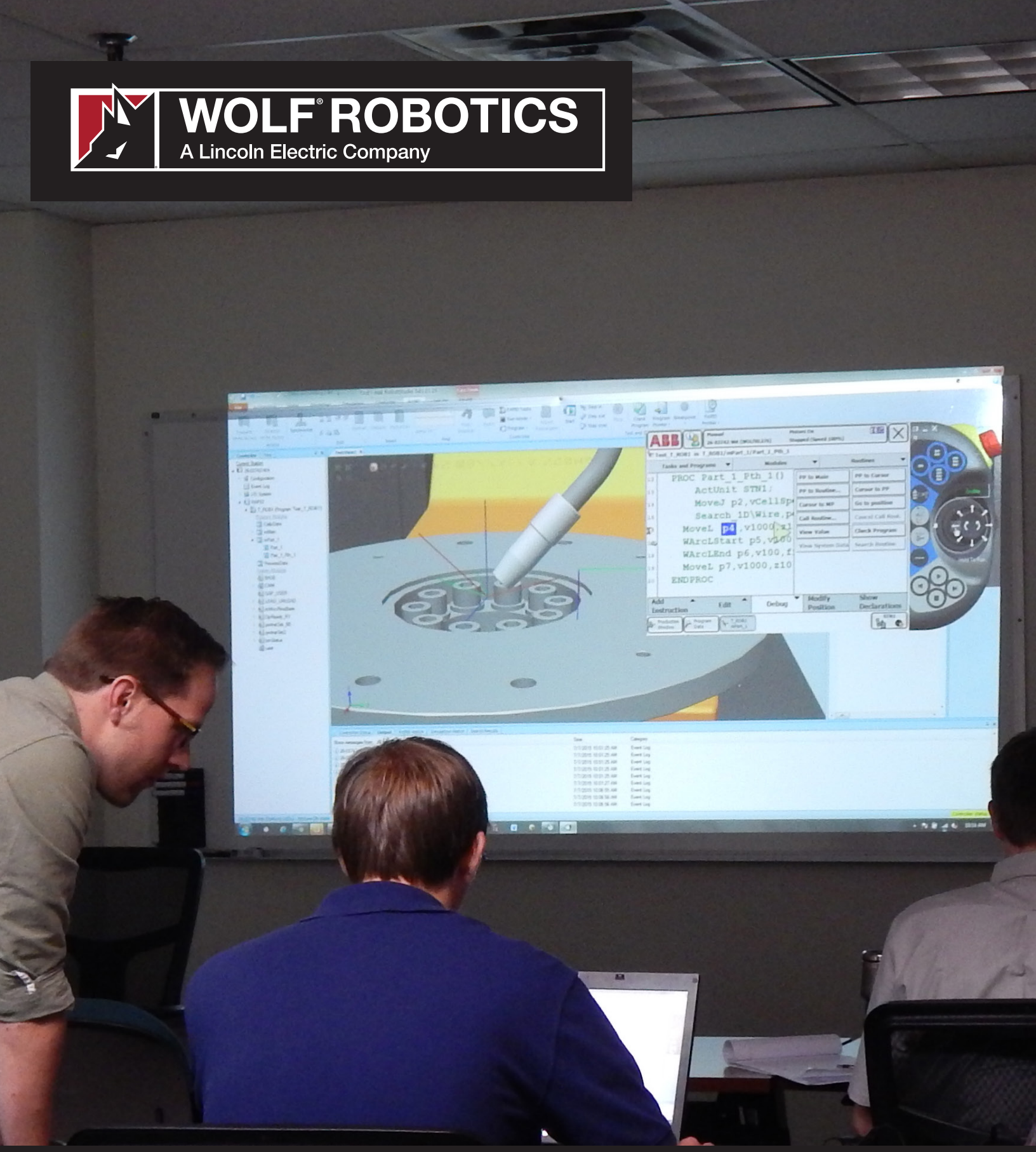



TRAINING SOLUTIONS THAT MEET THE MOST DEMANDING REQUIREMENTS —YOURS.

