

SUCCESS

LINCOLN[®]
ELECTRIC
THE WELDING EXPERTS[®]

15% Increase in Productivity

Waveform Control Technology

SFI of Memphis, Tennessee

SFI is a large steel and aluminum fabricator that manufactures industrial equipment components and subassemblies ranging from locomotive oil pans to crane outriggers.

- CHALLENGE -

- Large job shop environment needing versatile equipment for high-end semi-automatic welding and enables stick, TIG, MIG, pulsed and flux-cored processes, as well as gouging. Also needed to be able to be partnered with a robotic cell.
- Welders spending too much time on rework and grinding.
- Improve workflow and material transfer

- SOLUTION -

- 115 Lincoln Electric Power Wave[®] 355M and 455M inverter power sources.
- Power Feed[™] 10M wire feeder for each Power Wave[®] machine.

- RESULTS -

- 15% increase in productivity.
- On certain jobs, SFI has been able to move from welding 35 parts a day to 100.
- Able to take on more projects. Machines will pay for themselves within two years.
- Virtually eliminated spatter, considerably reduced the need for grinding and rework.
- Production Monitoring Software identified opportunities for workflow changes, and productivity increases.



The company name SFI may not seem familiar, however, the companies it does work for are. SFI completes projects for large companies such as UPS, MTD, Caterpillar, FedEx, International, General Motors, Case New Holland, and Black & Decker.

SFI is a large steel and aluminum fabricator headquartered in Memphis, Tenn., with a second plant in Conway, Ark. The firm manufactures industrial equipment components and subassemblies ranging from locomotive oil pans to crane outriggers.

Operating essentially as a large job shop, SFI fabricates more than 350 custom products from carbon steel, stainless steel and aluminum. The company has enjoyed double digit growth in recent years and has continued to land contracts with new customers, including a recent five-year, \$100 million contract with JLG to make a number of components for the company's lift cranes.

The SFI business success story though has not come without some growing pains. Just a few years ago, more than 80 percent of the SFI's business was focused on the tractor and trailer industry, making the company's success and profitability extremely susceptible to that sector's stability. After declaring bankruptcy, the company was purchased in 2002 by the Lerman family, which has invested upwards of \$40 million to remake the company and upgrade its facilities.

In 2005, the family hired a new president, Greg Langston, an industry veteran with 28 years of experience working with Fortune 500 companies and managing operations in more than 50 countries. Though he may not have seemed like a natural choice at the onset, Langston demonstrated the Lerman family's commitment to turning SFI into a world-class company with top-notch employees, facilities and equipment.

The future of welding is here.®

15% Increase in Productivity

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SFI of Memphis, Tennessee

Today, the 50-year-old firm is on track to achieve this objective. It has diversified its customer base with expansion into other markets, including construction, mining, agriculture and recreation, keeping SFI on schedule to double its business in the next five years.

“Lincoln and nexAir are more than just suppliers; they are truly stakeholders with a vested interest in our success.”

A major contributing factor to the company's success has been the reengineering of its culture, focus and facilities. SFI, which has the ability to cut, stamp, form, bend and weld virtually any steel or aluminum component, closely examined every step of its operations for improvements. It adopted and integrated lean manufacturing and continuous improvement principles into its culture and work processes. During this journey, it was determined that SFI's welding operations at its Memphis plant needed to be radically revamped and updated.

“Greg considers our welders to be the ‘rock stars’ of our shop. He understands

the critical role they play and wanted to make sure they were working with the best technology available in the best environment possible,” said William Jacobi, SFI's manufacturing engineering manager.

Realizing that this would require a major investment of time, money and resources, SFI and Jacobi met with a number of welding equipment manufacturers and invited two companies to install their equipment on the shop floor for a side-by-side, real-world test. After six months of being put through the paces by SFI's welders on a wide variety of projects, the company selected and purchased 115 Lincoln Electric Power Wave® 355M and 455M inverter power sources. SFI also installed a Lincoln Power Feed® 10M wire feeder for each Power Wave® machine.

