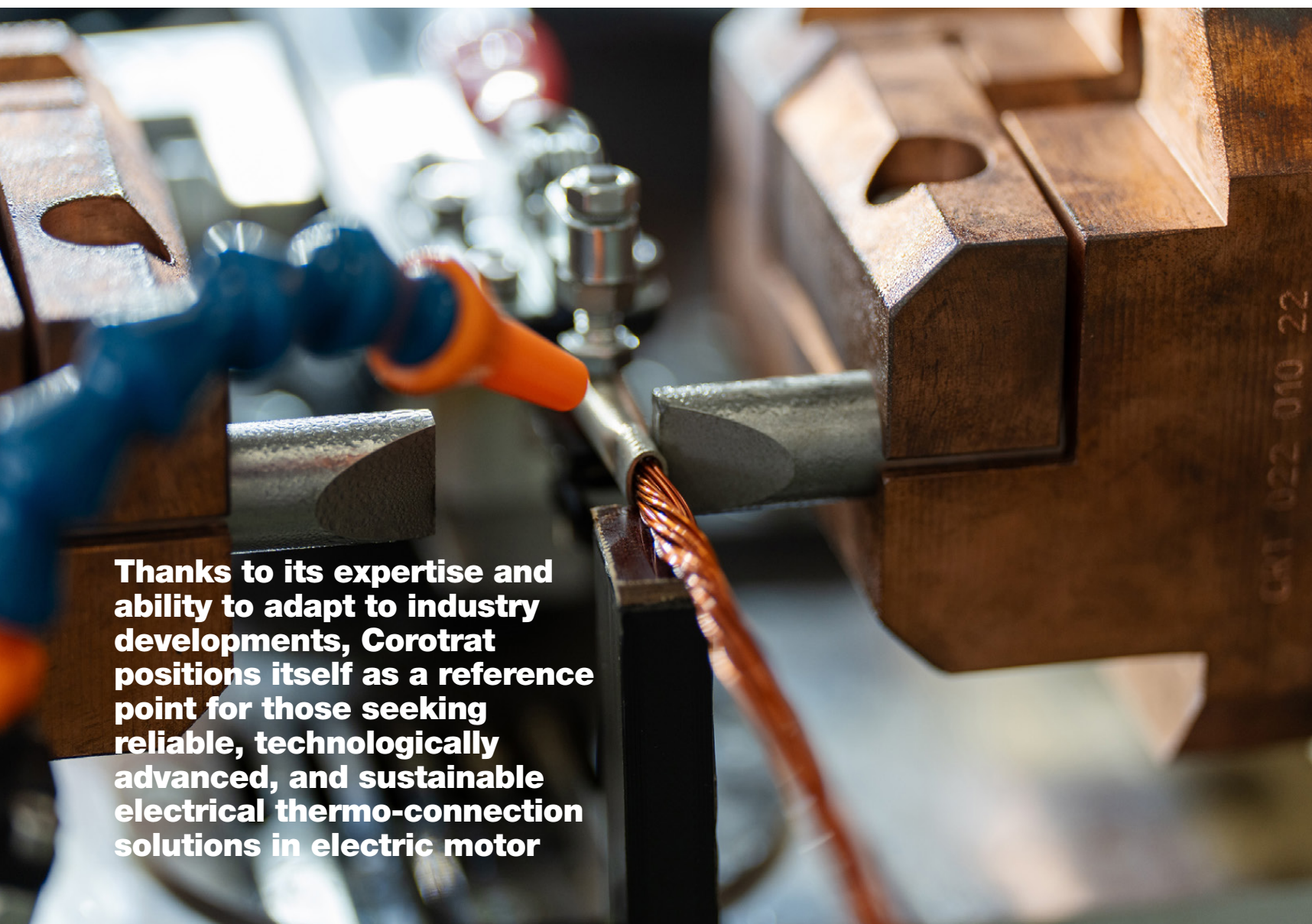


Hot crimping machines



Thanks to its expertise and ability to adapt to industry developments, Corotrat positions itself as a reference point for those seeking reliable, technologically advanced, and sustainable electrical thermo-connection solutions in electric motor

Quality in welding at a higher level

by Gianandrea Mazzola

Developing new solutions and systems while continuously researching innovative components to enhance both product offerings and production processes, with a focus on machine ergonomics and design - this is the mission of Corotrat, a company with over 40 years of experience specializing in the manufacturing of resistance Welding Machines (micro-welding, hot staking, diffusion bonding, and resistance brazing). For over a decade, Corotrat has also been active in the electric motor sector.