LINCOLN ELECTRIC

# WOLF ROBOTICS TRAINING

## TEACHING THE EXPERTISE NEEDED TO MOVE TO THE NEXT LEVEL.

### Training to succeed

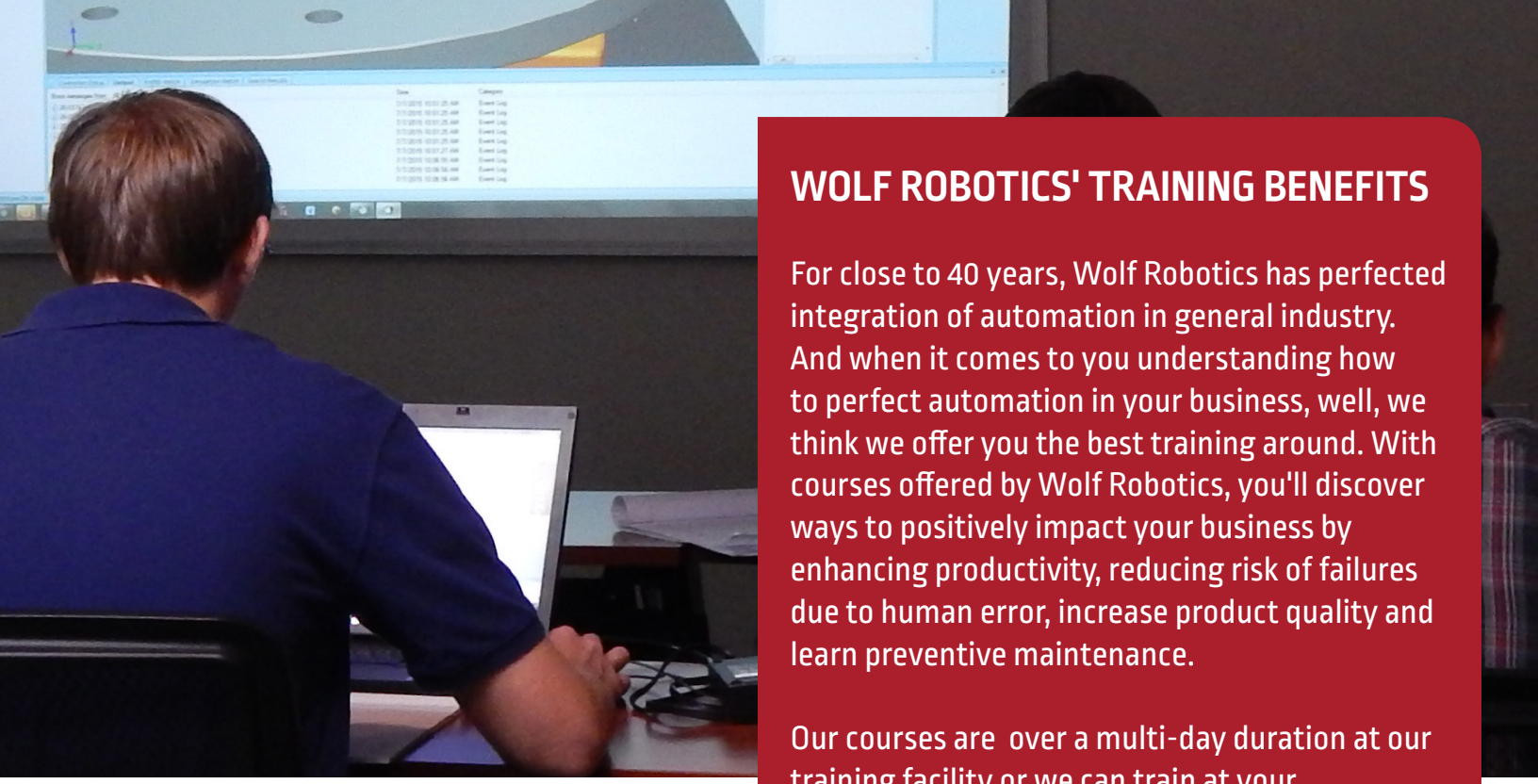
Having a knowledgeable and well-trained staff is crucial to improving your productivity and efficiency. Wolf Robotics offers robotic welding training classes, as well as custom classes specifically designed for the exact needs of your business.