SFI's selection process, six-month test, equipment purchase, and installation meant a considerable time commitment by Lincoln Electric's Allen Chapman and Jennifer Knauf and Willard Freeze from nexAir, the nation's second largest privately owned distributor of gases and welding supplies and a long-time SFI vendor.

“We realized from the onset what a major investment revamping our welding operations would be,” Jacobi said. “Welding is integral to nearly every project that goes out our door, so it was critical that we make the best decision possible for ourselves and our customers. We asked a lot of Allen, Jennifer and Willard, and they came through for us at every step. Lincoln and nexAir are more than just suppliers; they

are truly stakeholders with a vested interest in our success.”

SFI also challenged Lincoln and nexAir to serve a greater role than just supplying new equipment. The fabricator turned to them to advise on every aspect of the welding operations redesign, including equipment, welding wire, processes, welding curtains, floor coating, uniforms, personal protection equipment, lighting and even paint color. Jacobi said the improvements helped solidify every level of the organization – though especially to the shop floor – Greg Langston and SFI's commitment to both the employees and becoming a world-class organization.



“Based on current analysis, these machines will pay for themselves within two years.”

Members of SFI's management team traveled to Lincoln's Cleveland headquarters to tour the facilities and meet with Lincoln's senior management and application engineers. Lincoln and nexAir set up a secure Internet site, which provided 24-hour, real-time access for team members and updates on project status, equipment installations and more.

SFI's welders have been using the Lincoln Power Wave® machines and Power Feed™ wire feeders for nearly a year now and have seen a consistent 15-percent productivity gain.

“Since we're a job shop and manage upwards of 300 different projects a year,



15% Increase in Productivity

Waveform Control Technology **SFI of Memphis, Tennessee**

the jobs on the floor vary widely from day to day. A welder can be working on a school bus bumper one day and a locomotive oil pan the next," Jacobi said. "With the Lincoln systems in place, we've seen an impressive increase in productivity, which has allowed us to take on more projects. Based on current analysis, these machines will pay for themselves within two years."

According to Jacobi, the Power Wave® machines have contributed to gains in productivity first through their versatility. The Power Wave® 455M is specifically designed for robotic, hard automation and semiautomatic applications and is ideal for MIG, pulsed, STT® and flux-



cored welding. The Power Wave® 355M is a highly efficient power source for high-end semiautomatic welding and enables stick, TIG, MIG, pulsed and flux-cored processes, as well as gouging. The Lincoln Power Waves have also been partnered with robots for a number of robotic welding applications.

"As with any job shop environment, we require both our welders and equipment to multitask – robotic and manual welding with a variety of processes – submerged, MIG, TIG. It all depends on the job and its requirements," Jacobi explained. "Lincoln's machines give us the needed versatility to produce the high-quality products our customers demand."

SFI's welders have been able to virtually eliminate spatter and considerably reduce the need for grinding and rework.

The new machines have also given the welders more control over the welding process. For example, they are able to easily control burnback time, crater time and start time, all of which allow for a better quality weld. This has contributed to the company's productivity increase and faster turnaround time on projects.

SFI is also using Lincoln's Production Monitoring Software™, which works in tandem with the Power Wave machines. The software integrates digital technology to network the welding equipment and makes the data taken from the shop floor available anywhere, whether from the shop foreman's office or from an engineer's laptop while

traveling. In addition to monitoring weld data, the software allows for storing and sharing of files, monitoring production tasks, setting weld limits and tolerances, and tracking

consumable inventory. It also allows welding machine faults to be logged and emailed, while diagnostic troubleshooting can be performed from a remote location.

When SFI began using the software, Jacobi said they noticed that a number of welders were experiencing large periods of downtime. As it turns out, these periods represented time that the welders were waiting on materials or working on other tasks. The software allowed SFI to identify and correct this problem, including improving the design of its flow of materials between stations.

Lincoln and nexAir conducted all of the initial training for SFI's welders. This hands-on training, coupled with the Power Wave's easy user interface, allowed the fabricator to significantly minimize the downtime during the

installation of the new equipment. Lincoln and nexAir are also responsible for training all new, incoming welders, and they regularly consult on new welding applications when needed.



