

SOLUTION

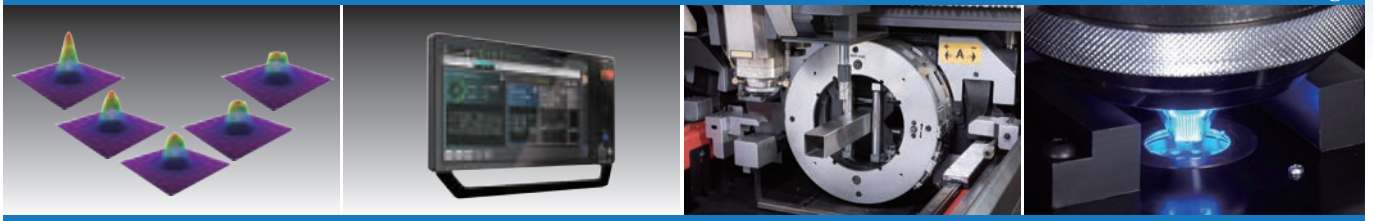


Wide range processing by dynamic beam control
Best selling fiber laser

ENSIS AJ

SERIES

Blanking



The Engineering AMADA



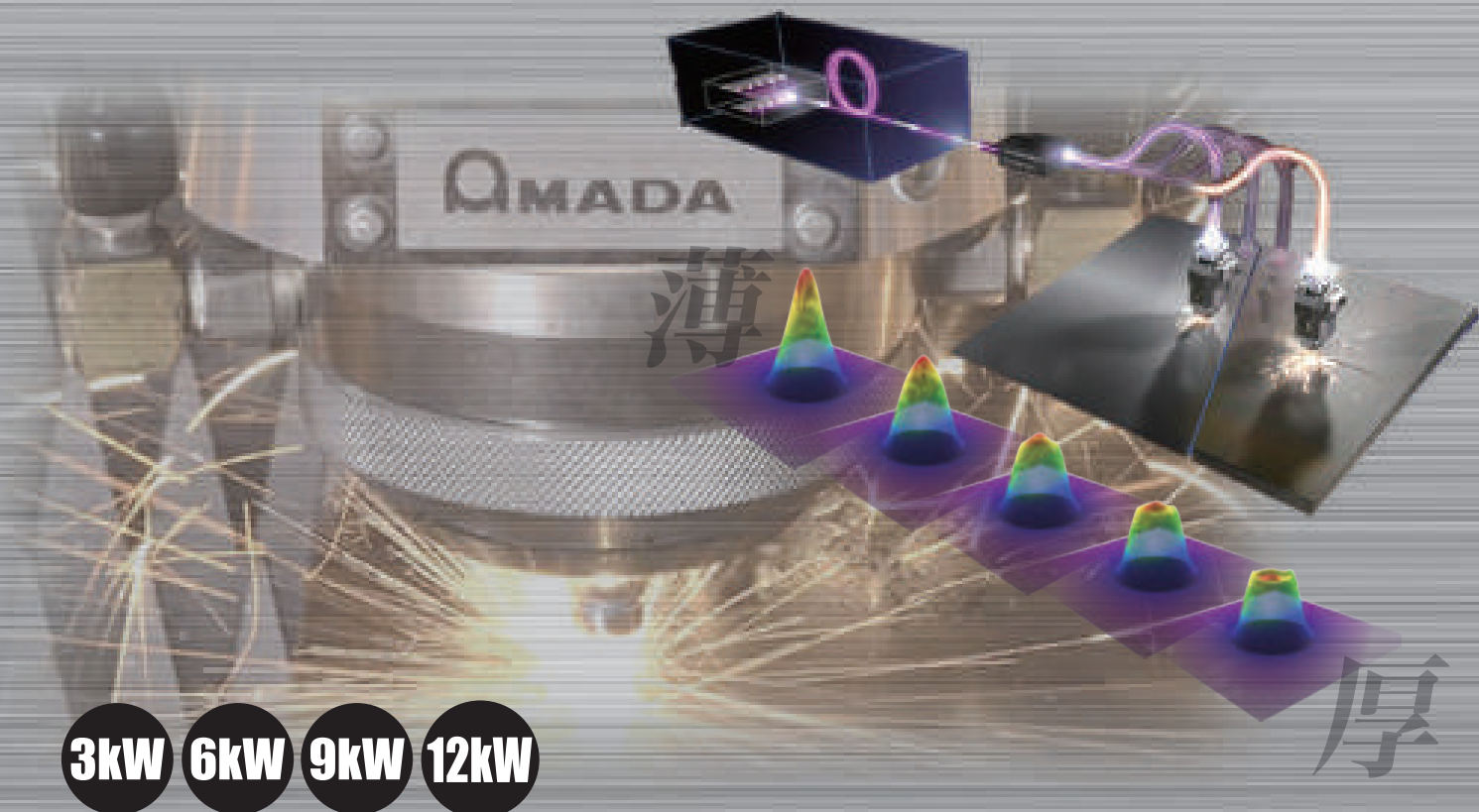
- 3kW
- 6kW
- 9kW
- 12kW



ENSIS technology

Automatic beam control providing optimum thin-to-thick processing

Utilizing AMADA's original 'ENSIS technology', the ENSIS-AJe series achieves wide range, high-speed, high-quality, stable processing for variable batch production.



