

SUCCESS

**LINCOLN**  
**ELECTRIC**  
THE WELDING EXPERTS

## Company Tackles Welding Shortage, Opens Its Own School

Invertec® V350-PRO welders

**Carolina Energy Solutions, Rock Hill, S.C**

**Carolina Energy Solutions is a complete field welding, machining, and post weld heat treating company. They offer services for nuclear, fossil and hydropower generation, waste to energy, petrochemical, gas and general fabrication industries. Their technicians are highly trained and experienced in pre-weld and post-weld heat treating, piping, boiler, turbine, valve repair, fabrication and installation.**

### - CHALLENGE -

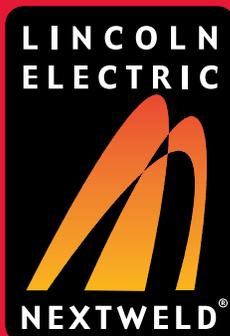
- Shortage of skilled welders
- Keep up with construction demand in the energy industry

### - SOLUTION -

Open their own welding school with 50 Lincoln Electric® Invertec® V350-PRO multi-process welders.

### - RESULTS -

- Having a readily available and skilled workforce
- The school has an enrollment waiting list
- Carolina Energy is considering doubling the school's capacity to 100 booths



**W**here have all the welders gone?" In late summer 2006, this *Wall Street Journal* headline screamed a problem that industry had long been aware of – the critical shortage of skilled welders. Compare the number of career welders nearing retirement age against younger workers shying away from a welding career – now combine that with a boom in industrial manufacturing,

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construction and repair work, and it becomes clear why the shortage of skilled welders has reached critical mass.

Companies are employing a wide variety of tactics – ranging from significant signing bonuses and tuition reimbursement to starting salaries on par with a newly graduated engineer – in order to attract and retain new welders. Though numerous vocational and high schools across the country have jumped on the bandwagon, expanded their welding programs and are graduating record numbers of welders – it’s still not enough to keep up with industry demand.

With all of this in mind, Carolina Energy Solutions decided to take matters into its own hands and with the help of another industry leader, The Lincoln Electric Company®, opened its own welding school.

The future of welding is here.®

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## Energy Industry Demands

Based in Rock Hill, S.C., Carolina Energy Solutions works in one of the world's fastest growing areas – the energy industry. With a focus on issues such as rising gas prices, U.S. foreign oil dependence and alternative power sources, the energy industry is seeing unprecedented growth on all fronts. New plants are being constructed. Older plants are being upgraded and renovated. All of this activity has created exceptional demand for contractors such as Carolina Energy.

The 10-year-old firm, started by a group of welders from the nuclear power plant boom in the 1970s, offers a complete range of welding, machining and post-weld heat treating solutions for nuclear, fossil, hydropower, waste-to-energy, petrochemical, gas and general fabrication industries. The company contracts directly with utility companies across the country for outage work, new construction and retrofits. It also subcontracts with some of the leading national and international construction/engineering firms, including Bechtel, Jacobs, Shaw, TIC, Fluor and Zachry. Carolina Energy's technicians handle pre-weld

and post-weld heat treating, field machining and welding of piping, boiler, turbine, valve repair, fabrication and installation both at the company's South Carolina facility and in the field throughout the United States and abroad.

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Whereas for some contractors welding is just one part of their overall services, welding is front and center at Carolina Energy and integral to the company's overall success. More than 80 percent of the firm's 400 employees are welders, making the shortage of skilled welders all that more significant.

“So we decided that since we couldn't recruit enough skilled welders fast enough to keep up with customer demand, we would just create our own,” said Danny Sechler, a welding specialist and Construction Institute of America's coordinator.

In late 2006, Carolina Energy welcomed the first welding students to its new Construction Institute of America, a separate nonprofit entity managed by Carolina Energy staff and partially funded through the federal government's Workforce Investment Act. The institute is housed at the company's South Carolina campus and consists of 50 fully outfitted welding booths. Carolina Energy believes their graduates will be the “welding leaders of the future.” Al Lovins, who successfully operated several welding schools in the late 1970s and early 1980s boom, manages the school and lends 30 years of welding experience to help these students prepare for their new careers.

