

FACTORY AUTOMATION

Customer Reference

Hirata Corporation's Kansai Division, Japan

Spring clamp terminals ensure safety and easy maintenance

Hirata Corporation's Kansai Division is increasingly using switchgear and breakers fitted with spring clamp terminals in the equipment it builds for clients. In addition to ensuring operator safety by eliminating exposed wiring, the terminals speed up installation and commissioning by removing the need to check and tighten every connection.

Key points

- No terminal cover is required to prevent accidents such as electric shock
- No loosening of terminals during transportation, eliminating the need for re-tightening during installation and subsequent use
- Utilized on the production line of a major consumer electronics manufacturer



Hirata Corporation's Kansai Plant where Mitsubishi Electric's electrical switchgear fitted with spring clamp electrical terminals are bringing multiple benefits.

Hirata Corporation, which builds a wide range of bespoke production equipment for manufacturing companies around the world, has plants in Japan, Singapore, China, North America and Europe. Its Kansai Division in Japan supplies custom-designed equipment to manufacturers of automotive parts and home electronics, with each system meeting each customer's exact requirements. The machines are built at the company's plant in Yasu City, Shiga Prefecture and then transported to the user's site, which may be anywhere in the world, for installation and commissioning.



Interior of the Hirata's Kansai Plant. Here production equipment is developed for each customer and then shipped to their sites anywhere in the world.

In 2021, Hirata's Kansai Division began using Mitsubishi Electric's switchgear and breakers fitted with spring clamp terminals in its own products. The spring clamp terminals are wire connection devices that use spring pressure rather than screws to connect wires. In use, wires are directly inserted into the terminal, significantly reducing the time required for wiring compared to screw termination. According to a survey by the Japan Switchboard & Control System Industries Association, a non-skilled worker with two years' experience can reduce their working time by 22% for wires with ferrules and by 52% for single wires and stranded wires when using spring clamp terminals rather than screw termination.



Mitsubishi Electric's No Fuse breakers, Earth Leakage breakers and Circuit Protectors are all available with spring clamp terminals.

Alongside the savings in build-time, the spring clamps improve end-user safety because bare wires are never exposed, also commissioning can be sped up as connections do not need re-checking and tightening, and maintenance becomes easier when compared to using screw-type terminals as spring clamps are typically more reliable over time.

Screws loosen over time

Hirata's Kansai Division builds equipment for customers around the world. During delivery, screw terminals can loosen, which in turn could lead to short circuits or other problems, even fire, when in use. Therefore, during on-site installation and commissioning, technicians must check and re-tighten each screw. This is likely to be a significant amount of critical work that must not be overlooked.

In addition, when a wire is inserted into a screw terminal, the wire and terminal remain exposed, so a cover is needed to protect against electric shocks. However, these covers are small and delicate, so can easily be lost or damaged particularly in transit, leaving the terminal exposed and operators at risk of injury.

Even when the production equipment is in use, maintenance procedures must be considered. Eiji Yoshida, Deputy General Manager of Control Design, Engineering Department, Kansai Division, explains, "The equipment's control panel may be opened for maintenance many times during the working life of the product. Often, maintenance is conducted without turning off the power to keep the machine running, and if the screw terminals are not covered there is a risk of electric shock."



Eiji Yoshida, Deputy General Manager, Control Design, Engineering Department, Kansai Division.

Safety: a key customer requirement

A simple way to address all of these issues is to switch from screw terminals to spring clamps. With these the connection is never exposed, which prevents electric shocks.

Moreover, spring clamp terminals do not loosen in transit. This eliminates the need for on-site checks and re-tightening, ensuring speedy, trouble-free startup and reliable operation of the machine.



For switchgear and breakers with spring clamp terminals, the connection is completed by inserting the wire.

In 2021, the Kansai Division proposed to leverage breakers with spring clamp terminals for a major consumer electronics manufacturer, who was setting up a new production line in Singapore. The safety and other advantages were evaluated and led to the adoption of the spring clamp terminals. "Switchgear and breakers are devices that protect both production equipment and operating personnel," says Eiji Yoshida. "Attention to safety is increasing year by year, and we need to support this. In the future, we expect to further expand our line-up of spring clamps to include not only the current 20A type, but also large-capacity types."

About Hirata Corporation

Hirata

Founded: December 29, 1951
Business: Manufacture and sales of various production systems, industrial robots, and logistics equipment, with a focus on electric vehicle-related production equipment and semiconductor-related production equipment.

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