FUTA-Q Imagination & Innovation

Technical Information

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Multitasking processing machine of excimer/femtosecond lasers

1. New multitasking processing machine equipped with both excimer and femtosecond laser systems

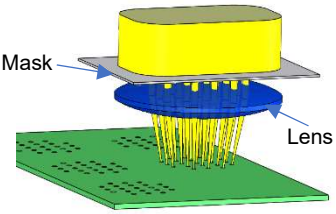
FUTA-Q has newly introduced a multitasking laser processing machine of excimer/femtosecond lasers. The excimer laser system can perform multiple micro fabrications simultaneously with the laser beam going through a mask. In this machine, the excimer laser and femtosecond laser processing can be overlapped on the same workpiece, making it possible to fulfill customers' various requests in more detail.

2. Characteristics of excimer and femtosecond lasers

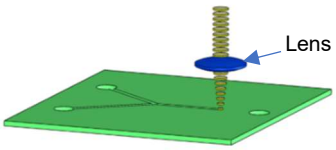
【Excimer laser processing】

Excimer laser is a gas laser that emits 193nm vacuum ultraviolet light with high efficiency and high power. The energy density is very high so that the enough energy required for processing can be provided in the wide laser irradiation area of 18 x 28 mm. A precisely fabricated mask placed at the middle of the laser beam path makes it possible to instantly process the complex patterns consisting of numerous holes and grooves.

Excimer laser processing



Femtosecond laser processing



【Femtosecond laser processing for continuous processing】

Excimer laser processing and femtosecond laser processing can perform consecutively on the same workpiece.

3. Laser processing machines installed in FUTA-Q

Laser processing machines	Excimer/femtosecond laser multitasking processing machine	Femtosecond laser processing machine	Picosecond - femtosecond laser processing machine	Fiber laser processing machine
Features	Both excimer and femtosecond laser processing is available. (see above)	The laser beam is focused in a very short time, enabling processing with minimal thermal effects.	Continuous processing for an elongated material is available by the laser with minimal thermal effects.	With the high-power laser, continuous processing is available at high speed and deep depth.
Laser wave length	Excimer: 193 nm in 10 - 30 W Femtosecond: same as on the right	1030 nm in 20 W 515 nm in 10 W 343 nm in 5 W	1035 nm in 60 W	800 - 125 nm in 200 W
Pulse width	Excimer: 12 - 30 ns Femtosecond: same as on the right	300 fs (fixed)	350 fs - 10 ps (variable)	μs up to continuous
Maximum process size	400 x 300 mm	Φ0.5 - 4 mm 100 x 100 mm	Φ0.2 - 25 mm 1.8 m (work length)	Φ0.35 - 15 mm 1.8 m (work length)
Minimum process diameter *	negotiable	Φ0.01 mm	Φ0.02 mm	Φ0.05 mm
Process depth *	negotiable	≦0.5mm	0.01 - 0.5 mm	≦several millimeters

*Hole and groove shapes vary depending on machining conditions and other factors.

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