### We know what it takes

With over 8,500 installations worldwide, our expert team at Wolf Robotics' designs and manufactures automation systems that result in faster, safer and higher-quality production.

Our welding automation experts leverage nearly 40 years of advanced design, process, and programming knowledge to meet modern welding and automation challenges. Wolf Robotics is unmatched in delivering robotic systems to customers in general industry.

*"Training at Wolf Robotics was very hands on.*
*I left knowing exactly what I needed to do and how to do it.*
*The information was very applicable to my day to day activities."*



## WOLF ROBOTICS' TRAINING BENEFITS

For close to 40 years, Wolf Robotics has perfected integration of automation in general industry. And when it comes to you understanding how to perfect automation in your business, well, we think we offer you the best training around. With courses offered by Wolf Robotics, you'll discover ways to positively impact your business by enhancing productivity, reducing risk of failures due to human error, increase product quality and learn preventive maintenance.

Our courses are  over a multi-day duration at our training facility or we can train at your facility .

Explore our course topics and see how we can help you transform automation in your business.

### TRAINING SCHEDULE

The training schedule can be found on our training website page located at http://www.wolfrobotics.com/training. The schedule gets updated weekly with the appropriate number of seats available. If you have a specific class request on a specific week, we can typically work with you to make it happen.

### RESERVING A TRAINING SEAT

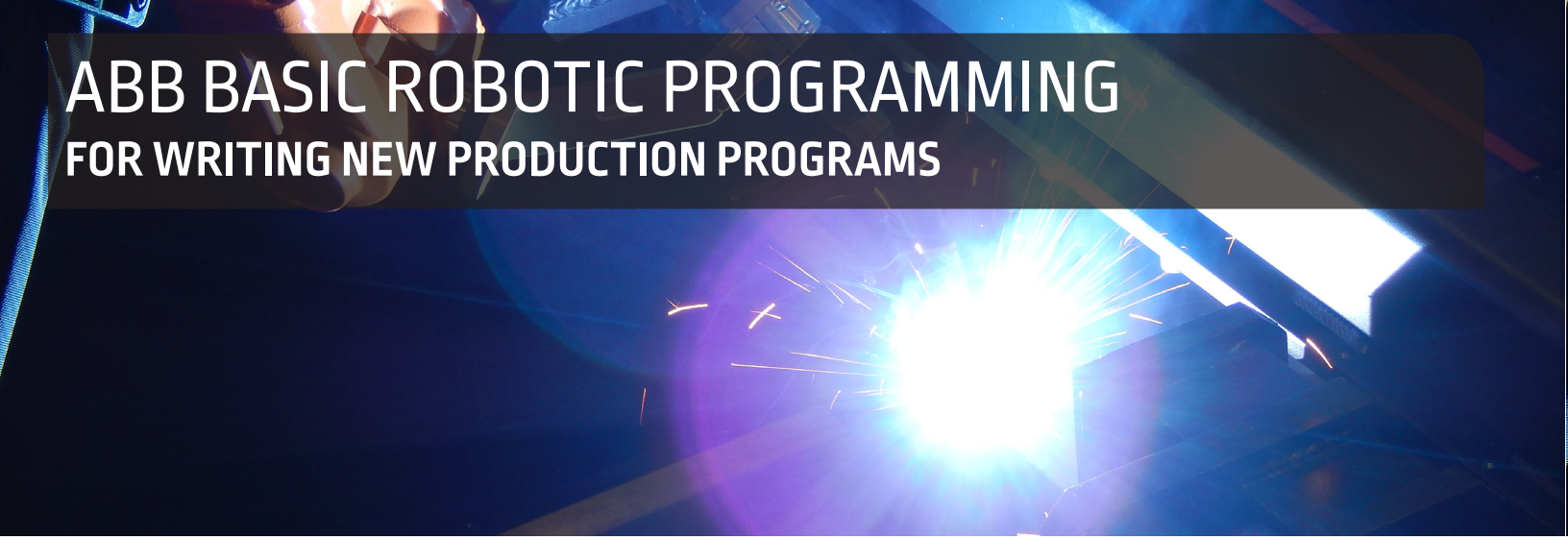
We require a 2 person minimum in each class offered at Wolf Robotics. The minimum can be met by sending 2+ trainees or met by multiple companies in the same class.  In order to reserve training seats, I need you to send us a PO. Please email Training@wolfrobotics.com to answer any questions you may have or need any additional information.