«A sector – confirms Managing Director and CEO Paolo Gai – that we began serving with the production of machines for terminal crimping on motors, stators, transformers, coils, cables, and electrical equipment».

The company stands out for its ability to develop innovative solutions, thanks to a team of approximately fifteen qualified employees operating across different departments within its 2,500 sqm facility in Pinerolo (TO), Italy. These premises also house the Welding Lab - an in-house laboratory available to customers for feasibility and weldability tests - and the Academy, through which Corotrat organizes training courses accredited by official institutions for personnel on the use of its welding and hot crimping machines.

«Corotrat - emphasizes the CEO - has always distinguished itself by manufacturing tailor-made Welding Machines, customized to best meet customer require-

“Corotrat currently offers three standard models of Italian design about hot crimping machines - systems designed to crimp connectors, terminals, and lugs onto enameled wires while simultaneously burning off the insulating varnish to ensure optimal electrical contact”



Paolo Gai, managing director and CEO of Corotrat

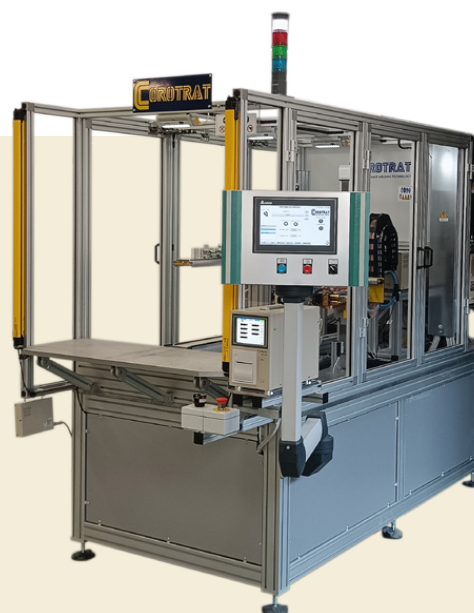


AUTOMATIC BATTERY PACK WELDING MACHINE

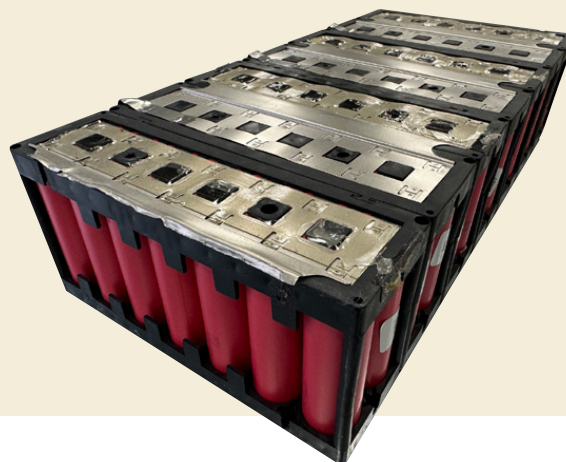
Busbars are rigid conductive elements, commonly made of copper or aluminum, chosen for their high electrical conductivity and corrosion resistance. Their primary function is to ensure a stable and efficient electrical connection between individual battery cells or battery groups, optimizing current flow. Thanks to their structure and ability to minimize energy losses, busbars play a crucial role in energy storage and distribution systems, helping to reduce overheating and enhance overall system reliability.

