



Automatic

# LASER EDGE-GRINDING SYSTEM

Incorporating the Technology of Water Jet Guided Laser (MicroJet®)

200 series  
LGS 200 M  
LGS 200 C  
LGS 200 A

*Expanding your Capabilities with the Latest Development in Laser Technology*

# The Laser MicroJet®

The Laser Microjet® surpasses laser cutting and water cutting technologies. The laser beam is contained within a hair-thin water jet by total reflection.

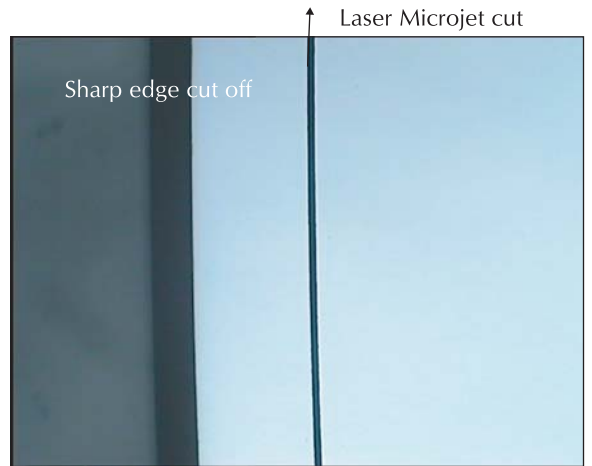
Processed parts are cooled by the water jet at the cutting face, producing what is effectively "cold laser cutting". The resulting minimal thermal damage ensures limited material change during processing.

The low water jet pressure ensures that virtually no mechanical force is exerted during processing, allowing rapid, damage-free production of delicate and composite parts.

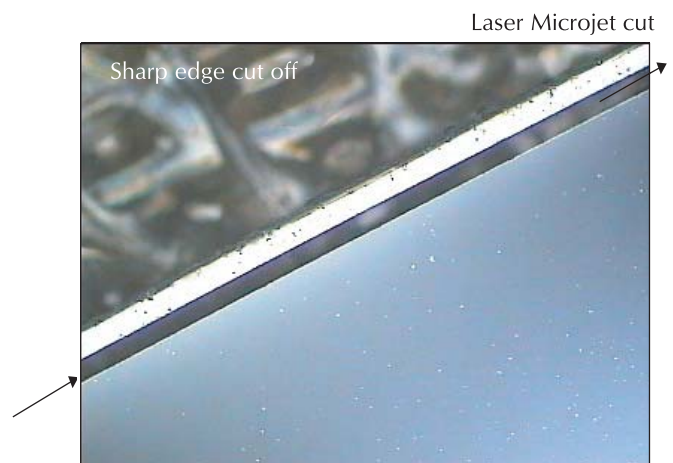
Precise cutting is achieved over the entire depth of the workpiece, leaving a fine, clean surface.

Constant high cutting quality is possible due to the long working distance and constantly focused, parallel laser beam.

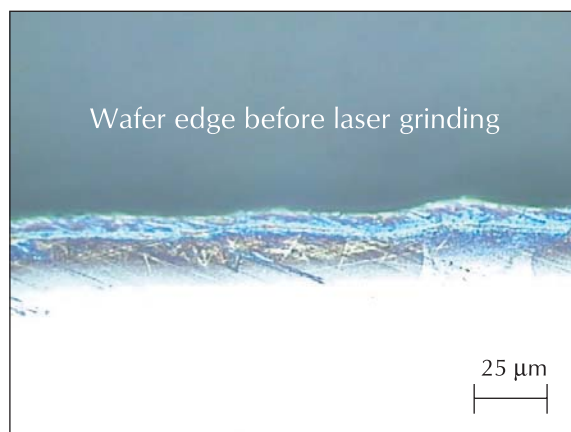
In short, the Laser Microjet® significantly expands your micro-machining capabilities, especially with difficult-to-machine parts.



