



AUTOMATED WELDING SOLUTIONS FOR EVERY INDUSTRY

www.lincolnelectric.com/automated-solutions

LINCOLN[®]
ELECTRIC

AUTOMATION
DIVISION





Lincoln Electric Automation Division

MISSION STATEMENT

The Automation Division of the Lincoln Electric Company will provide complete welding automation and fume extraction systems to customers throughout North America and provide assistance and service support to other Lincoln regions. These unique systems **improve our customers' quality, lower their costs and enhance their working environments.** Through design, integration, world-class customer service, and unparalleled welding expertise, we will be the industry leader in automated arc welding and fume extraction solutions.

With the largest, most competent sales force in the market place, coupled with our extensive distribution network, we will provide the **strongest local presence** in the industry to **maximize customer satisfaction.**

EXPANDED CAPACITY TO PROVIDE MORE CUSTOMER SOLUTIONS

The Lincoln Electric Automation Division recently expanded our product offering and invested in additional capacity with a new facility. The **Lincoln Electric Automation Center of Excellence** exemplifies our dedication to the design and manufacture of automated welding and cutting and fume extraction solutions. It is the latest investment in the advancement of our ability to provide **complete and reliable solutions and services** to you, our customer.

GLOBAL EXPERTISE

Lincoln Electric, founded in 1895, is the **world leader** in the design, development and manufacture of arc welding products, robotic welding systems, weld fume removal products and plasma and oxyfuel cutting equipment. Headquartered in Cleveland, Ohio, USA, our Company has:

- Manufacturing operations, joint ventures and alliances in 20 countries
- A network of independent distributors and Lincoln Electric sales offices covering more than 160 countries
- A global workforce of more than 9,000

Recognized internationally as The Welding Experts®, Lincoln Electric provides leading technology products and solutions. From the beginning, our Company has pioneered technological advancements and improvements in arc welding consumables and equipment, sustaining the industry's most aggressive and comprehensive research and product development program. Our own **David C. Lincoln Technology Center**, the most advanced facility of its kind, supports this ongoing effort.

POWERFUL LINCOLN / FANUC PARTNERSHIP

Lincoln Electric's strategic alliance with FANUC Robotics translates into an unparalleled combination of welding and robotics expertise, plus **single-source efficiency.** Whether customers are considering their first automated cell or ready to upgrade or enhance existing robotic systems, they can rely on our global network of welding experts to provide **quick response and personalized attention.** All in an effort to create and implement solutions that fit specific customer needs.





The 100,000 square-foot Lincoln Electric Automation Center of Excellence building proudly showcases:

- State-of-the-art 50-seat auditorium
- Two modern classrooms for hands-on, applied training
- Fully equipped robotic welding application and service labs
- 20,000 square-foot assembly area
- An innovative applications solutions lab
- Comprehensive service and repair facility

Lincoln Electric Ribbon Cutting and Open House for the Automation Center of Excellence: shown left to right is Chris Bailey – Automation Division General Manager; John Stropki – CEO; Dick Seif – Senior Vice President Global Marketing and Automation; Euclid Mayor Bill Cervenk.





Leading Industry Solutions

HEAVY FABRICATION INDUSTRY – TANDEM MIG®

The Lincoln Electric Synchronized Tandem MIG® process coordinates **two separate arcs to create a common weld pool** in both robotic and hard automation solutions. Now with **Synchronized Pulse**, Synchronized Tandem MIG® is ideal for welds requiring large volume of metal deposited, like large fillet welds and groove welds found in the heavy fabrication industry exceeding 30 lbs/hour (13.6 kg/hr) with excellent weld quality and productivity.

TRANSPORTATION INDUSTRY – RAPIDARC®

The unmatched speed of RapidArc® can transform any welding system into a **productive, highly efficient solution** for customers of virtually any industry. The success of this process produces high-speed, low-voltage, low-spatter, high-quality welds on light gauge parts – ideal for the transportation market. This process, available on any Power Wave® machine, can be added into any automated cell, whether pre-engineered or custom from Lincoln Electric.