3kW 6kW 9kW 12kW



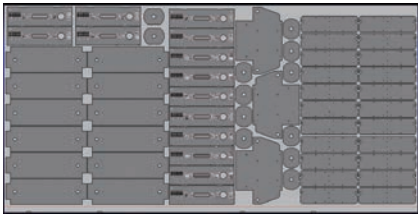
ENSIS AJ SERIES

ENSIS means "sword" in Latin.

Comparison with conventional machine

Thin material by Clean Cut

Material: SPCC
 Thickness: 1.2mm
 Sheet size: 1524×3048mm



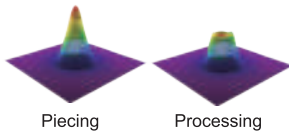
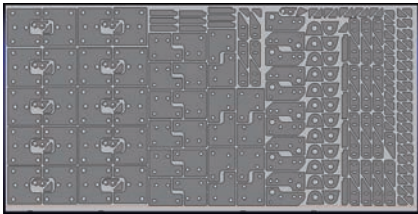
	Conventional CO ₂ laser (4kW)	ENSIS-AJe (3kW)
Processing speed	F7000	F34000
Processing cost	6539JPY	4008JPY

Process time comparison **45.1% Reduction**

Conventional CO ₂ laser (4kW)		1hr. 26min. 4sec.
ENSIS-AJe (3kW)		47min. 16sec.

Thick material by oxygen cut

Material: SS400
 Thickness: 25mm
 Sheet size: 1524×3048mm



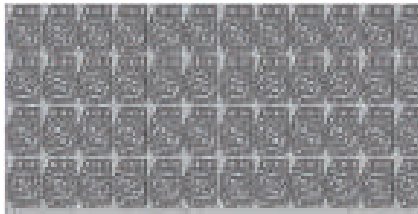
	Conventional CO ₂ laser (6kW)	ENSIS-AJe (6kW)	ENSIS-AJe (9kW)
Processing speed	F650	F600	F1100
Piecing time	18sec.	5sec.	1sec.
Processing time	8hrs. 38min. 12sec.	6hrs. 49min. 27sec.	3hrs. 33min. 35sec.

Process cost comparison **81.7% Reduction** *Comparison between CO₂ laser and ENSIS-AJe (9kW)

Conventional CO ₂ laser (6kW)		40679JPY
ENSIS-AJe (6kW)		12485JPY
ENSIS-AJe (9kW)		7475JPY

Clean Cut vs Clean Fast Cut Process comparison

Material: SUS304
 Thickness: 6.0mm
 Sheet size: 1000×2000mm



	Conventional CO ₂ laser (4kW)	ENSIS-AJe (9kW)	ENSIS-AJe (12kW)
Processing speed	F1800	F11000	F15000

Process time comparison

Conventional CO ₂ laser (4kW)		1hr. 43min. 40sec.
ENSIS-AJe (9kW)		24min. 51sec.
ENSIS-AJe (12kW)		23min. 1sec.

Process cost comparison **73.4% Reduction** *Comparison between CO₂ laser and ENSIS-AJe (12kW)

Conventional CO ₂ laser (4kW)		11776JPY
ENSIS-AJe (9kW)		3249JPY
ENSIS-AJe (12kW)		3143JPY

Eco Cut vs Easy Fast Cut Process comparison

Material: SPHC
 Thickness: 6.0mm
 Sheet size: 1524×3048mm



	Conventional CO ₂ laser (4kW)	ENSIS-AJe (9kW)	ENSIS-AJe (12kW)
Processing speed	F3000	F10000	F14500

Process time comparison

Conventional CO ₂ laser (4kW)		34min. 15sec.
ENSIS-AJe (9kW)		15min. 28sec.
ENSIS-AJe (12kW)		13min. 12sec.

Process cost comparison **59.3% Reduction** *Comparison between CO₂ laser and ENSIS-AJe (12kW)

Conventional CO ₂ laser (4kW)		1422JPY
ENSIS-AJe (9kW)		589JPY
ENSIS-AJe (12kW)		579JPY

