



Higher quality. More materials.
Your product never looked so good.

The LodeStone™ system is a more accurate and flexible processing alternative for the efficient cutting and drilling of flexible materials. Its short pulse-width femtosecond laser results in low levels of carbonization and minimal heat affected zones, delivering the exceptional accuracy and tight tolerances required by processors driving new solutions to market.



Femtosecond quality at
nanosecond price and reliability

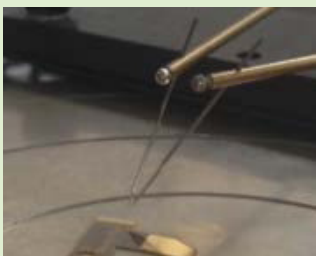
LodeStone uses an ESI-designed femtosecond laser with proprietary fiber technology to avoid costly laser components and historical issues with short pulse width laser reliability. With low upfront cost and high-quality, responsive ESI service support, LodeStone enables you to consistently output ultra-high quality product with minimal headaches and low cost.

Broader range of materials
with high quality and
productivity

It is well-known that ultra-short pulse lasers can avoid issues associated with poor laser energy absorption due to its cold ablation mechanism. Inefficient energy absorption is a major cause of poor quality and low throughput in many materials. LodeStone's femtosecond laser enables you to process a broader range of material with high quality and productivity.

Throw out your tooling

Can't achieve your customer's tight tolerances and high accuracies with your mechanical process anymore? Tired of long lead times and high prices for your mechanical punch tooling? LodeStone cuts overlay and flexible circuits with equivalent quality and reliability while enabling you to meet your customer's demanding lead time and quality requirements and avoiding costly tooling.



Depaneling high-reliability flexible circuits

The last step of FPC production requires depaneling the individual circuits. High-reliability circuits have historically required a mechanical process to avoid low-resistance paths caused by laser-induced debris and carbonization. LodeStone now enables a cost-effective process to avoid tooling expenses and achieve $>1014 \Omega$ finger-to-finger resistance in a wide range of FPC materials.

Laser

Type	Femtosecond green fiber laser
Pulse Rate for Via Formation	Up to 1 MHz
Average Power	>7.8W @ 1 MHz work surface

Laser Beam Positioning

Type	Cross-axis with galvanometer (Laser beam moves in XY, part moves in Y axis)
Panel Size	533 mm x 635 mm
Accuracy	± 20 µm over entire panel area
Maximum Average Velocity	500 mm/s
Peak Point-to-Point Move	2,000 points per second
Speed	
Controller	ESI custom DSP based controller

Main Stage

Type	Cross axis
Motor Type	Brushless linear motors

Secondary Stage

Type	XY Galvanometer
Controller	High-speed custom digital control

Laser Power Control

Long Term Stability	±10%
Power Control	Precision Pulse™ real-time

Programmable Z Stage

Resolution	1 µm
Maximum Average Velocity	>10 mm/s
Repeatability	± 10 µm
Travel	25 mm

Automatic Alignment and Illumination

Coarse Camera Field of View	30 mm diagonal
Fine Camera Field of View	2 mm diagonal
Detection Device	CCD, monochrome
Illumination LED	LED

System Control Computer

Type	IBM® PC compatible
Processor	Intel Quad Core
Memory	4GB
Hard Drive	Dual 500GB in RAID1 configuration
Monitor	17" LCD flat panel
Input Devices	Keyboard and trackball
Network Compatibility	TCP/IP, 10/100/1000 GBE
Drill File Formats	DXF, ASCII, Excellon I and II, Sieb & Meier and Gerber using esiCAM software

Automation Capability

Software, mechanical and electrical interfaces provide the capability to attach web and panel material handlers to the system.

Ask an Expert! For facilities guidelines, requirements or more information, please contact your local MKS representative or visit www.esi.com.