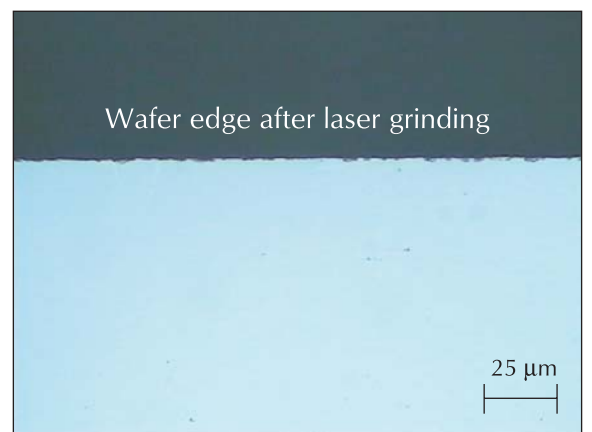
Laser cutting of wafer edge



Laser grinding of wafer edge



Wafer edge before laser grinding



Wafer edge after laser grinding

Water jet Laser Power

for:

Cutting

Grinding

Drilling

Grooving

Scribing

# The LGS 200 benefits at a glance

LGS 200 A is a fully automatic laser edge-grinding system, targeted to edge-grinding of thin wafers. Advanced process capabilities to reduce wafer breakage due to micro-cracks at the edge of the wafer.



- The Laser-Microjet<sup>®</sup> is able to laser-grind the wafer edge in minimal time without damage
- Any contour of the edge is possible
- Very fast process : optimal cutting speeds between 50 mm/s and 200 mm/s
- Easy recipe change leads to a very flexible process
- Negligible mechanical stress; force free
- Negligible chipping
- Negligible mechanical damages
- laser-grinding of any edge profile possible
- Machine can also be utilised for drilling, scribing, grooving, dicing, thinning, marking of untaped wafers
- Flat- or notch cutting possible
- Ideal for thin wafers
- Optimal wafer thicknesses between 25 microns - 300 microns
- No tool-wear
- Very few consumables, low running costs
- Reduced cost of ownership compared to traditional grinding methods
- Laser-class-1 machine with full enclosure
- Change of wafer size (for example 6" to 8") possible without any modification



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## General Specifications LGS 200

### AXES

Type	XY-Table with separate axes on granite base
Drive	Linear motors
Useable working area	240 x 240 mm
Maximum stroke (X x Y)	600 x 400 mm
Accuracy	< 3 µm
Repeatability	< 1 µm
Maximum axis speed	600 mm/s
Maximum acceleration	20 m/s <sup>2</sup>
Index	0.1 µm

### LASER

Type	can be installed outside of clean room
Wavelength	Solid state Nd:YAG, pulsed
Average power	1064 nm
Laser beam transmission	100 W
	Optical fiber, length 10 m

### WATER PUMP

Type	can be installed outside of clean room
Water flow Average	Two-cylinder pressure amplifier
Water pressure	0.05 l/min
Pressure transmission	50 to 500 bars
	Flexible water hose

### OPTICAL HEAD

Type	Projection of fiber exit into water jet nozzle
Image ratio	4:1, 6:1 or 8:1
Nozzle diameter	50 µm, 75 µm or 100 µm
Alignment	Vision controlled

### VISION SYSTEM

Type	Pattern matching
Magnification	Two-level (high/low magnification)
Optical magnification	x 0.5 to x 5.0
Illumination	Coaxial and ring light, fiber-coupled
Automatic alignment	by image processing, alignment time < 5 s

### WORKPIECE

Wafer size	25 to 203 mm (1" to 8")
Wafer thickness	25 to 300 µm

### CLEANING STATION LDS 200 C/A

Cleaning	DI water jet (high-pressure & Megasonic optional)
Drying	Front and back side

### LOADING STATION LDS 200 A

Cassettes	Max. 3 wafer cassettes (6" or 8")
	Single wafer drawer

### UTILITIES

Electrical power	3 x 400 V or 3 x 200 V, 50/60 Hz
Total power consumption	20 kVA
Air pressure	5 - 6 bars, oil free
Laser cooling water	Max. 25 l/min, max 16°C, industrial water
DI-Water flow for cutting	Average 0.05 l/min, < 0.3 µm, degasified
DI-Water flow for cleaning	Max. 1 l/min, DI-water, < 0.3 µm

### DIMENSIONS/WEIGHT

Basic machine (W x D)	LGS 200 M: 1140 x 820 mm, 800 kg
	LGS 200 C: 1140 x 1100 mm, 900 kg
	LGS 200 A: 1560 x 1100 mm, 950 kg
Laser (W x D)	2550 x 650 mm, 900 kg
Water pump (W x D)	1300 x 700 mm, 350 kg

### Options

Transformer 200 V/400 V  
 Vacuum pump  
 De-ionization  
 Fiber length 20 m  
 Uninterruptible Power Supply

The above specifications are subject to changes due to technical improvement.  
 The Laser Edge-Grinding System incorporates the worldwide patented technology of water jet guided laser.  
 This machine is conforms to CE and CDRH regulations.