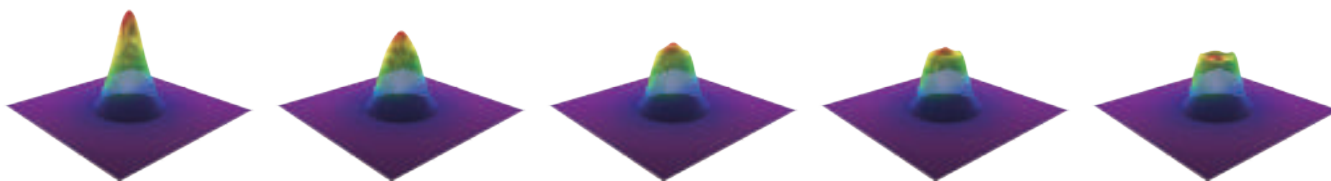
•Calculating running cost Electricity: 30JPY/kWh, Laser gas: 40,000JPY/7m³, Oxygen: 30,000JPY/132m³, Nitrogen: 25,000JPY/107m³
 Cost for consumables and maintenance parts are included in running costs based on AMADA's recommended period for replacement

*Processing time and running costs may differ from the actual value

ENSIS-AJe Series New Technology

Thin-to-thick processing with one machine

ENSIS technology creates the most suitable beam shape according to the material type and thickness due to the Variable Beam Control Unit, and realizes wide range processing with one machine. The best laser machine for those who process variety of thickness and materials.

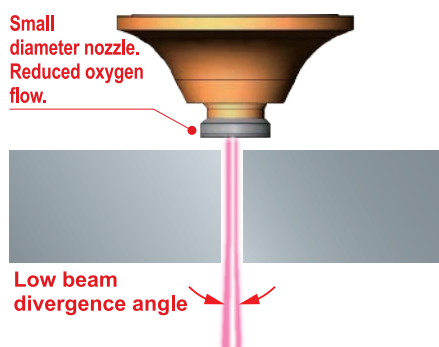


Thick material capability increase by dynamic beam control

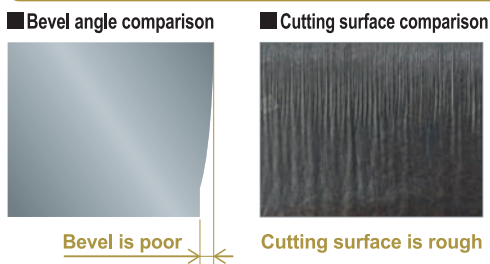
High power ENSIS machines*1 are equipped with the Auto Collimation feature to control the beam diameter and focal point. Dynamic beam control in combination with the Variable Beam Control unit provides improved process times and, product quality (such as cutting surface and bevel angle).

*1 3kW excluded

Beam divergence CG

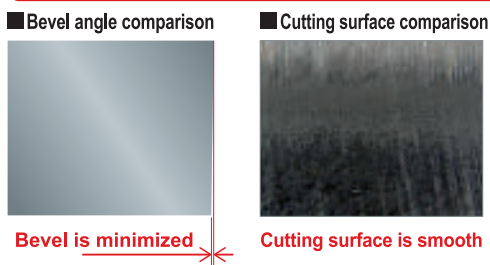


Before: Conventional fiber laser



Excessive oxygen combustion and wide beam divergence occurs on the underside. This results in poor quality cutting surface and cutting edge.

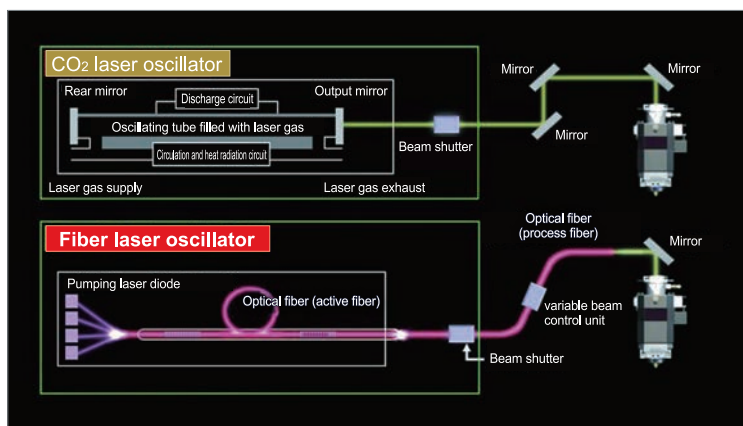
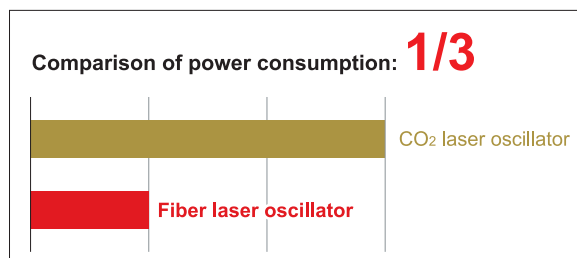
After: ENSIS-AJ (6kW/9kW)



The Auto collimation system can control the beam shape and minimizes the beam divergence. Utilizing small diameter nozzle minimizes oxygen combustion on the underside, helping to reduce the bevel angle by up to 90%. The cutting surface is improved significantly and high quality processing is realized.