AEROSPACE/NUCLEAR INDUSTRY – ROBOTIC TIG

Lincoln Electric Automation can supply and integrate TIG welding into a variety of our pre-engineered and custom robotic systems. This solution fits into industries such as nuclear, pipe and power generation, as well as aerospace, where requirements for **high-quality welds, precise heat location, low distortion and superior appearance** are mandatory.

PIPE INDUSTRY – ROBO PIPE™

The unique abilities of the Surface Tension Transfer® process (STT®) have led the pipe welding industry for years. Combining this technology into an **easy-to-operate welding system** and providing the ability to change from procedure to procedure for root, fill, and cap passes make Robo Pipe™ an unmatched automated welding solution for the pipe industry.

ENERGY/OFFSHORE INDUSTRY – POWER WAVE® AC/DC 1000® SD SUBMERGED ARC SYSTEM

The Power Wave® AC/DC 1000® SD delivers **optimized productivity** through the ability to adjust and modify the welding performance to suit the application. This system is the benchmark for performance results. Whether it's a single arc pipeline application or a multi-arc offshore platform fabrication, the competitive advantages of the Power Wave® AC/DC 1000® SD – and other Lincoln Electric turnkey solutions – are meeting and exceeding expectations around the world.



Custom robotic welding system with overhead gantry, 2 zones, 2 headstocks and laser-based vision tracking.



Detailed System Analysis

Lincoln Electric believes in building welding solutions around your parts. The Lincoln team starts with a visit to your facility. We review your complete manufacturing systems and assess parts for productivity improvement.

Next, we bring the parts to our facility to evaluate potential weld strategies. Our specialists **analyze weld quality, speed, and part positioning accuracy, reliability and efficiency**. We also **conduct cycle time analysis, administer a return-on-investment analysis and compile a video of our recommendations** on your welded samples. This exhaustive review process ensures optimal execution from system start-up.

We thoroughly evaluate your system's performance by creating computer models of your part and a 3D animation that accurately depicts the proposed automated production process. This animation allows you to:

- Visualize your part being welded in a automated environment.
- Discover and eliminate bottlenecks, inefficiencies and safety issues.
- Analyze operator performance for improved production and flow.
- Explore multiple part welding.
- Examine alternative floor layouts to optimize space.
- Identify potential torch/part tooling interference.
- Estimate and study cycle time options to increase product throughput.



Lincoln Electric System 30 shown customized with a Power Wave® 455M and two Precision TIG® 375 welders for MIG (GMAW) and TIG (GTAW) welding capability.



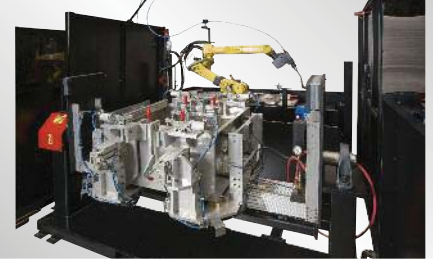
Complete Application Support

Our experienced application engineers provide a number of options to assist you in optimizing your automated welding environment.

- Custom part-specific programming supported by a computer simulation of your procedures and systems.
- Welding procedure analysis and development to help you optimize your welding application.
- Assistance at our facility or yours to ensure flexibility and the most productive use of your time.

When Lincoln Electric delivers a system, our staff can be by your side for installation and offer start-up support at any level, from operator training, staff orientation and integration with other systems to project management of the entire process.





Diverse Automation Systems

PRE-ENGINEERED AND CUSTOM ROBOTIC SYSTEMS

You can select your ideal robotic welding system from our extensive menu of pre-engineered hardware and software configurations. Or request the development of a custom cell that is designed and built to your specific requirements. Whatever the case, Lincoln Electric's welding automation experts work with you to **identify the most important performance and quality characteristics** and suggest appropriate options for review.