Corotrat, with its solid experience in the sector, was among the first companies to introduce advanced technology for automated busbar welding to battery cells, both for the positive terminal (anode) and negative terminal (cathode), through a simultaneous and highly efficient process. «This solution – explains Paolo Gai, Managing Director and CEO of Corotrat – has proven to be particularly advantageous for large-scale battery pack production in the automotive sector, where precision, reliability, and assembly speed are key

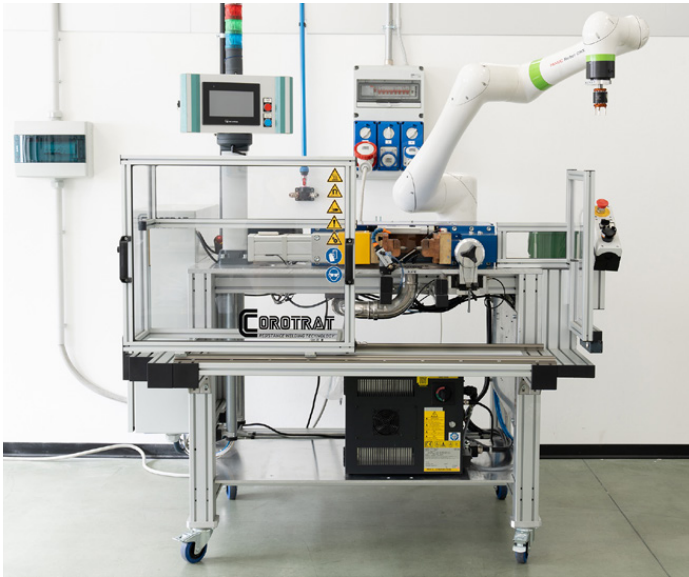
factors in meeting growing market demand. For this purpose, we have developed an automatic Welding Machine called 'Volta ARK-1', designed to optimize the production process through an innovative design. The system features a vertical battery pack positioning while two lateral welding heads operate simultaneously, ensuring a solid and uniform connection. The welding units are connected to a Medium Frequency Direct Current (MFDC) control system, ensuring high-quality welds while improving both energy efficiency and process repeatability».



Corotrat's ARK-1 automatic Welding Machine is designed to simultaneously weld the positive and the negative of the battery pack on the battery cells



INDUSTRY FOCUS



SC35H automatic welding machine with Cobot



Corotrat's SC35H is a stand alone machine for hot crimping terminals on enameled and insulating wire



SC35V Hot-Crimping system with double head



HC 470 G hot-crimping for automated applications for Industry 4.0-5.0

ments, especially in the automotive sector, where demands and performance expectations are always high».

Based on these principles, the company's development strategy has long focused on key pillars such as integration with automation, robotics, and compliance with Industry 4.0 and 5.0 standards.

«Another crucial aspect - adds Gai - is sustainability. Corotrat designs energy-efficient machines and actively works to reduce environmental impact through innovative solutions. This sustainable vision not only contributes to environ-

mental protection but also provides added value to customers seeking efficient products that comply with environmental regulations».

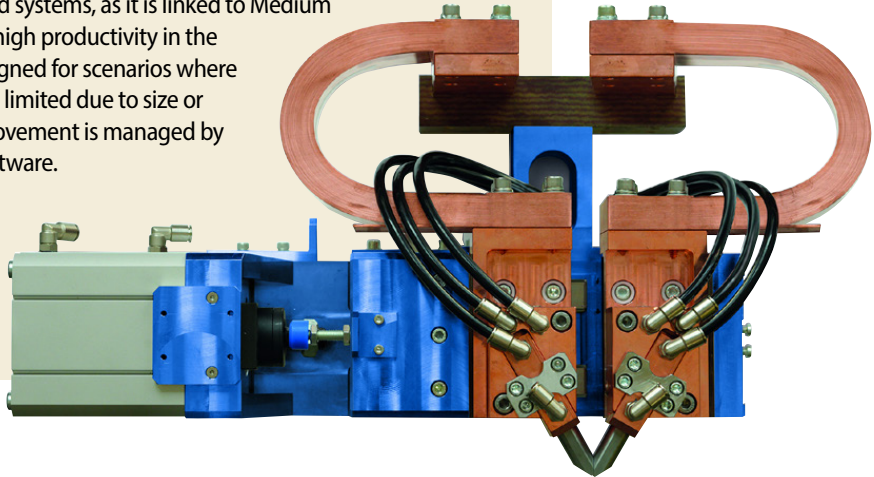
Resistance Welding Machines for electric motors and industrial applications

Thanks to its industrial background, Corotrat offers a wide range of Resistance Welding Machines for massive, high-quality production for electric motors and the electrical applications industry.

