Breakdown Spectroscopy (LIBS)

Identifies materials through laser-induced plasma emission

# FEATURES

## 01

### HIGHEST ENERGY AT THE FIBER TIP

Highest energy levels available at the fiber tip, enabled by a unique beam-shaping module.

## 02

### INDUSTRIAL-READY INTEGRATION

A flexible architecture designed to integrate seamlessly into industrial infrastructures and adapt to diverse workflows.




## 03

### LASER COMPATIBILITY

An adaptable beam-shaping module compatible with multiple nanosecond and picosecond laser sources.

## 04

### SMART FIBER MONITORING

Dedicated software for laser control and real-time monitoring through an integrated fiber-imaging module.

## 06

### BUILT FOR FIELD OPERATION

A durable fiber design for handheld or robotic-arm operation with quick and easy fiber replacement.

## 05

### SILICA OPTICAL FIBERS

Supplied with single-core silica optical fibers.

# FIELDS

### AEROSPACE & AUTOMOTIVE

Airframe, engine components, maintenance & coating removal

### NAVAL INDUSTRY

In-situ treatment, corrosion & oxide removal, on-site maintenance

### ENERGY

Turbine blades, discs, shafts & other critical components

### METALLURGY

Metallic parts surface treatment, oxide & contamination removal

### GEOLOGY

Elemental analysis & material identification

### NUCLEAR

Decontamination in restricted environments

# SPECIFICATIONS

| | 532 nm | | 1064 nm | |
|---|---|---|---|---|
| **System transmission (%) (1)** | 67 | | | |
| **Repetition rate (Hz)** | 10 | 100 | 10 | 100 |
| **Pulse duration (ns)** | 6 | | | |
| **Fiber maximum input energy (mJ) (2)** | 330 | 240 | 390 | 210 |
| **Fiber maximum output energy (mJ) (3)** | 300 | 220 | 350 | 190 |
| **Fiber core diameter (mm) (4)** | 1.5 | | | |
| **Fiber bending radius (m) (5)** | 0.4 | | | |
| **NA** | 0.12 | | | |

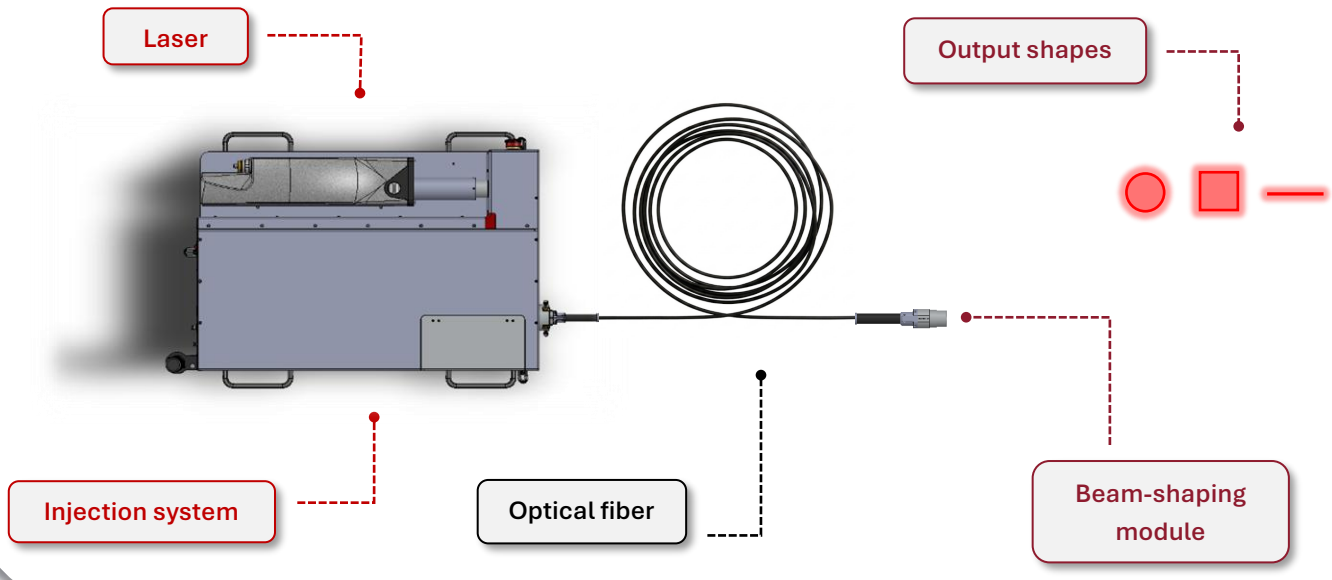
| | |
|---|---|
| **Fiber length (m)** | Up to 60 |
| **Fiber output polarization** | Random |
| **Fiber output intensity profile** | Top-hat |
| **Fiber output beam shape** | Circular, square, linear |

