Mitsubishi Electric processing machines support the world

1986 L series

1995 LX series

1998 LZ series

2001 LV series

2008 LV PLUS series

2011 eX series

2015 eX PLUS series

2015
ML3015SR-32XP

MITSUBISHI ELECTRIC
Changes for the Better

for a greener tomorrow

FACTORY AUTOMATION

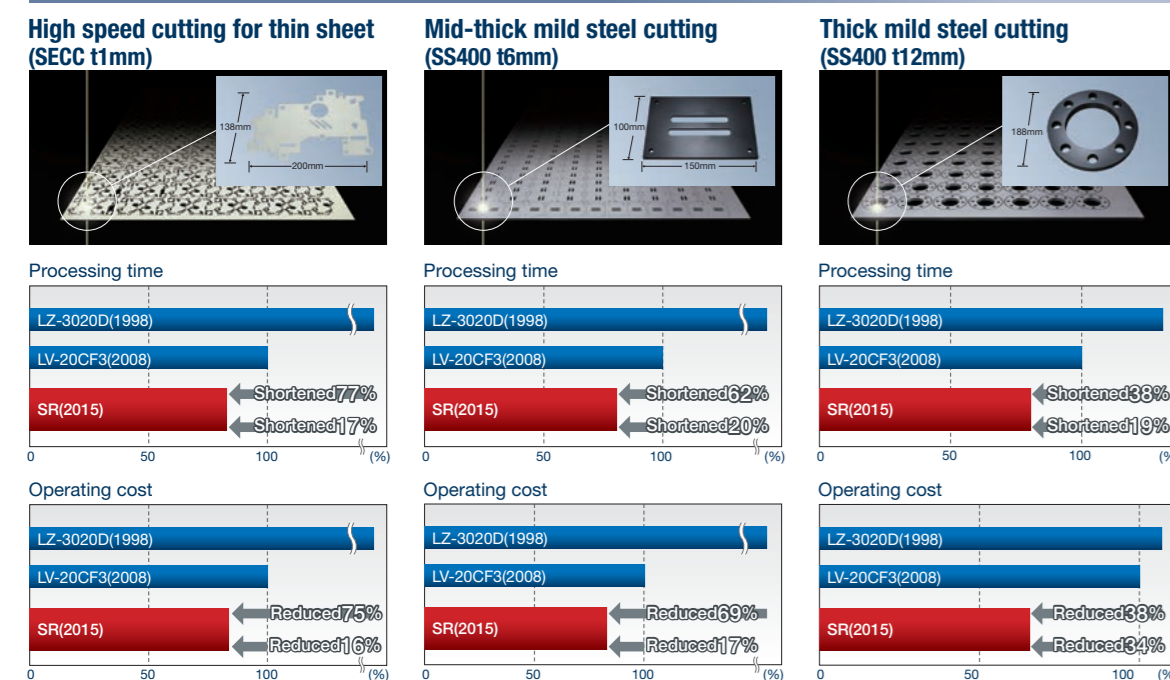# CO_2 2-Dimensional Laser Processing Systems ML3015SR-32XP