AUTOMATIC HOT CRIMPING OF ENAMELED WIRES, CABLES, AND TERMINALS

Corotrat's HC470 hot crimping head has been developed to perform connections of enameled wires, cables, and terminals for integration into an automated process. The self-centering head's flexibility ensures excellent connection quality in automated systems, as it is linked to Medium Frequency (inverter) welding systems to achieve high productivity in the automotive sector. In particular, the HC470 is designed for scenarios where stator handling is complex or where movement is limited due to size or weight constraints. Vertical and horizontal axis movement is managed by two brushless motors controlled by dedicated software.

Corotrat's HC470 hot crimping head is suitable for integration into automation processes



«These machines – notes Paolo Gai – are developed by our team of expert engineers, skilled in exploiting advanced components specifically designed for heavy-duty applications. We source these high-performance components from a well-established network of about twenty internationally renowned partners with whom we collaborate closely to meet high industry standards and who help optimize the performance and operating life of the equipment». More specifically, all Hot-Crimping machines are designed and developed entirely in-house, both electrically and mechanically, and then meticulously assembled, providing a highly reliable solution in the field of electrical connection technology. Such systems are suitable for manual, semiautomatic and fully automated operations, ensuring versatility and adaptability to different production requirements.

Tailored hot crimping solutions

The operation of Corotrat's hot crimping machines is based on the combined action of heat and pressure applied by electrodes, which are powered by power units equipped with constant current control systems. This setup ensures an extremely precise and repeatable process. This method completely removes the enamel coating from insulated wires, resulting in a highly durable mechanical joint while simultaneously providing an electrical connection characterized by extremely low resistance.

«The result – confirms the CEO – is an efficient, reliable connection system designed to ensure the highest quality in the most demanding industrial applications».

Corotrat currently offers three standard models of Italian design about hot crimping machines - systems designed to crimp connectors, terminals, and lugs onto enameled wires while simultaneously burning off the insulating varnish to ensure optimal electrical contact.

«The SC35 model represents our entry-level crimping system – explains Gai

– but it is still a high-performance machine derived from our extensive experience in resistance welding equipment».

Designed for connecting electrical conductors up to 70 mmq, this machine combines welding and crimping to ensure highly reliable and high-quality connections.

«The SC35H BC model – adds Gai – features the same power unit as the base version but includes a safety enclosure for the working area and is intended for small-scale production or prototyping».

The HC470G model, on the other hand, is a high-end hot crimping system specifically developed for the automotive sector. Equipped with force and displacement sensors, as well as Industry 4.0 and 5.0 configurations, it integrates the reliability and performance of Siemens PLCs and HMIs, HWH welding control, and Roman Mfg. transformers.

«All our machines – clarifies Gai – are equipped with cooling and fume extraction systems».

Ready for the U.S. market, too

Continuous investments in equipment and R&D activities have positioned Corotrat as a benchmark in the production of electrical thermo-connection machines for industrial-grade, high-quality component manufacturing. More than 1,000 clients have benefited from its operational advantages, with the company achieving a turnover of over €3 million last year, of which 30% was generated by exports.

«Corotrat – concludes Paolo Gai – will also be present next June at the first overseas edition of the Coiltech trade fair, which will be held in Novi, Michigan, USA. This will be an opportunity to introduce the new version of the high-end HC470G machine, designed to comply with U.S. and Canadian UL and CSA regulations and featuring power components from our American partners, such as WTC and Roman Mfg».