## From the Ground Up

Opening a new welding school meant a significant investment for Carolina Energy. It meant building the school from the ground up – hiring a full-time team of experienced instructors, marketing its program to potential students and purchasing all new equipment.

The firm planned the school to open with 50 booths outfitted and ready for hands-on work starting on day one. With this in mind, the firm talked to all of the major welding manufacturers and in the end, chose Lincoln Electric® equipment and consumables for its new venture.

“From first contact, Lincoln® approached our project in the same way that we work with our customers – as a partner not just a vendor,” Sechler explained. “Brian Hart from Lincoln® wasn't just trying to sell us equipment. He worked side by side with us to find the best solution.”

Carolina Energy's welders are skilled in the typical welding techniques,

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stick, MIG, TIG and flux-cored. Because of the type of projects they handle, the welders also work with a number of specialty welding applications, such as orbital welding. (Carolina Energy was recently chosen by one of the premier orbital welding equipment manufacturers, Liburdi Dimetrics, to become their authorized training and repair center.) The Construction Institute of America required a welding machine that provided great versatility, allowing the students to learn the entire spectrum of weld techniques. The company purchased and installed 50 Lincoln® Invertec® V350-PRO welders.

The V350-PRO is the most versatile inverter power source in its class and is specifically designed to serve as a multi-purpose, multi-process power source that is also lightweight and portable. It is built to handle the rigors of harsh environments, whether that's in the field or in the hands of a student welding for the first time.

"The Lincoln welders grow with our students as their skill level grows,"

Sechler said. "It's easy to use for the guy in his first week of class, but it also stands up to the student practicing precise TIG pipe welding right before graduation."

The school is also using Lincoln® Excalibur® electrodes and UltraCore® welding wire.

## A Good Deal

Students entering the new school start out at \$18/hour or about \$37,500/year and sign on to work for the company for one year following graduation. If they stay on after their first year, they move up to \$28-\$30/hour or about \$60,000/year, which is in line with the starting salary of an engineer graduating with a four-year degree.

"In addition to extremely competitive pay, many of our students will also have the opportunity to travel, as we send our technicians out to jobs around the country," Sechler stated. "It's a great opportunity for them."

The school has a waiting list, so as soon as it sends one graduate out into the field, their place is taken by another. With high demand from the industry and customers, Carolina Energy is considering soon doubling the school's capacity to 100 booths. The new booths will also utilize the Lincoln® Invertec® V350-PRO and welding wire. Students spend a minimum of five hours a day welding, with the balance consisting of classroom work. Students start out

stick welding, move onto flux-cored, then to open-butt TIG welding on pipe. They are tested after each stage and are required to meet the appropriate ASME section IX acceptance criteria in order to move on.

"Because customer demand is so high, our students have even had the opportunity to get hands-on field experience before completing our entire program. For example, we had a project in Wisconsin that only required stick welding, so the students who had passed the ASME Section IX test were sent north to work side by side with our experienced welders," Sechler explained. "The customer appreciated that we were able to meet their tight schedule, and the students spent a couple of weeks on site putting their training to work."

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Once that project was completed, those students returned back to their welding booths completing the next stage of training.

"Opening our own school has given us great versatility and flexibility we didn't previously have," Sechler summarized. "Everybody benefits, Carolina Energy and our customers from having a readily available, skilled workforce, and our students receiving excellent training and guaranteed job placement."



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## Featured Lincoln Product



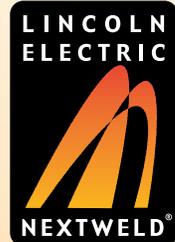
### Invertec® V350-PRO

The Invertec V350-PRO is a versatile, multi-purpose, multi-process power source that's lightweight and portable. Available in construction, factory, advanced process and factory rack models, the V350-PRO is capable of doing virtually any job, whether in the shop or on the construction site. The V350-PRO is capable of stick, DC TIG, MIG, Pulsed MIG<sup>(1)</sup>, flux-cored and arc gouging, making it the most versatile inverter power source in its class. And it's built tough to handle the rigors of harsh environments.

<sup>(1)</sup>Advanced Process Panel only.

### 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.



THE LINCOLN ELECTRIC COMPANY  
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The future of welding is here.®