SR

Mitsubishi Electric Laser Processing Machines
– supporting the world's production sites –
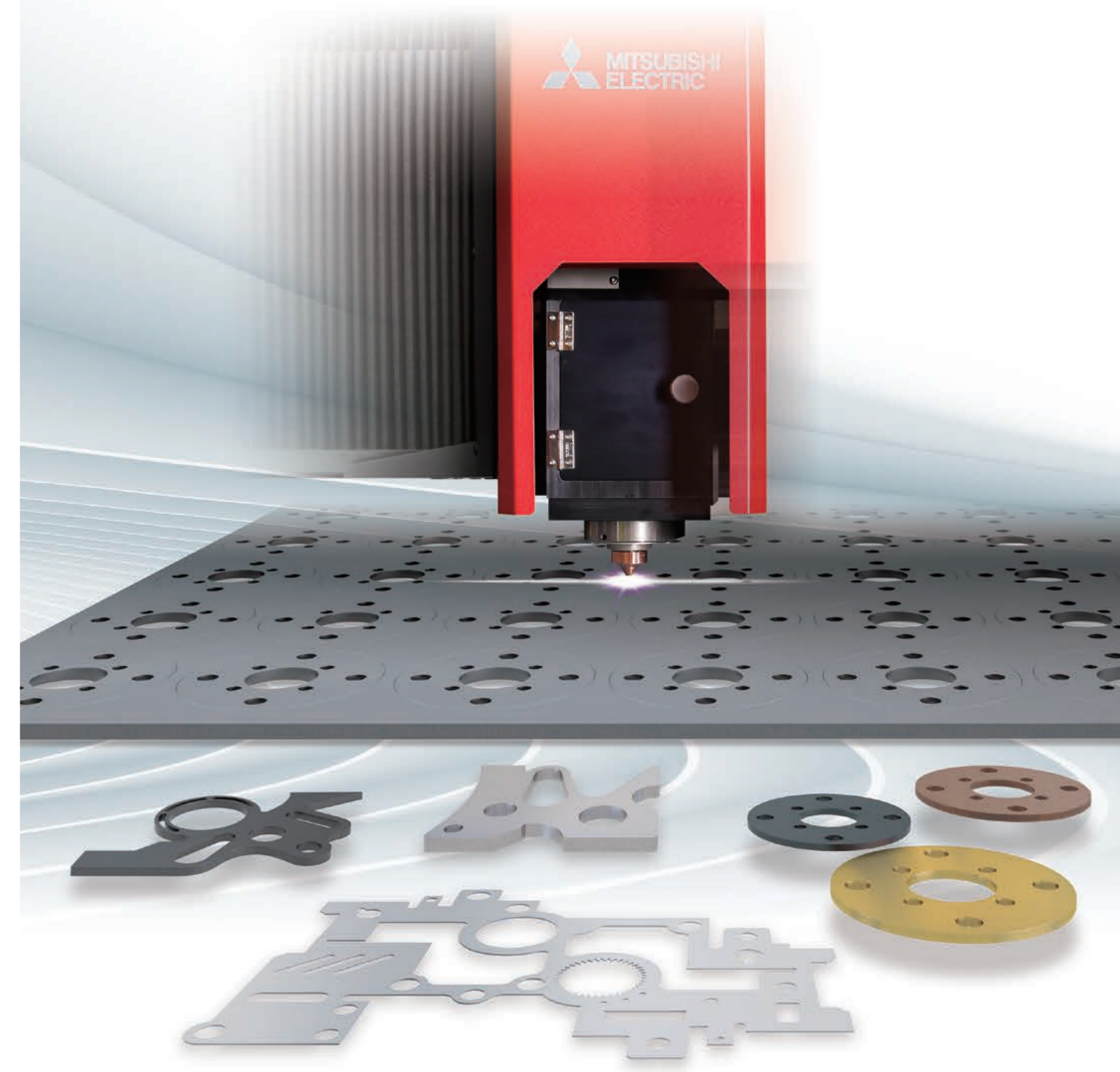
All-around machine that covers all plate thickness
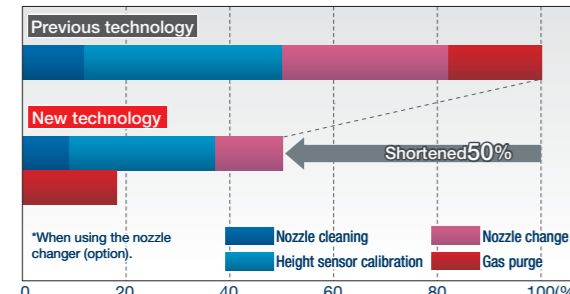
Improvement of processing performance

High speed cutting for thin sheet (SECC t1mm)