HARD AUTOMATION SYSTEMS

Lincoln Electric's solutions are focused on **efficient welding, higher productivity and lower overall production costs**. Our line of welding and positioning equipment incorporates the latest in engineering design to attain the level of quality and precision needed to be "Lincoln Electric." Equipment capabilities include:

- Column and boom manipulators.
- Welding and positioning equipment.
- Tilting rotary positioners.
- Floor rotary turntables.
- Circumferential welding lathe package.
- Linear seam welder packages.
- Turning rolls.
- Side beam tracks and carriages.

VERNON TOOL™ TUBE AND PIPE CUTTING

Tube and pipe cutting machinery from Vernon Tool™ provide **solutions to difficult industrial construction pipe fabrication and process flow issues**. CNC cutting machines consolidate measuring and cutting activities, abrasive saws offer a machine-tool finish on straight cuts and bevels on all types of material, and shut-off valves include sampling valves, line blinds, and quick closing valves. For more information, visit www.vernontool.com.



Hard Automation; Palletized Sidebeam with Positioner and Tandem MIG® with Synchronized Pulse.



Comprehensive Training

Lincoln Electric offers a full range of comprehensive training programs - covering safety issues, programming, maintenance and more - to ensure that your automated solutions are always operating at peak efficiency. From our three-day basic robotic programming course to custom developed programs, we can assist with all your training needs:

- Basic robotic programming (included with every automated system purchase).
- Advanced robotic programming.
- WeldPRO™ off-line simulation software.

CRAW TESTING CENTER

The AWS Certification Program for Robotic Arc Welding (CRAW) is a seminar and examination for operators and technicians per AWS D16.4:2005. It offers operators and technicians a measure against standards and a certificate to highlight their capabilities. Lincoln Electric Automation training staff teaches and conducts this testing at our facility.



Efficient Service and Support

The Lincoln Electric Automation Division offers a full complement of services. Our team is a customer-oriented group of certified technicians and engineers focused on supporting you in every aspect of your automation equipment service and support needs. Our commitment is to provide customers with fast, efficient, effective services that exceed their expectations.

24/7 Phone Support –

Business Hours (8 a.m.-5 p.m. EST):

1-888-935-3878

After Hours:

1-888-532-8001

Regional Field Service –

Multiple deployment centers

Warranty Service –

Lincoln Electric and FANUC factory certified

Calibration Services –

Lincoln Electric wire feeders, Power Wave® power sources and robot calibration services.

Preventive Maintenance Services –

FANUC Robotics and Lincoln Electric welding equipment and fume extraction.

On-Site Training and Support Services –

Welding application and robotic programming support and training.

Convenient Lease and Finance Options



Lincoln Electric offers a wide range of purchase and lease options that make automated welding an immediate option for your company. In fact, there is no faster, more convenient way to bring the efficiency, profitability and quality of automated welding to your company than through **Lincoln Electric Capital™**.

Lincoln Electric Capital™ offers a complete

menu of customer purchase and lease options that make automation amazingly affordable.

For questions about lease and financing options available for automation equipment, contact Lincoln Electric Capital™ at 1-877-WELDNOW (1-877-935-3669).