Energy-saving performance unique to fiber lasers

Fiber lasers are extremely energy-efficient lasers with an oscillator energy efficiency about three times that of CO₂, enabling a significant reduction in power consumption. The simple structure of the oscillator also minimizes maintenance costs, enabling operation with low running costs.



Schematic diagram of an oscillator structure

AMNC 4ie

The new AMNC 4ie NC system is developed based on the concept of the "4 e's" to address the key issues in sustainability, namely "human issues" and "environmental issues." In addition to controlling machines and peripheral devices, the AMNC 4ie has enhanced interface functions to connect customers and machines.



Easy operation for anyone to use Easy	Efficiency in remote operation from anywhere Efficiency
Environmental sustainability in production Environmental	Evolution together with our customers Evolution



Facial recognition

Language and screen display can be switched. (setting is required in advance)



Startup inspection guidance

Navigation video that allows anyone to perform startup inspections according to the procedures. Management and sharing of inspection history.



Mobile HMI *1

The status of the machine (status, remaining time, and on-site image) can be checked with a smartphone. Schedule editing and start/stop can be performed remotely.



Automatic remnant nesting

Anyone can create high-yield nesting with the i-Camera Assisted System *2.



Joint adjustment function during processing

Adjust the joint strength for each processing condition. This is useful when programming is shared with CO₂ lasers.

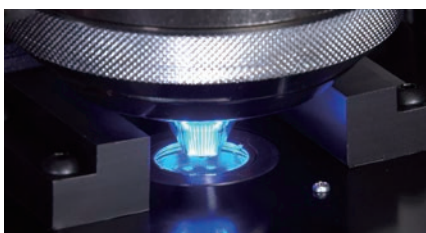


CO₂ emission reporting function

CO₂ emissions are measured for each component, and reports can be created and filed.

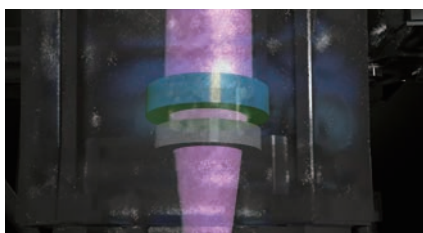
Laser Integration System

Automation of laser processing operations reduces subjective operator decisions and increases uptime. It supports stable processing with zero downtime and contributes to increased productivity.



i-Nozzle Checker*2

Automatic beam centering function
Nozzle status diagnosis function
Autofocus function



i-Optics Sensor

Protective glass contamination detection
Status diagnosis function



i-Process Monitoring

Processing defect detection → Automatic recovery
Pierce defect detection



Automatic recovery from head interference

Processing head interference detection → Automatic recovery *3

*1 Start/Stop function requires V-monitor (option).

*2 Option

*3 Operator's intervention might be required in such case as nozzle breakage or serious collision. Automatic recovery from head collision requires i-Nozzle Checker.

Dual purpose machine which can process flat sheet and tube/structural steel

ENSIS 3015 RI **3kW 6kW 9kW**



ENSIS series multipurpose machine

This machine is equipped with a rotary index that can process tube and structural steel with high accuracy, as well as thin-to-thick flat sheet.



Flat sheet processing



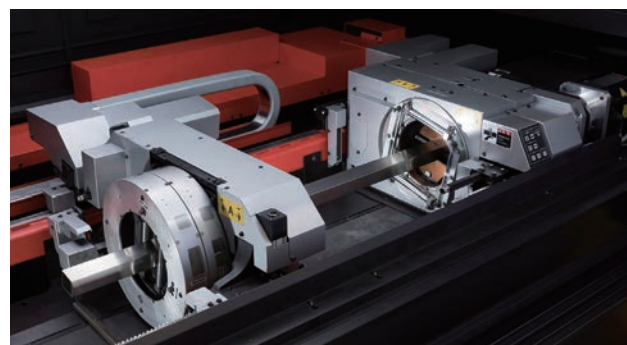
Tube/structural steel processing



Combination of flat sheet and tube

Simplified setup and improved efficiency

Flat sheet processing and tube/structural steel can be switched easily on NC screen. The one-touch chuck jaws can be easily exchanged without special tools, improving the efficiency rate.



High quality and high accuracy tube/structural steel processing

Standard features include dual synchronized drives chucks, 4-axis simultaneous drive and a touch probe, to provide enhanced tube/profile processing.



* 12kW oscillator cannot be equipped on ENSIS-RI.
* 3000W output in case Rotary Index is used

Other Functions (○: Option)

i-Camera Assisted System ○

This function recognizes the material with the camera and enables manual or automatic plate removal and placement of products.



V-monitor ○

Camera images from inside the machine can be viewed in real time on a smartphone or PC. You can use the NC to check the video recorded when an alarm is activated.



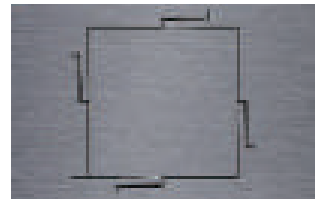
Nozzle changer ○

The necessary nozzles can be automatically replaced according to cutting conditions. Continuous automatic operation is possible from thin to thick plates. (standard 8 pcs., OP16 pcs.)