Processing time

LZ-3020D(1998)	
LV-20CF3(2008)	
SR(2015)	Shortened 77% Shortened 77%

0   50   100 (%)

Operating cost

LZ-3020D(1998)	
LV-20CF3(2008)	
SR(2015)	Reduced 74% Reduced 16%

0   50   100 (%)

Mid-thick mild steel cutting (SS400 t6mm)

Processing time

LZ-3020D(1998)	
LV-20CF3(2008)	
SR(2015)	Shortened 82% Shortened 17%

0   50   100 (%)

Operating cost

LZ-3020D(1998)	
LV-20CF3(2008)	
SR(2015)	Reduced 60% Reduced 17%

0   50   100 (%)

Thick mild steel cutting (SS400 t12mm)

Processing time

LZ-3020D(1998)	
LV-20CF3(2008)	
SR(2015)	Shortened 39% Shortened 19%

0   50   100 (%)

Operating cost

LZ-3020D(1998)	
LV-20CF3(2008)	
SR(2015)	Reduced 13% Reduced 21%

0   50   100 (%)

Reduction in processing time of thin sheet

Previous technology / New technology

Height sensing starts → Piercing starts → Height sensing starts → Piercing starts → Cutting starts
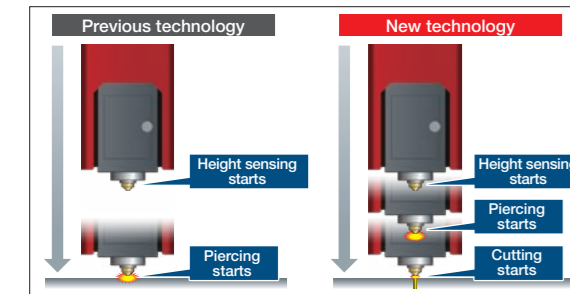
Minimizes the time before starting the piercing operation by performing the beam on and gas on processes before the height sensing completes.

Reduction in non-actual processing time

Previous technology

New technology

Shortened 50%

0   20   40   60   80   100(%)

*When using the nozzle changer (option).

Nozzle cleaning / Height sensor calibration / Nozzle change / Gas purge

Total productivity has been improved with the high-speed and parallel operation of each movement before processing.

Cutting sample

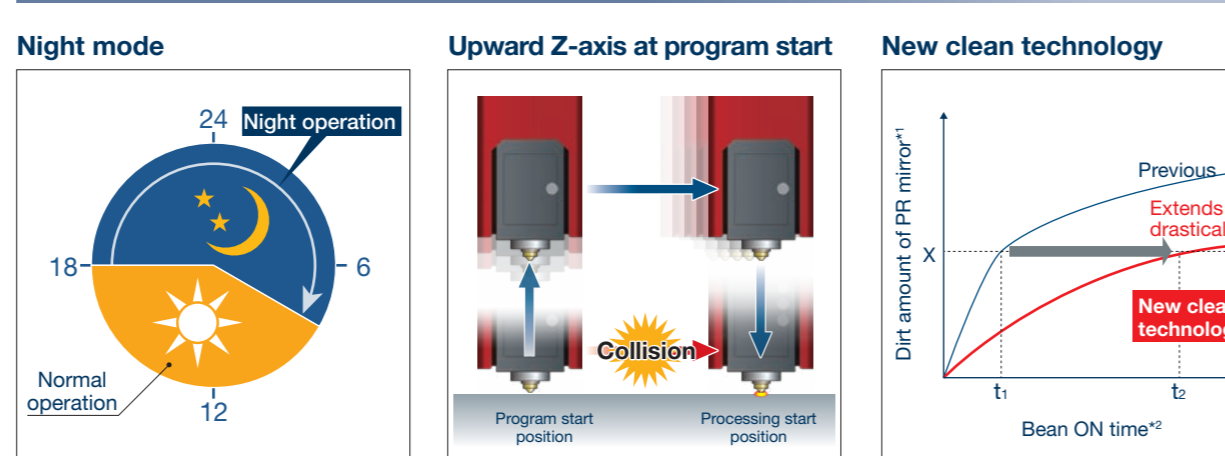Material/Thickness
Galvanized steel (SECC)/t1mm