### SAFETY FOR TRAINING AT WOLF ROBOTICS

We do require that all students wear approved safety glasses and shoes while attending all training classes. Non-prescription safety glasses will also be supplied by Wolf if necessary.

### LOGISTICS

Wolf Robotics provides lunches on full-day training (typically Monday-Thursday) in Fort Collins. Half day training days (typically Friday), lunches are not provided.
Wolf Robotics is located roughly 65 miles (1 hour drive) North of Denver International Airport. Directions and a list of preferred hotels and restaurants is available upon request.



# ABB BASIC ROBOTIC PROGRAMMING

## FOR WRITING NEW PRODUCTION PROGRAMS

### OBJECTIVES

Fundamental education for students who will be writing new production programs for ABB Robotics systems. Students will leave with knowledge of work object frames, tool center point, jogging the robot in multiple coordinate systems, program structure using modules and routines.

**Who should attend? This training class is tailored for robot programmers or operators who are allowed to create and modify current production part programs.**

This course will teach:

- Robot Jogging
- Basic program structure
- How to create, modify, save, and load programs
- Use of ABB Flex Pendent
- Basic weld instructions

**Content: 10% classroom, 90% hands-on equipment**

### PREREQUISITES

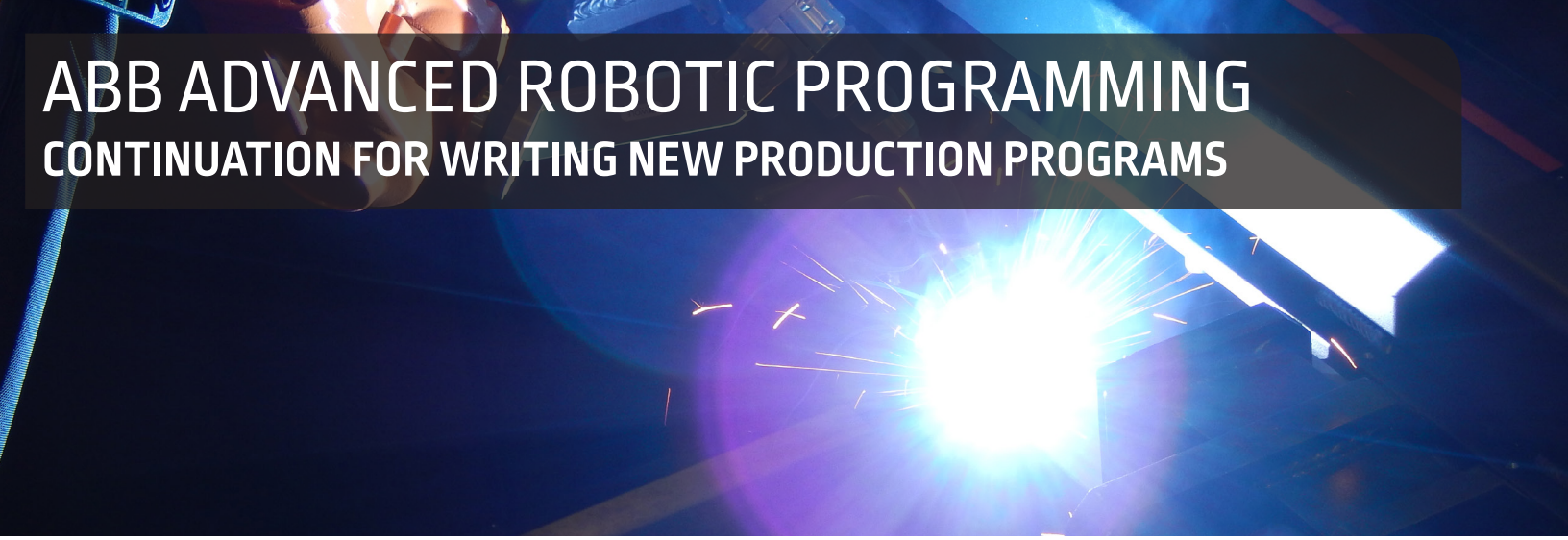
GMAW welding experience is preferred. Basic PC skills and knowledge of Windows based operating system.