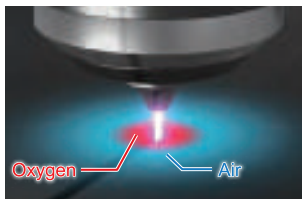
Soft joint *1

This new joint uses the thermal distortion generated in the slit section to clamp the product. Prevents parts from rising, reduces manual removal time, and reduces man-hours required for finishing joint marks.



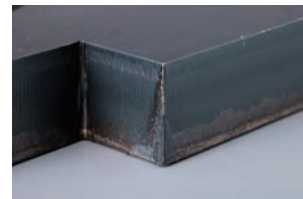
Dual gas *2 ○

When processing mild steel plates with oxygen, the use of oxygen assist gas in the inner nozzle and air in the outer nozzle reduces processing defects.



Smart Edge ○

This processing technology achieves sharp edge quality when processing mild steel plates.



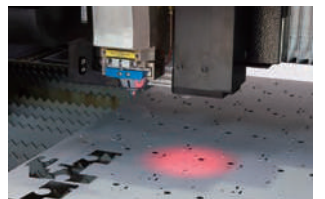
Fiber silky cut *3 ○

This processing technology improves the cutting quality of stainless steel. Optimal beam formation improves surface roughness and dross quality.



OVS-D *4 ○

CMOS camera for combined machining with a punch press (NCT). This enables combined processing by measuring the hole position processed by the NCT machine and correcting the origin position.



Automatic WACS II ○

This system automatically supplies water to the WACS equipment. This system makes it possible to extend the cooling water replenishment cycle.



HP Easy Cut Device ○

High nitrogen content gas can be extracted from factory compressed air and used as an assist gas. A separate compressor is required. (1300L, 1.37MPa)



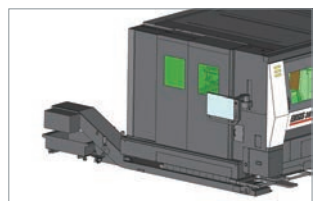
DR cutting device ○

A small amount of air is mixed into the assist gas to reduce dross in aluminum processing. Gas density can be automatically switched by NC control.



Y-conveyor *4 ○

Take out the scrap and small items to the machine rear (or front).



Warning light ○

Three-color tower-type signalling lights allow you to check the operating status of the machine even from a distance. (Amada standard lighting conditions)



*1 VPSS 4ie BLANK is required. *2 3kW oscillator cannot be selected. *3 Ask Amada engineer for the required equipment and details. 3kW or 6kW oscillator cannot be selected.

*4 ENSIS-Rie cannot be selected.

Automation solutions to maximize productivity

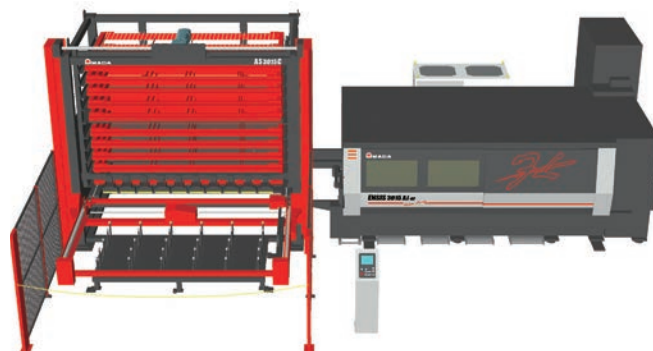
Automation of thick plate processing

Pallet changer

AS-C

Long-time continuous operation of thick plate processing

- Process pallet: 10 shelf (standard)
- Lineup from minimum 5 to maximum 20 shelves
- Add the operator support tool to the flexible tool rack (option)*¹



Left loading

Number of shelves that can be selected according to the factory



Low height 5-shelf type

20-shelf type

Worker support tool

Skeleton separation mechanism



Automatic material setting mechanism



Process pallet switch mechanism



Flexible tool rack (all options*²)

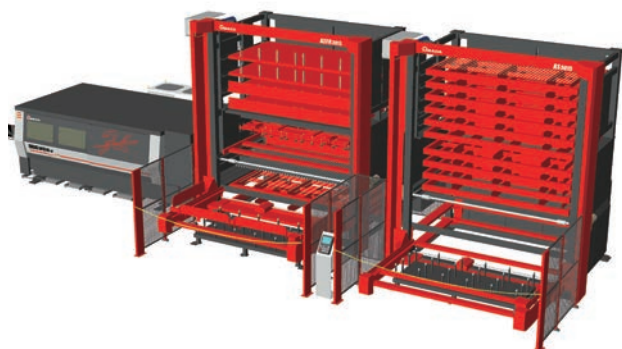
Automation to expand production volume and range