Material/Thickness
Mild steel (SS400)/t12mm

Material/Thickness
Stainless steel (SUS304)/t10mm
*When using f254mm(f10") lens (option)

Reliable and comfortable operation attained with the latest technology

Support for reliable operation

Night mode

24 Night operation
18 — 6
Normal operation
12

Switching to the night operation with the preset time is available.
Reduction in pallet running noise considering the surrounding environment.
Reduction in contact with the workpiece by changing the movement of the processing head.

Upward Z-axis at program start

Collision

Program start position   Processing start position

Z-axis rises automatically at the same time with the program start. Reduces the risk of processing head collision and supports reliable operation regardless of skill level.

New clean technology

Dirt amount of PR mirror*¹

Previous
Extends life drastically
X
New clean technology

t₁   t₂
Bean ON time*²

Enhanced clean technology extends the life of the PR mirror drastically.
*1: Dirt limit value X of PR mirror differs depending on the processing contents, required specifications, etc.
*2: Time of t₁ and t₂ that reaches to the dirt limit value of PR mirror differs depending on the deterioration condition of the oscillator parts.
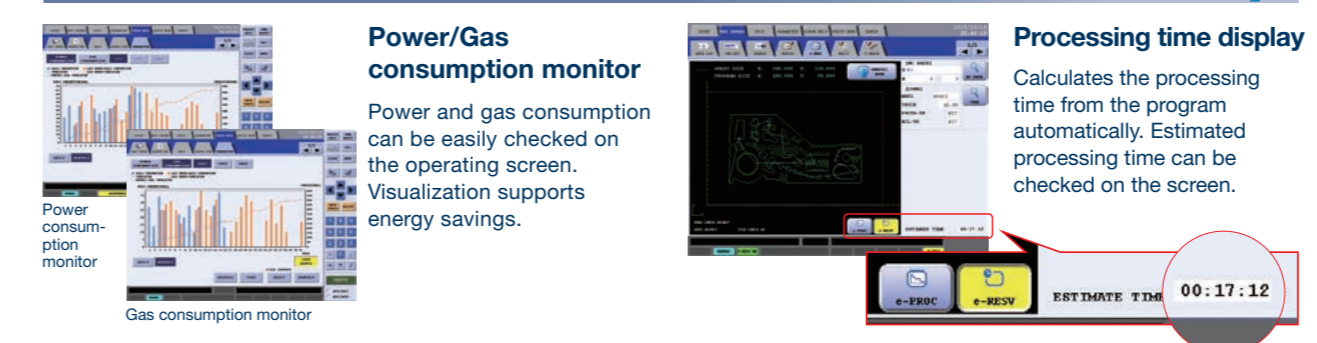
Comfortable operability