"Lincoln's machines give us the needed versatility to produce the high-quality products our customers demand."

"Our relationship with Lincoln and nexAir is different than any other vendor we work with. They are truly partners, invested in our company and committed to helping us be successful," Jacobi said. "They are the only outside group on a first-name basis with our president. This speaks volumes about both companies and their team members."

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Featured Lincoln® Products



Power Wave® 455M & 455M/STT®

For welding thicker materials in robotics, hard automation and semiautomatic applications, choose the Power Wave® 455M. For those applications where heat input control, minimal distortion, and reduced spatter are essential, opt for the Power Wave 455M/STT®. Both models feature Waveform Control Technology® for superior arc performance on a variety of materials, including steel, stainless steel, aluminum and nickel alloys. Both deliver custom control of the arc for a given wire type, size and shielding gas configuration for consistent welds time after time. The Power Wave® 455M and 455M/STT® are designed to be components in a modular, multi-process welding system capable of digital communication with other industrial machines to create a highly integrated and flexible welding cell.

Order K2202-1

Power Wave® 455M

Order K2203-1

Power Wave® 455M/STT®

Order K2375-1

Power Wave® 455M/Power Feed™
10M Ready-Pak® Pkg.

Power Wave® 355M

The Power Wave® 355M features some of Lincoln's best performance technologies and processes all rolled into one highly efficient inverter power source designed for high-end semi-automatic welding. Lincoln's Waveform Control Technology® is at the heart of the Power Wave® 355M's performance, enabling processes such as Pulse-On-Pulse® and Power Mode®. Precise control of process parameters allows you to weld on a variety of materials, including steel, stainless steel, aluminum and nickel alloys in virtually any application. Optimize the arc for each wire type and size for a consistent weld time after time with the Power Wave® 355M.

Order K2368-1

Power Wave® 355M

Order K2372-1

Power Wave® 355M Ready-Pak®
Pkg. (for Steel)

Order K2373-1

Power Wave® 355M Ready-Pak®
Pkg. (for Aluminum)

Power Feed™ 10M

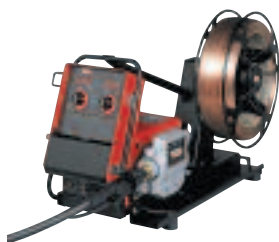
When you need a versatile, multi-process industrial wire feeder for welding virtually any material, you need the Power Feed™ 10M. Choose the Power Feed™ 10M for automotive manufacturing, shipbuilding, pressure vessels/heavy plate, oil gas and pipeline construction, particularly when code-quality work is required. The new MSP4 user interface panel features the Infrared Port with a Palm® OS-based interface, allowing wireless communication between a handheld device and the welding system, for fast, easy and accurate process control.

Order K2230-1

Power Feed™ 10M Bench Model

Order K2230-1

Power Feed™ 10M Dual Bench Model



WHAT IS NEXTWELD®?

The challenges facing industrial fabricators today are growing in number and complexity. Rising labor, material and energy costs, intense domestic and global competition, a dwindling pool of skilled workers, more stringent and specific quality demands all contribute to a more difficult welding environment today.

Through our commitment to extensive research and investments in product development, Lincoln Electric® has established an industry benchmark for

applying technology to improve the quality, lower the cost and enhance the performance of arc welding processes. Advancements in power electronics, digital communications and Waveform Control Technology® are the foundation for many of the improvements.

NEXTWELD® brings you a series of Process, Technology, Application and Success Story documents like this one. NEXTWELD® explains how technologies, products, processes and applications are linked together to answer the important questions that all businesses face:

- How can we work faster, smarter, more efficiently?
- How can we get equipment and people to perform in ways they've never had to before?
- How do we stay competitive?

NEXTWELD® is the future of welding but its benefits are available to you today. Ask your Lincoln Electric® representative how to improve the flexibility, efficiency and quality of your welding operations to reduce your cost of fabrication.

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THE LINCOLN ELECTRIC COMPANY®
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