Environmental/ Fume Extraction Solutions

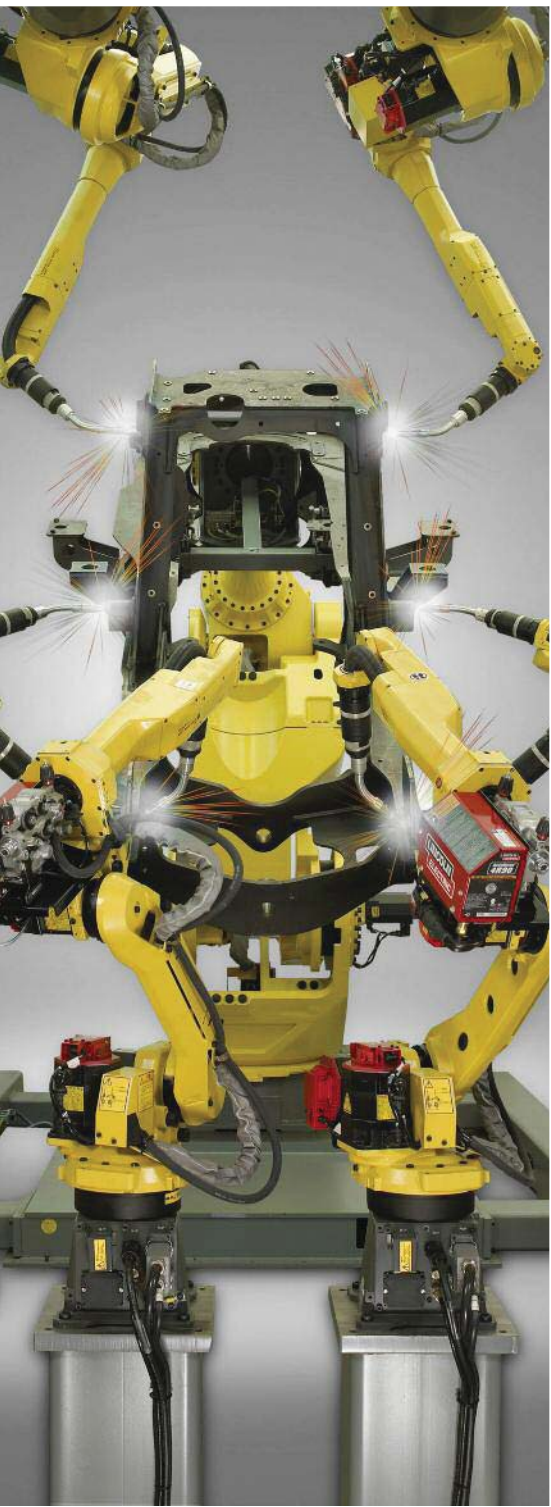
Arc welding is a safe occupation when sufficient measures are taken to protect the welder from potential hazards. When these measures are overlooked or ignored, however, welders can encounter such dangers as electric shock, overexposure to fumes and gases, arc radiation, and fire and explosion; which may result in serious or even fatal injuries.

Lincoln Electric offers a full compliment of fume extraction solutions, as well as a team of specialists on staff to assist with your fume control and fume extraction questions and concerns.

- Low Vacuum/High Volume
 - Mobiflex®
 - Statiflex®
 - DownFlex™ table
- High Vacuum/Low Volume
 - Miniflex®
 - X-Tractor®
 - Fume extraction guns
 - Suction nozzles
- Engineered Systems
 - Low vacuum central system
 - High vacuum central system
 - Modular extraction hoods, filter banks, and extraction hoods for robotic welding systems
 - Push/Pull and Circulator Systems

For additional information see:
www.lincolnelectric.com/weld-fume-control
www.lincolnelectric.com/safety

The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.



Let Us Help You

The goals of automation are to decrease manufacturing costs and increase weld quality and overall productivity. The Lincoln Electric Automation team will work closely to evaluate your needs and ensure we design the right solutions for you.

Visit our **Lincoln Electric Automation Center of Excellence at 22221 Saint Clair Avenue** and see for yourself or allow us to come and evaluate your process with you. We can help you every step of the way.

Automation Division Phone: 1-888-935-3878

Automation Division Fax: 1-216-383-4732

Automation After-Hours Technical Support: 1-888-532-8001

Nashville Regional Service Center Phone: 1-615-291-9927

Nashville Regional Service Center Fax: 1-615-291-9928

The Lincoln Electric Company

Automation Division

22221 Saint Clair Avenue

Cleveland, Ohio 44117-8542 USA

Email: Automation@lincolnelectric.com

www.lincolnelectric.com/automated-solutions

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company® is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