Simple processing condition adjustment
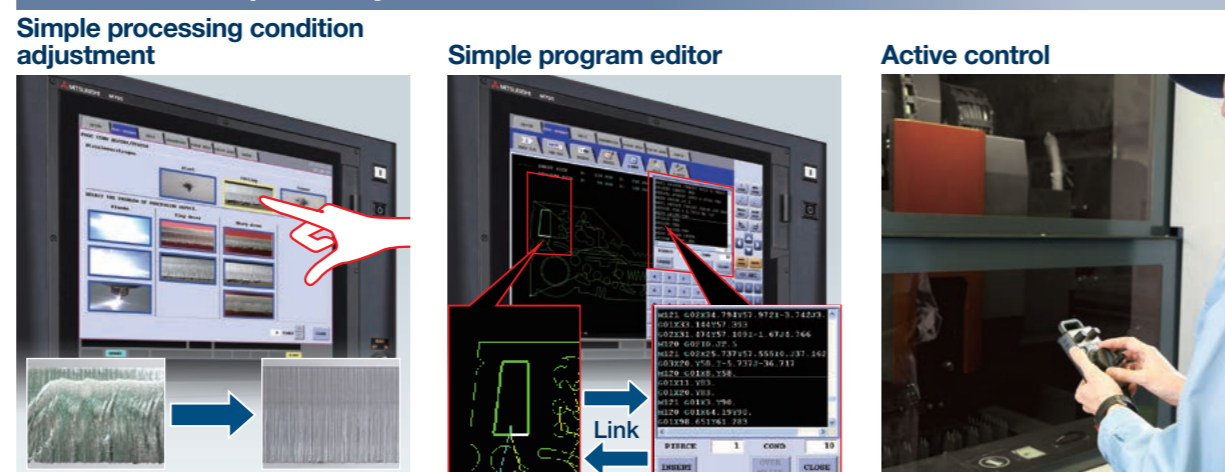
High quality processing regardless of proficiency is possible by selecting the similar picture to processing status.

Simple program editor

Link

Allows the change of program and processing condition numbers easily while checking the shape on the graphic screen.
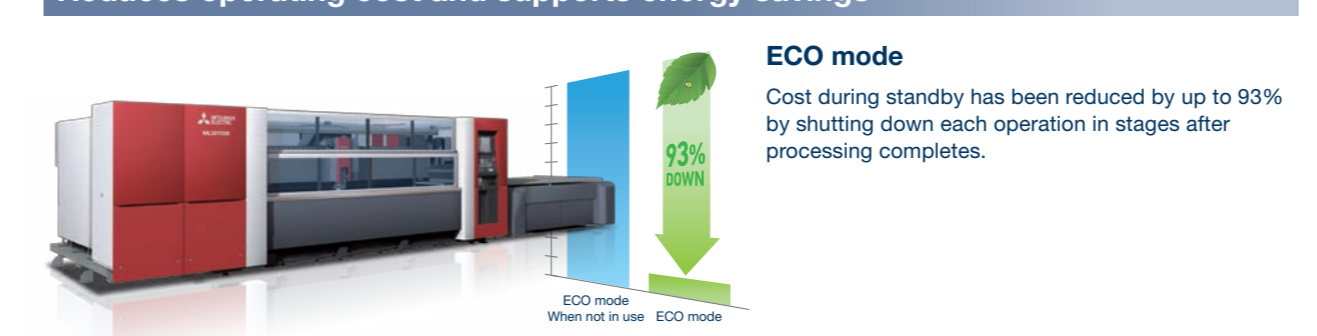
Active control

Adjusts the processing condition by a dial while looking at the processing.

