Welding Solutions for Exhaust Systems
Tough Standards
meeting industry challenges
maintaining productivity

Increasingly stringent CAFÉ standards are pushing design changes in exhaust systems. Higher temperatures are influencing material selection to include better corrosion and thermal cycle performance. Technologies like start/stop have increased thermal fatigue risks. Effective, gas-tight welding of exhaust systems without leaks and spatter is getting tougher.

Lincoln can help, with cost-effective solutions for today and high-tech innovations to help you get a jump on tomorrow. We have a broad portfolio of precision engineered solid and metal-cored welding wires that will improve weld integrity and boost productivity. We’re at the forefront of precision welding that can compensate for poor fit-up, variable edge welds, and other difficult-to-weld parts. And we’re not just The Welding Experts®, we’re the cutting experts, too – we offer laser cutting solutions that will improve joint location precision. Here at Lincoln, we live up to tough standards too.
More sophisticated emission control systems require more specialized welding products to reach top performance. Custom manufactured welding consumables can improve weld strength, corrosion performance and productivity.

Consumables

Exhaust components like the tail pipe, muffler and intermediate pipe are now thinner and lighter. Lincoln offers welding wire that is specifically designed to join exhaust system parts. Primalloy™ T-409Ti wire enables higher travel speeds on thin stainless steel. Single pass welding is possible, with good deposition rates and corrosion resistance and minimal spatter and slag.

Lincoln has also developed welding wire to improve travel speed and meet the high temperature needs of the hot end of an automotive exhaust system. Our Primalloy T-439Ti welding wire reduces cycle time, has improved high temperature corrosion resistance and is cost-effective. Coupling Primalloy T-439Ti with Lincoln’s advanced waveforms additionally enhance welding speed.

Wire feedability

All welding wire is not created equal. Wire that is both lot-selected and precision manufactured feeds and welds better. Lincoln offers a wide array of welding wire and consumables engineered to fit your specific exhaust system applications.
Robotic Welding Power Source

Lincoln’s Power Wave® welders are the industry standard. Our units are built for the long haul, with a sterling record of dependability.

They flex to your unique welding environment while consistently maintaining superior arc performance. Choose from over 60 standard welding waveform programs that offer a broad range of electrode size, type and shielding gas combinations to give you optimal appearance, penetration, bead shape and travel speed for each application. For exhaust applications, the Rapid-Arc® waveform delivers a 20% or greater improvement in travel speed. Power Mode™ enables stable arc welding on thin materials, with precise heat input throughout the welding process, even with out-of-position welds.

What further sets our equipment apart is the ability to provide a revolutionary level of networked communication.

Laser Tube Cutting

The effectiveness of upstream automation becomes more critical in a demanding welding environment like exhaust system manufacture. Precision upstream equipment can be key to improved productivity.

Lincoln provides a wide range of custom, flexible tube cutting solutions. Laser cutting can add production capabilities at a reasonable capital cost. The method can improve joint location precision; there is no loss of a cutting edge over time as there is with saw cutting.

When the upstream equipment and welding line equipment are supplied by the same manufacturer, start-up, fit-up and ongoing operation run more smoothly. Lincoln Electric is the only supplier of both upstream and welding automation.
Lincoln’s Primalloy T-439Ti wire requires significantly less feeding force over time than two competitive ferritic SS metal-cored wires.

**Power Mode** compensated for arc length fluctuation 4x faster than traditional welding power sources.

**SOLUTION**: Lincoln metal-cored welding wire is the recognized standard for achieving faster travel speeds on the new high performance exhaust systems. In documented studies in exhaust system plants, T-439Ti has been able to run up to 50% faster than solid ferritic or austenitic wires. Primalloy T-439Ti and Primalloy T-439TiTi are ferritic stainless steel, metal-cored wires specially designed for high travel speed welding on exhaust systems. They deliver corrosion resistance and a good deposition rate, with minimal spatter and slag.

Lincoln Primalloy wire, stabilized by titanium, produces strong welds that remain strong over time. Welds made with competitive welding wire alloyed with niobium can be subject to accelerated knife line corrosion. Nickburn carbide does not precipitate uniformly, leaving some areas of the weld unprotected. Welds with Lincoln titanium alloy wire remain uniformly strong.

**CHALLENGE**: From the cold end, tail pipe, muffler, intermediate pipe T-409Ti Metal-Cored Wire and Hot end, manifold, catalytic converter, flange T-439Ti Metal-Cored Wire are specifically designed for high travel speed welding on exhaust systems. They deliver corrosion resistance and a good deposition rate, with minimal spatter and slag.

**SOLUTION**: Lincoln's Primalloy T-439Ti wire requires significantly less feeding force over time than two competitive ferritic SS metal-cored wires.

**LASER TUBE CUTTING**

**CHALLENGE**: The solution to exhaust system parts fit-up may be more than better welding. Upgrading your upstream process with precision tube cutting may be the answer.

**SOLUTION**: Lincoln's laser tube cutting is the state-of-the-art method for pre-weld parts prep.
Automation Solutions

Lincoln Electric's expertise goes beyond the weld process to all aspects of automated metal fabricating for exhaust system manufacture.

- Flexible, automated systems for metal forming, fabricating and joining, including fixturing, laser and plasma cutting systems, press automation, tube bending and fabricating systems, tubular hydroform/structural frame automation and build-to-print manufacturing services
- Turntables, positioners, robot transport units, tool shuttles, transfer fixtures, conveyors and lifters
- High quality toggle, tube and wire clamps and retract pin devices

Environmental Solutions

Lincoln Electric supports safety and regulatory responsibility around the welding process with a full suite of audit services and safety equipment, including:

- Portable, stationary and engineered weld fume control systems
- Systems for fire detection and suppression

Robotic Welding Solutions

Lincoln Electric knows welding, and we also know automation. We have the depth and breadth of experience in exhaust system assembly to deliver the fastest, highest quality, most repeatable results for your robotic line. Our advanced technologies include:

- Workhorse welders
- Wire feeders for heavy-duty applications
- Innovative waveform technologies for strong, clean welds
- Unique welding consumables to optimize your results
- Laser welding systems
Lincoln Electric is the world leader in arc welding equipment, consumables and automation. We have been at the forefront of welding technology for more than one hundred years. Our product line now spans the breadth of the assembly floor, from plasma and oxyfuel cutting systems to arc welding products, weld fume removal products and robotic welding systems.

We offer a complete line of welding automation equipment and solutions for automotive assembly plants. We can customize your system with flexibility to meet the rapid changes in the industry. And with Lincoln, you receive full support, including modeling, procedure development, on-site programming, and training.