(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 5m fiber
(4) Lower core diameters are available for lower output energies
(5) Lower bending radii are available for lower output energies

# SHOCKLITE'S OFFER

ShockLite is committed to supporting customers throughout their applications. We offer tailored beam-shaping solutions at the optical fiber output (circular, square, linear), giving end-users precise control of the laser beam from the source to the target while meeting the specific requirements of each application.

## BEAM DELIVERY *OVERVIEW*

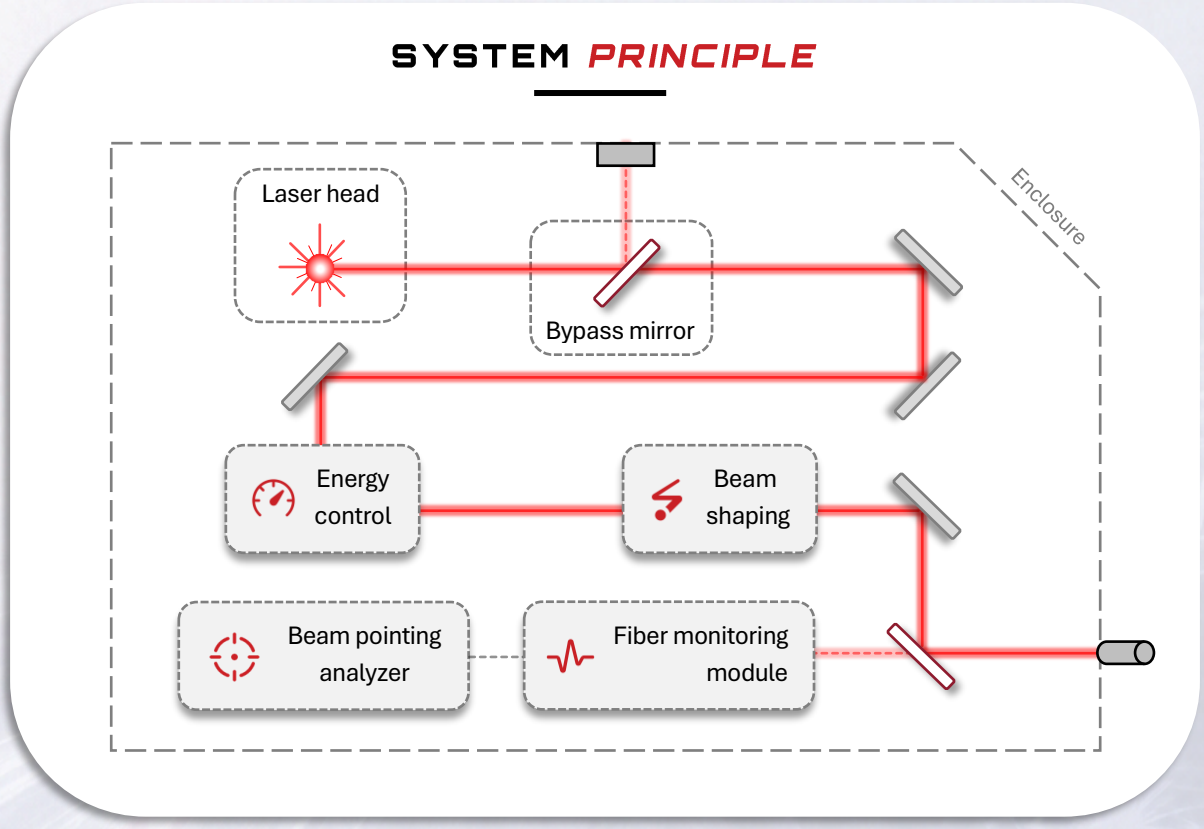


# FIBERING EXISTING LASER SOURCES

ShockLite also offers plug-and-play beam-shaping modules for fiber delivery from laser sources supplied by other manufacturers. A range of options can be integrated to tailor the system to specific process requirements:

+ **Enclosed laser-head integration**, for simplified operation in industrial environments
+ **Bypass mirror**, for switching between fiber delivery and free-space propagation
+ **Fiber output energy control**, for fine-tuning process parameters
+ **Beam pointing analyzer**, for fast and user-friendly fiber alignment
+ **Real-time fiber monitoring**, for safe and reliable fiber operation

## SYSTEM *PRINCIPLE*



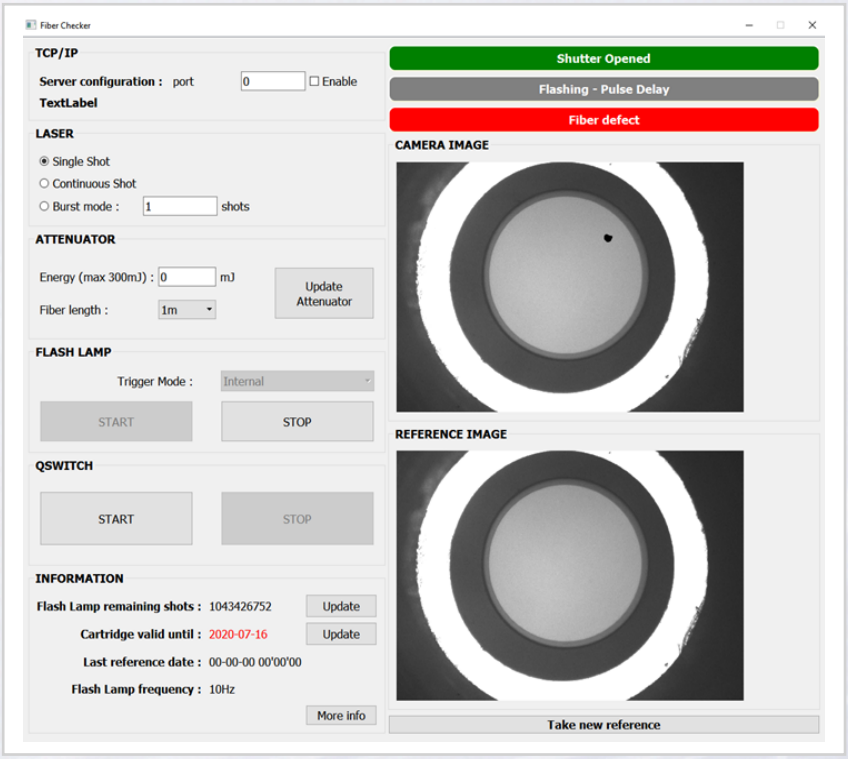
# SOFTWARE

## FiberChecker

The FiberChecker software is a tool that allows the customer to use the system in the safest way as it features live monitoring of the fiber input facet to prevent any lasing in case of fiber damage. Other functionalities are proposed such as the laser energy control or the lasing mode (single-shot, continuous, burst). The user is also completely autonomous in replacing the optical fiber as the software integrates an alignment helper.

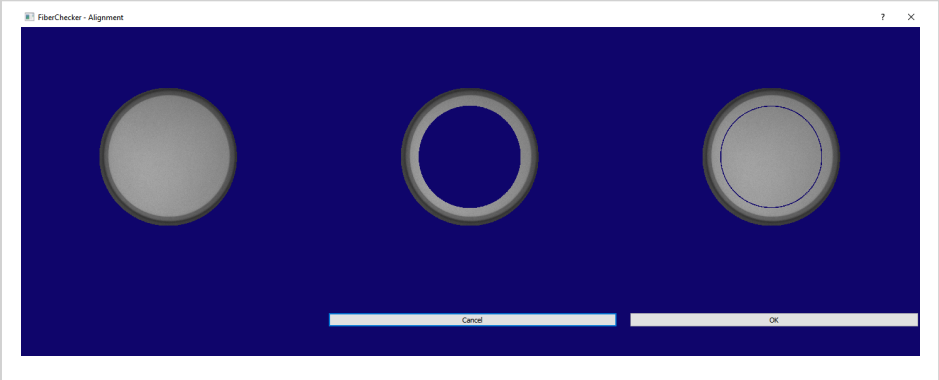
### FiberChecker Interface

Detection of a defect on the fiber surface and interruption of laser pulses.




### Optical Fiber Alignment Tool

Example of optimal alignment of the fiber input facet with the laser beam.



# REQUEST
# SAMPLE TESTING

Our teams will work with you to perform preliminary tests on representative parts with our internal laser source.

## CONTACT US


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