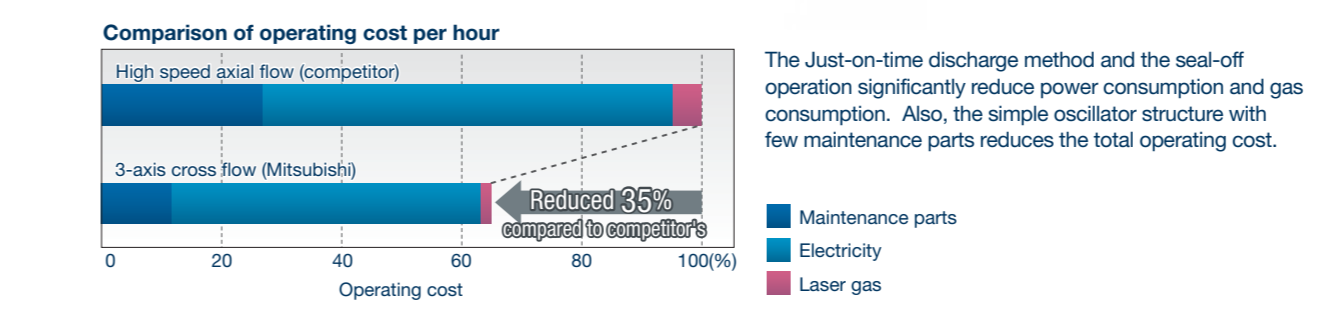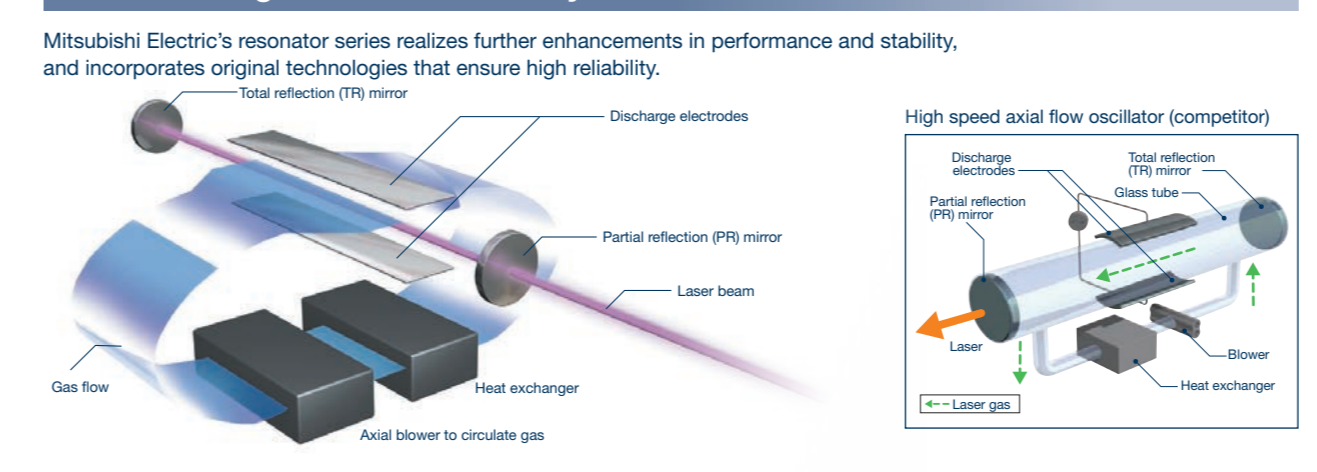# Visualization supports energy saving / production plan and reduces operating cost

Visualization
e-F@ctory

Power/Gas consumption monitor

Power consumption monitor

Gas consumption monitor

Power and gas consumption can be easily checked on the operating screen. Visualization supports energy savings.

Processing time display

Calculates the processing time from the program automatically. Estimated processing time can be checked on the screen.

ESTIMATE TIME   00：17：12

Reduces operating cost and supports energy savings

ECO mode

Cost during standby has been reduced by up to 93% by shutting down each operation in stages after processing completes.

93% DOWN

ECO mode
When not in use   ECO mode

3-Axis cross gas flow excitation system oscillator

Mitsubishi Electric's resonator series realizes further enhancements in performance and stability, and incorporates original technologies that ensure high reliability.

Total reflection (TR) mirror
Discharge electrodes
Partial reflection (PR) mirror
Laser beam
Heat exchanger
Gas flow
Axial blower to circulate gas

High speed axial flow oscillator (competitor)

Discharge electrodes
Partial reflection (PR) mirror
Total reflection (TR) mirror
Glass tube
Laser
Laser gas
Blower
Heat exchanger

Comparison of operating cost per hour

High speed axial flow (competitor)

3-axis cross flow (Mitsubishi)

Reduced 35% compared to competitor's

0   20   40   60   80   100(%)
Operating cost

Maintenance parts
Electricity
Laser gas

The Just-on-time discharge method and the seal-off operation significantly reduce power consumption and gas consumption. Also, the simple oscillator structure with few maintenance parts reduces the total operating cost.