### SCHEDULE

4 1/2 Days
8 AM to 4 PM Monday-Thursday 8:00 AM to 11:30 AM on Friday

### COST

At Wolf Robotics training facility: $1,990 per student plus $100 for optional test per student. (results of test will be sent to you)
On-site: On-site duration is typically reduced to 3 ½ days to allow Wolf Robotics instructor travel days on Mon. & Fri.
Recommend only 2 persons per teach pendant for effective training on-site.
USA $9,450 1st shift and for $9,950 2nd & 3rd shifts
Canada or Mexico $9,950 1st shift



# ABB ADVANCED ROBOTIC PROGRAMMING

## CONTINUATION FOR WRITING NEW PRODUCTION PROGRAMS

### OBJECTIVES

This course is a continuation for programmers who will be writing new production programs for ABB robotic systems. Students will leave with knowledge of work object frames, coordinated motion, searching, robotic GMAW welding, th-ru-arc tracking and multi-pass welding.

**Who should attend? This course is tailored for experienced programmers.**

This course will teach:

- How to program and operate robotic advanced functions
- Tactile searching and part displacement
- Load and unload instructions
- Multi-pass weld instruction (including replaying of stored welds)
- Weld error recovery setup
- Use of coordinated user frames and work objects

**Content: 10% classroom, 90% hands-on equipment**

### PREREQUISITES

GMAW welding experience. Basic PC skills and knowledge of Windows based operating system. Prior attendance of the ABB Basic Programming class. Programming experience will be determined per case basis.

### SCHEDULE

4 1/2 Days
8 AM to 4 PM Monday-Thursday 8:00 AM to 11:30 AM on Friday

### COST

At Wolf Robotics training facility: $2,500 per student plus $100 for optional test per student. On-site: On-site duration is typically reduced to 3 ½ days to allow Wolf instructor travel days on Mon. & Fri.
Recommend only 2 persons per teach pendant for effective training on-site.
USA $9,450 1st shift and for $9,950 2nd & 3rd shifts
Canada or Mexico $9,950 1st shift

# ABB ROBOTSTUDIO

## LEARN ROBOTSTUDIO FOR OFFLINE PROGRAMMING

### OBJECTIVES

This course is for programmers with little or no RobotStudio experience to offline programming on the ABB platform. The course consists of several "Course Exercises" that students will complete using the information learned during class. The course exercises are designed to developed students skills learned during lecture. If time permits, the training will also cover basic programming within the student's unique virtual station. Students wanting to take this class should have some basic computer skills, CAD experience is especially helpful and knowledge of the ABB platform. Students should provide their own computer for the training. A loaner laptop may be provided upon request a minimum of 1 week prior to the training.

**WHO SHOULD ATTEND? This course is tailored for experienced programmers and CAD engineers interested in offline programming.**

This course will teach:

- Basic RobotStudio navigation and programming
- Offline programming best practices for arc welding with external axis
- Arcweld Power Pack programming
- Program simulation

**Content: 100% classroom, RobotStudio**

### PREREQUISITES

GMAW welding experience. Prior attendance of the ABB Basic Programming class. PC literacy is a must.