Twin tower

AS-T

Compatible with the production of a wide variety of materials from thin to thick sheets

- ASFH (2 product pallets, 2 material pallets, 2 processing pallets) + AS-C (10 processing pallets) 2-shelf configuration (standard)



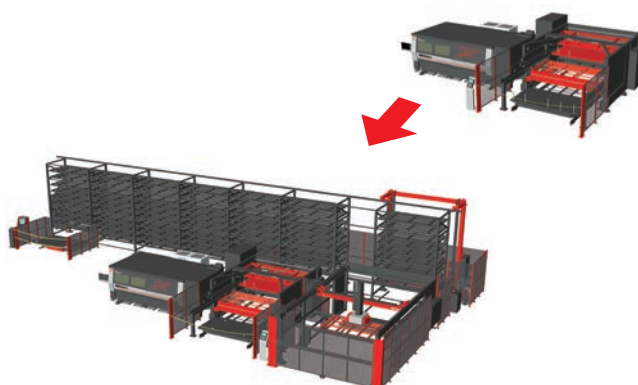
Expansion system to connect multiple machines

Manipulator + Automatic warehouse

MPL-C MARS-N

Retrofittable and expandable automation to support variable-quantity production

- MPL-C supports material supply to product accumulation automatically
- If connected to a MARS, the number of shelves and station numbers can be customized according to the customer.
- Connection with multiple blanking machines is also supported

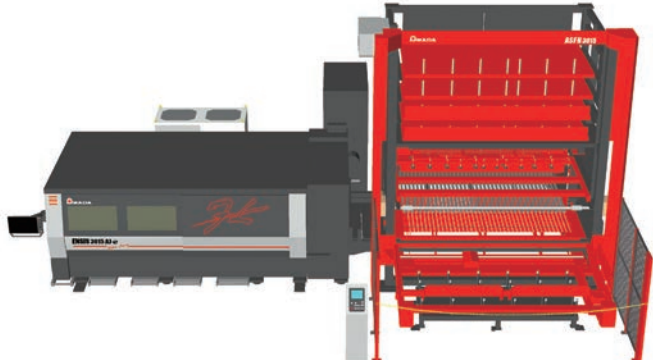


*¹ The area for three shelves is used. 5-stage specifications are not selectable.

*² You cannot select more than one.

*³ Only left loading is available for ENSIS-Rle

All automation solutions can be set to right loading or left loading.*3



Right loading

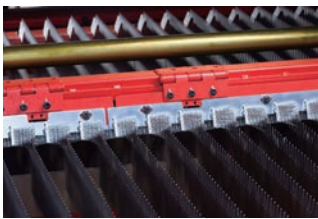
Automation of medium-thickness plate processing from packaging material

Fork type Pallet changer **ASFH**

Long-term continuous operation up to medium-thick plates using packing materials

- Automatic operation of product accumulation from material supply
- Maximum plate thickness :12mm
- Two product pallets, two material pallets, and two processing pallets (standard)

■ Maintenance support



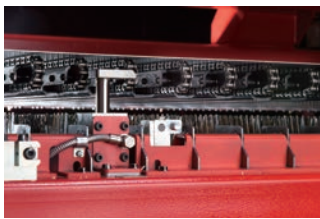
Cleaning brush

■ Automation of material supply



Single sheet pick up device

■ Automation of product accumulation



Chain fork unit

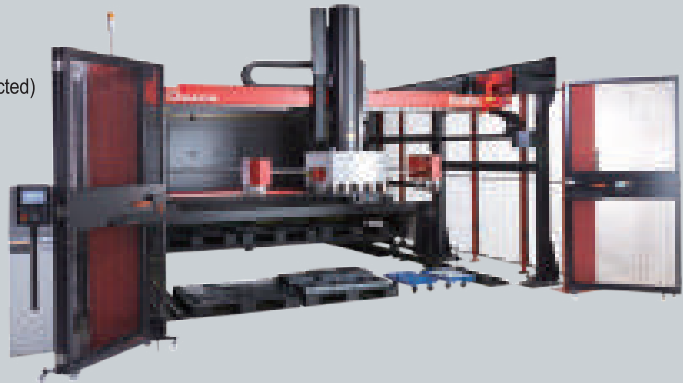
Take-out loaders for laser machine

TK 3015L

(All models can be connected)

Automation of parts removal and sorting operations

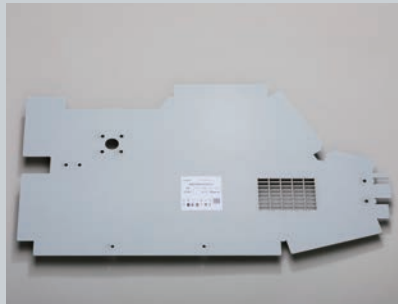
- Reducing the burden of sorting work
- Reduction of lead time by integrating parts
- Maximum load capacity :150 kg
- Maximum sizes: 2500mm×1250mm
- Max. plate thickness :12mm