Processing capability

Model	Material	Assist gas	Thickness(mm)
ML3015SR-32XP	Mild steel(SS400)	Oxygen	
	Stainless steel(SUS304)	Nitrogen	
	Stainless steel(SUS304)	Nitrogen	When using f254mm(f10") lens (option)
	Aluminum alloy(A5052)	Air	
	Aluminum alloy(A5052)	Nitrogen	When using f254mm(f10") lens (option)

(scale: 0 2 4 6 8 10 12 14 16 18 20 22 24)

*The above are processing capabilities based on special conditions. The acceptance criteria are as stated in the specifications.
*The actual performance/quality may vary depending on the surface condition and deviation in the material composition even if materials are of the same specifications.
*Variations in processing performance/quality may occur depending on the part geometry.
*Regarding mild steel (SS400) with a thickness over t19mm, capacities listed in this catalog are based on the LS material (steel plate for laser cutting) of Chubu Steel Plate Co., Ltd.

Options

Processing machine	f125mm (f5") lens	Control unit	Network download
	f254mm (f10") lens		
	Magnetic damage reduction	Solutions	CamMagic LA (CAD/CAM exclusively for lasers)
	Automation pack (Magnetic Damage Reduction + Nozzle Changer)		Linked nesting
	Work clamp (manual)		Linked DXF conversion
	Work lifter		Linked e-mail notification additional features
	Barcode reader		BANKIN Navigator(Production control support)
	FRG(F-CUT Route Generator)		

Processing Machine specifications

Model name		ML3015SR
Drive system		Flying optic (X-axis, Y-axis:light transfer)
Control system		Simultaneously 3-axis (X-Y-Z) control (Z-axis height control is also possible)
Workpiece dimensions (mm)		3050×1525
Pallet load weight (kg)		950
Workpiece support height (mm)		880
Stroke	X-axis (mm)	3100
	Y-axis (mm)	1565
	Z-axis (mm)	150
Speed	Rapid feedrate	XY-axis(m/min)	Maximum 100
		Z-axis(m/min)	Maximum 65
	Maximum processing feedrate(m/min)		50
Accuracy	Positioning accuracy	XY-axis(mm)	0.05/500
		Z-axis(mm)	0.1/100
	Repeatability (mm)		±0.01(X,Y-axis)
Processing head		Auto-focus preset head
		Processing lens (mm) ø50.8(ø2.0"),ø190.5(f7.5")
Power requirement (kVA)		8
External dimensions		9918×3134×1956
Weight (kg)	Machine weight (excluding oscillator)	Approx. 7500
	Pallet changer weight	Approx. 2100

Oscillator specifications

Model name		ML32XP
Excitation method		3-axis 5D excitation cross flow oscillator
Laser output characteristics	Pulse peak output (W)	3200
	Rated output (W)	2700
	Beam mode	Lower order (TEM01*main component)
	Power stability (%)	±1 or less during power control (relative to rated output)
	Output power adjustable range (%)	0 to 100
Laser gas composition		CO2:CO:N2:He = 8:4:60:28
Laser gas consumption(ℓ /hr)		Approx. 1
Power requirement (kVA)		41
External dimensions (mm)		2040×450×1620
Weight (kg)		Approx. 1200

Cooling system specifications

Cooling method	Air
Power requirement (kVA)	21
Cooling capacity (kW)	45
External dimensions (mm)	2390×934×1772
Weight (kg)	Approx. 850

Control system specifications

Display screen	15" TFT (touch panel)
Hard disk (GB)	20
Program input method	Screen creation, USB (ver.2.0), Ethernet
Operation method	Memory operation, HD direct operation

Layout

(Gas inlet side)   Maximum installation height : 1956mm

Cooling system space
Maintenance space
Piping space
Piping space
Drawer maintenance space

600 / 2960 / 2390 / 5150 / 1590
2452 / 6423 / 3625
12500 / 2140

Unit:mm