### SCHEDULE

4 1/2 Days
8 AM to 4 PM Monday-Thursday 8:00 AM to 11:30 AM on Friday

### COST

At Wolf Robotics training facility: $4,400 for 1 student, $2,200 each with two or more students
On-site: On-site duration is typically reduced to 3 ½ days to allow Wolf instructor travel days on Mon. & Fri. Loaner laptops are not available when doing class on-site.
USA $9,450 1st shift only
Canada or Mexico $9,950 1st shift only

# ABB ELECTRICAL/MAINTENANCE

## LEARN HOW TO KEEP YOUR ROBOT RUNNING SMOOTHLY

### OBJECTIVES

This electrical and maintenance training covers the major elements of a typical robotic welding system with an emphasis on preventative maintenance and troubleshooting techniques. This course is focused on both ABB and Wolf system electrical schematics. On-site class will also cover indicated mechanical items on your specific robotic system.

**WHO SHOULD ATTEND? This course is tailored for robot cell technicians, maintenance personal, and electricians.**

This course will teach:

- Preventative maintenance best practices on ABB systems
- Electrical Troubleshooting on ABB robots
- Basic robot jogging

**Content: 15% classroom, 85% hands-on equipment**

### PREREQUISITES

Electrical maintenance experience is required along with the ability to read electrical schematics, and electrical troubleshooting skills

### SCHEDULE

3 1/2 Days
8 AM to 4 PM Tuesday-Thursday 8:00 AM to 11:30 AM on Friday
Students can travel on Monday & Friday afternoon.

### COST

At Wolf Robotics training facility: $4,400 for 1 student, $2,200 each with two or more students
On-site: Recommended only 2 persons per teach pendant for effective training on-site.
USA $9,450 1st shift $9.950 2nd & 3rd shifts
Canada or Mexico $9,950 1st shift

# ABB CELL OPERATION CLASS I
## NO PROGRAMMING ACCESS

### OBJECTIVES
The objective is to teach a robot operator how to operate a pre-engineered robotic system without covering robot programming. Students will learn to properly change weld consumables, basic cell maintenance, and trouble shooting in order to keep the robot system running. Operators will also learn how safety devices function on one of our in house Wolf Robotics cells.

**WHO SHOULD ATTEND? This class is tailored for system operators who are NOT allowed to make program modification to existing part production programs. No programming access.**

This course will teach:
- Basic robot jogging and movements
- Usage of Wolf Cell Controller
- Safety error identification

**Content: 10% classroom, 90% hands-on equipment**

### PREREQUISITES
Application process knowledge (Welding, Cutting, etc.), PC exposure (Preferably Windows Based), High School or equivalent.

### SCHEDULE
3 Days
8 AM to 4:30 PM Tuesday-Thursday
Travel can be done on Monday and Friday

### COST
At Wolf Robotics training facility: $1,990 per student
On-site: On-site duration is typically reduced to 3 ½ days to allow Wolf instructor travel days on Mon. & Fri. Recommended only 2 persons per teach pendant for effective training at your facility.
USA $9,450 1st shift only
Canada or Mexico $9,950 1st shift only

# FANUC® BASIC PROGRAMMING
## FOR WRITING NEW PRODUCTION PROGRAMS

## OBJECTIVES
Fundamental education for students who will be writing new production programs for Fanuc Robotics systems. Students will leave with knowledge of frames, tool center point, jogging the robot in multiple coordinate systems, program structure using teach pendant.