Reduce heavy burden of part separation and sorting



Rotation and extension/contraction of the suction cup unit to accommodate various products



Improved traceability with labeling (option)

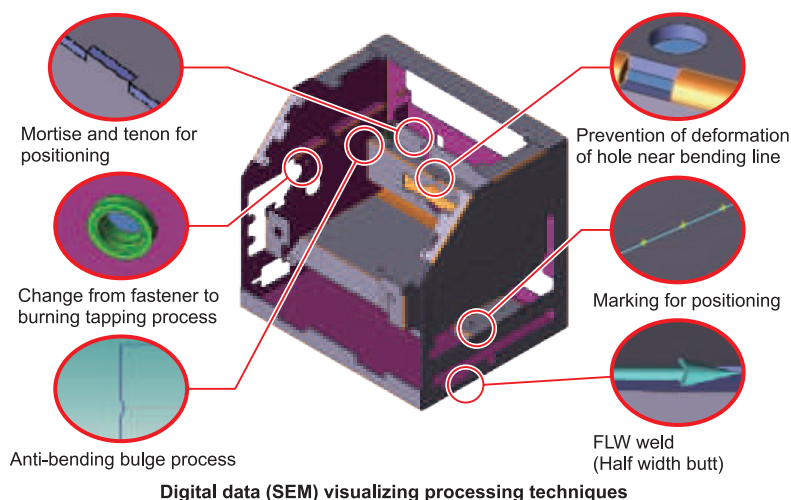
Amada's concept of connecting with customers is to

Software

Advanced sheet metal engineering system

VPSS 4ie

The evolved sheet metal engineering system, VPSS 4ie, is more intelligent and automated than ever before, digitizing the processing know-how of all processes and bringing revolutionary benefits by connecting machines, software, and people in the factory with information.



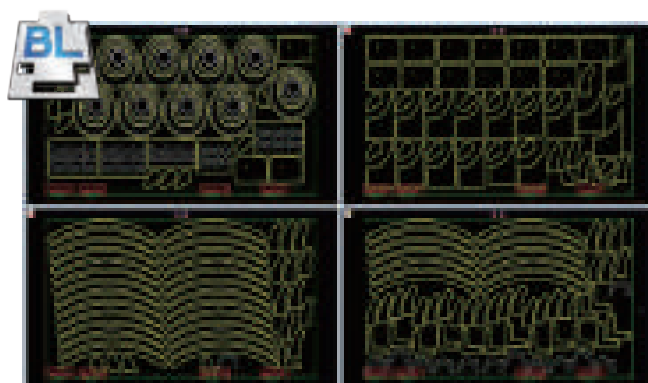
Digital data (SEM) visualizing processing techniques

CAM (VPSS 4ie PREMIUM/BLANK for blanking)

Blank CAM software for sheet metal that fully utilizes the performance of our blanking machines.

It performs cutting, automatic allocation, and processing verification for each part and assembly. It reduces data preparation time and maximizes productivity and utilization of our blanking machines.

*VPSS 4ie PREMIUM can create efficient programs including bending simulation by CAM for bending.

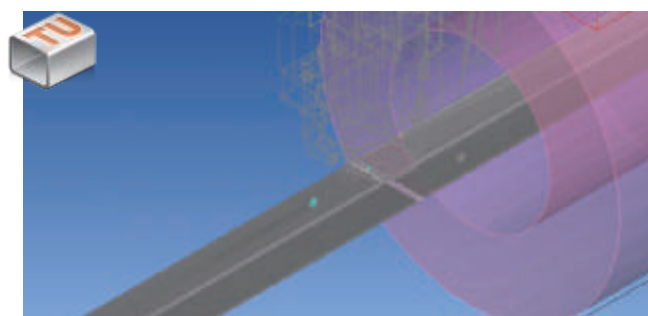


For Rotary index applications

CAM for Rotary index system (VPSS 4ie TUBE)

Creates programs for rotary index operation.

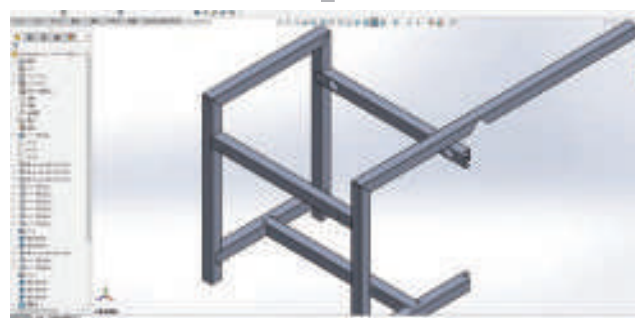
This software, with the auto-nesting, 3D simulation feature, etc., shortens the lead-time of complex tube/structural steel processing and improves material utilization.



SheetWorks

SheetWorks for Unfold is available to make 3D models for tube/structural steel, which is also capable for sheet-metal unfolding.

