NEWS RELEASE

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AMADA CO., LTD.

Start of Official Order Acceptance for the Three-Dimensional Laser Integrated System "ALCIS-1008e" with Blue Laser and Scanner Head Specifications

Significant productivity improvement achieved through optimization of the entire welding process for EV motor hairpins

In November 2025, AMADA CO., LTD. (Isehara City, Kanagawa Prefecture, President: Takaaki Yamanashi) began accepting official orders for the ALCIS-1008e three-dimensional laser integrated system with a blue laser oscillator and scanner head specifications.

The "ALCIS (Advanced Laser Cube Integrated System)" is a three-dimensional laser integrated system that can perform various laser processes such as cutting, welding, and laminating on a single machine. It can be equipped with two types of laser oscillators for a blue laser and a fiber laser.

Official orders are now being accepted for the scanner-head machines equipped with high-output blue laser oscillators. These systems have been optimized for the hairpin welding of rectangular copper wire for EV motors, and for bus bar welding. By optimizing the entire hairpin welding process, this machine significantly improves productivity while it also achieves "easy operation," "no setup," and "zero outflow of defects."

In recent years, the growing demand for sustainable products and services such as e-Mobility have led manufacturers to create new methods and take on new challenges.

AMADA combined the laser development techniques and experience cultivated at the company over many years and developed "ALCIS" with the aim of expanding laser applications, not only in the conventional areas of sheet metal processing, but also in new areas. AMADA will continue to respond to the issues faced by customers and will take on the challenge of creating new value of manufacturing by developing the "ALCIS" series.

■ Main features

1. System configuration optimized for high productivity

The ALCIS-1008e can be equipped with a 4 kW high-output blue laser oscillator. A blue laser has a short wavelength of approximately 450 nm and the greatest merit of its use is its extremely high absorption rate in copper. The ample laser power output and power density make it possible to melt the copper instantly and form a stable flow of the molten metal, which enables the simultaneous achievement of both high-speed processing and stable processing with no spatter.

The main body of the machine has an orthogonal drive in the three axes X, Y, and Z. This realizes machining head trajectory motion that has higher speed and higher precision than an articulated robot. The scanner head has a tilted axis and it is possible to process complex shapes by selecting the optional 2-axis positioner table for production.

For the scanner, AMADA has newly developed "on-the-fly processing." As the scanner processes in synchronization with the axis movements, this eliminates the need to repeatedly stop the axis for each processing area, which is required in normal scanner machining, and realizes approximately three times higher productivity.

2. Software and sensing technologies that help realize "easy operation" and "no setup"

The use of the latest "VPSS 4ie MMWELD" CAD/CAM software makes it possible to create programs offline and therefore eliminates the need to create programs for each different product.

Additionally, the system can also be equipped with the newly developed "welding position sensing" as an option. In the sensing, the workpiece (EV motor) is automatically photographed using a camera installed next to the scanner head. The coordinate information for the rectangular copper wire is then calculated by analyzing the images photographed with both in-house image processing technology and an AI model that has been individually trained and optimized. Based on the information calculated, the processing conditions with the optimum irradiation locus and time are automatically assigned for each pair of rectangular copper wires and a machining program is generated for the workpiece. This responds to the processing issues that lead to machining defects, such as misalignment of the workpiece, and gaps or misalignment between copper wires, and enables anybody to easily achieve high-quality processing without setup.

3. Monitoring technology that helps realize zero outflow of defects

The "MM-L400A" laser welding monitor produced by AMADA can be installed as an option. The MM-L400A is a monitoring device that instantaneously judges the presence of an abnormality in the welding based on changes in the intensity of near-infrared light, reflected light, and visible light, which are three types of light generated in the part being welded.

This MM-L400A operates in conjunction with the NC equipment on the machine and automatically switches the reference waveform and threshold values in accordance with the position and processing conditions of the rectangular copper wire being processed. This makes it possible to visualize the pass/fail result for the welding in-process and in real time. The judgment results for each point welded are displayed on the "AMNC 4ie" NC equipment on the machine and also all the measurement data is stored in a database on the server PC. This has made it possible to construct a solution that ensures complete traceability and prevents the outflow of defects to subsequent processes.

■ **Specifications**

Model			**ALCIS-1008e**
Max axis travel	Machine body X × Y × Z	mm	1,000 × 800 × 500
	Scanner head U (Tilt)	deg	±45
	2-axis positioner table (optional) CR (Tilt) / CS (Rotation)	deg	±95 / ±240
Positioning speed	Machine body X, Y and Z	m/min	50
Oscillator system			Blue direct diode laser
Rated laser power of oscillator		W	3000 / 4000
NC equipment			AMNC 4ie
Dimensions of machine	W × D × H	mm	2,200 × 2,535 × 2,700

End

* The information in this release is subject to change without notice.