**Who should attend? This training class is tailored for robot programmers or operators who are allowed to create and modify current production part programs.**

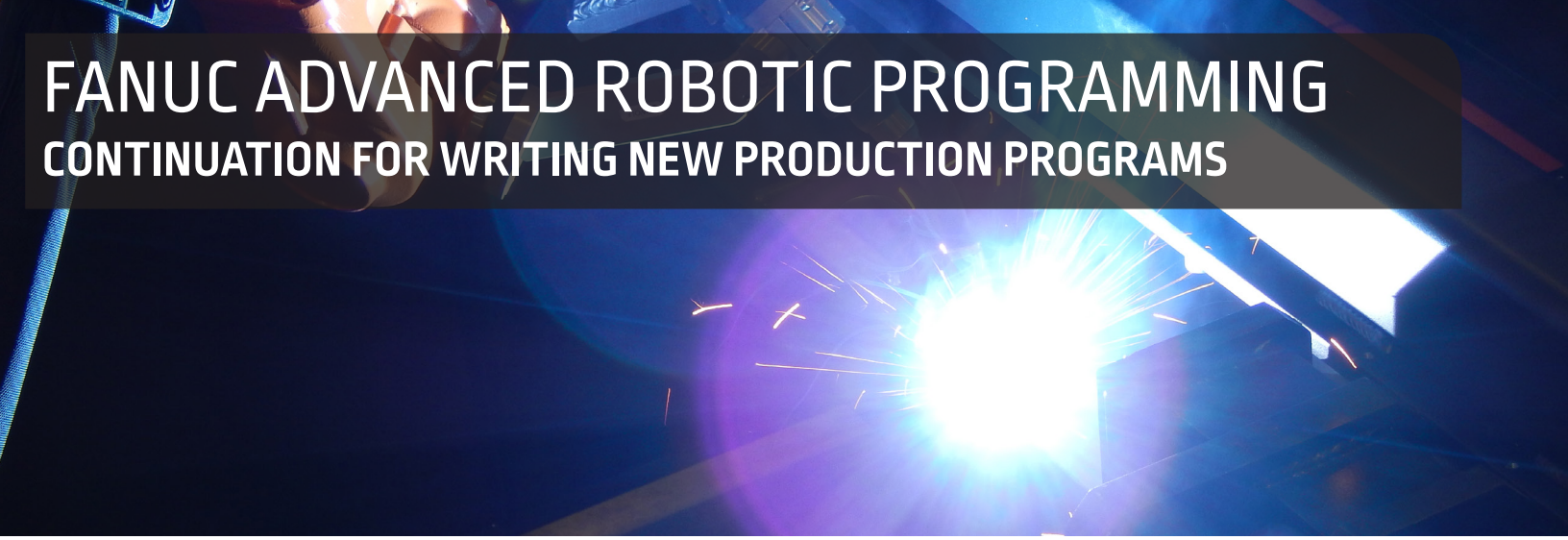
This course will teach:
- Robot Jogging
- Basic program structure
- How to create, modify, save, and load programs
- Use of Fanuc Teach Pendent
- Basic weld instructions

**Content: 10% classroom, 90% hands-on equipment**

## PREREQUISITES
GMAW welding experience is preferred.

## SCHEDULE
4 1/2 Days
8 AM to 4 PM Monday-Thursday 8:00 AM to 11:30 AM on Friday

## COST
At Wolf Robotics training facility: $1,990 per student plus $100 for optional test per student. (results of test will be sent to you)
On-site: On-site duration is typically reduced to 3 ½ days to allow Wolf Robotics instructor travel days on Mon. & Fri. Recommend only 2 persons per teach pendant for effective training on-site.
USA $9,450 1st shift and for $9,950 2nd & 3rd shifts
Canada or Mexico $9,950 1st shift



# FANUC ADVANCED ROBOTIC PROGRAMMING

## CONTINUATION FOR WRITING NEW PRODUCTION PROGRAMS

### OBJECTIVES

This course is a continuation for programmers who will be writing new production programs for Fanuc robotic systems. Students will leave with knowledge of frames, coordinated motion (if equipment is available), searching, robotic GMAW welding, thru-arc tracking and multi-pass welding.