This software with a lot of useful functions for tube/structural steel modeling can reduce the time of creating models.



provide "assurance and satisfaction" to customers

V-factory

Amada's recommended V-factory is based on the concept of "creating profits for customers". V-factory will co-create factory reforms with customers by providing visualization, taking advantage of IoT technology and maximizing machine utilization.

V-factory Connecting Box

Used to connect machines to the cloud and start V-factory.

V-monitor *

Automatically records the state of the machine during automatic operation.



- Visualization of machine operation, production, and consumption
- Visualization of machine maintenance and utilization status

*Machine option

- Constant monitoring of operating conditions, sensors, power consumption, etc.

Machine dimensions

Units: mm

- ENSIS-3015AJe+Shuttle table (Model: LST3015G) L : 9900 × W : 2860 × H : 2236
- ENSIS-4020AJe+Shuttle table (Model: LST4020G) L : 11875 × W : 3351 × H : 2236
- ENSIS-3015RIe+Shuttle table (Model: LSTRI3015E) L : 12505 × W : 2916 × H : 2451



Machine Specifications

Model	ENSIS-3015AJe	ENSIS-4020AJe	ENSIS-3015RIe
Registered model name	EN3015AJE	EN4020AJE	EN3015RIE
Axis travel distance X×Y×Z mm	3070×1550×100	4070×2050×100	3070×1550×200
Maximum processing dimensions X×Y mm	3070×1550	4070×2050	3070×1550
Maximum material mass kg	920	1570	920
NC type	AMNC 4ie		
Axis control method	X, Y, Z axes (simultaneous 3-axis control) + B axis + CF axis*1		X, Y, Z axes (simultaneous 3-axis control) + B axis + CF axis*1 + A axis
Oscillator	AMADA ENSIS-3000 / ENSIS-6000S / ENSIS-9000 / ENSIS-12000		AMADA ENSIS-3000 / ENSIS-6000S / ENSIS-9000
Chiller	RKE5502B-VA-UP2BP-L / RKE7502B-VA-UP2BP-L / RKE11002B-VA-UP2BP / RKE15002B-VA-UP2		RKE5502B-VA-UP2BP-L / RKE7502B-VA-UP2BP-L / RKE11002B-VA-UP2BP
Dust collector	PXN-6XA*2 / JXN-6XA / JXN-7XA*3 (self-standing pail can type)		PXN-6XA*2 / JXN-6XA (self-standing pail can type)
Axis travel method	X- and Y-axis: Rack and pinion Z-axis: Ball screw		
Rapid traverse X×Y Composite m/min	170		-
Processing feed rate X×Y m/min	0 ~ 120 (maximum command speed)		
Least input increment mm	0.001		

*1 CF axis is only for ENSIS-3000

*2 PXN-6XA is only for ENSIS-3000

*3 JXN-7XA is only for ENSIS-12000

Oscillator specification

Model	ENSIS3000	ENSIS6000S
Oscillation method	LD excitation fiber laser	
Rated laser power W	3000	6000
Stability %	±2.0 or lower	
Pulse peak output W	3050	6050
Pulse frequency Hz	1~10000	
Duty %	0~100	
Wave length μm	1.08	

Model	ENSIS9000	ENSIS12000
Oscillation method	LD excitation fiber laser	
Rated laser power W	9000	12000
Stability %	±2.0 or lower	
Pulse peak output W	9150	12150
Pulse frequency Hz	1~10000	
Duty %	0~100	
Wave length μm	1.08	

Tube specification

Shape of Tube/ Structural steel	<ul style="list-style-type: none"> • Tube (Round/Square/Rectangular) • Angle (L-shape, equilateral and non-equilateral) • C-channel
Outer dimension of Tube/ Structural steel mm	<ul style="list-style-type: none"> • Round tube: Φ19~220 • Square tube: □19~150 • Rectangle tube: Circumscribing Φ220 or less • Angle (L shape) <ul style="list-style-type: none"> • Height 19~90 × Width 19~90 • C-channel <ul style="list-style-type: none"> • Height 19~150 × Width 19×150
Maximum processing length mm	6000 (Size exceeding the processing range is supported by repositioning)
Thickness of Tube/ Structural steel mm	1~12 (Tube) 1~9 (Angle, C-channel)
Maximum mass of Tube/Structural steel kg	200

*3000W output in case Rotary Index is used

*Specifications, appearance, and equipment are subject to change without notice by reason of improvement

⚠ For your safe use, be sure to read the operator's manual carefully before use

- For safety operation, a dedicated partition is required.
- This system requires a dedicated shield material for the wavelength 1.07μm.
- Use of this product requires safeguard measures to suit your work.



This laser product uses a Class 4 invisible laser for processing and a Class 3R visible laser for positioning.

- Class 4 invisible laser : Avoid eye or skin exposure to direct or scattered radiation. Do not look into or touch the laser beam.
- Class 3R visible laser : Avoid direct eye exposure

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Inquiries



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