**Who should attend? This course is tailored for experienced programmers.**

This course will teach:

- How to program and operate robotic advanced functions
- Tactile searching and part displacement
- Load and unload instructions
- Multi-pass weld instruction (including replaying of stored welds)
- Weld error recovery setup
- Use of coordinated user frames and work objects
- Shift Utliity

**Content: 10% classroom, 90% hands-on equipment**

### PREREQUISITES

GMAW welding experience. Programming experience will be determined per case basis.

### SCHEDULE

4 1/2 Days
8 AM to 4 PM Monday-Thursday 8:00 AM to 11:30 AM on Friday

### COST

At Wolf Robotics training facility: $2,500 per student plus $100 for optional test per student. On-site: On-site duration is typically reduced to 3 ½ days to allow Wolf instructor travel days on Mon. & Fri.
Recommend only 2 persons per teach pendant for effective training on-site.
USA $9,450 1st shift  and for $9,950 2nd & 3rd shifts
Canada or Mexico $9,950 1st shift

# CRAW PREPARATION TRAINING
## WE'RE A CRAW APPROVED TESTING CENTER

### OBJECTIVES
Wolf Robotics offers a 3-day preparation class prior to the AWS Certified Robotic Arc Welding Operator or Technician (CRAW-O or CRAW-T) certification. The CRAW preparation training is optional for the certification, but recommended. We typically devote the first 3 days (Mon.-Wed.) to training and the 4th day (Thur.) to the examination when conducting the training. The CRAW certification consists of a written and performance (hands-on) examination. Each exam is limited to ~2 hours.
The CRAW training is performed on ABB robots only, but the 3 day preparation course is designed to prepare robotic welding personnel, even if their area of expertise is a different robot brand.
All AWS application(s) must be submitted no later than three weeks prior to the examination date. If received less than three weeks prior to the examination date, but no less than two weeks prior to the exam, then a fast track fee of $250 will be charged. Applications received less than two weeks prior to the exam date will not be accepted. AWS approval is required prior to reserving seats in a training class.

**WHO SHOULD ATTEND? This course is tailored for students wanting to achieve CRAW-O or CRAW-T certification.**

This course will teach:
- Safe cell operation
- How to reset safety and recover from a safety violation
- Basic weld errors
- How to properly jog ABB robot
-

**Content: 10% classroom, 90% hands-on equipment**

### PREREQUISITES
Students must meet all of the AWS requirements per their website at http://www.aws.org/certification/detail/certified-robotic-arc-welding prior to requesting training.

### SCHEDULE
3-5 Days
8 AM to 4 :30 PM Monday-Wednesday
Exam performed on Thursday or Friday.
Classes scheduled "By Request"
*Subject fo AWS changes

### COST
CRAW 3 Day Preperation with Certification $2,500 plus $350 AWS Fee (FEE IS MEMBER PRICE & PAID DIRECTLY TO AWS)
CRAW Certification only $575 plus $350 AWS Fee (FEE IS MEMBER PRICE & PAID DIRECTLY TO AWS)

The AWS Certification Program for Robotic Arc Welding - Operators and Technicians (CRAW) allows many welding personnel employed in various welding sectors to measure themselves against standards for their occupation. It also signifies that the CRAW Operator or Technician has demonstrated the capability of working with various codes, standards, and specifications. Since proof of active practice or re-examination is required every three years, certification also signifies that the CRAW Operator or Technician is current with the welding industry.

## CRAW Approved Testing Centers

AWS CRAW Approved Testing Centers (ATCs) prepare individuals for certification and administer both the practical and written exams at their respective facilities.

Do you have the necessary arc welding equipment to test individuals to the requirements of the Certified Robotic Arc Welding (CRAW) program? If so, consider applying for AWS Approved Testing Center (ATC) designation. As a designated CRAW ATC, your facility enjoys valuable industry recognition, including your AWS website listing and periodic Welding Journal magazine advertising. Visit the ATC Facility Accreditation information page: CRAW APPROVED TESTING CENTER.

## Requirements for CRAW Exam Qualification

The AWS D16.4:2005 Specification for the Qualification of Robotic Arc Welding Personnel and the QC19, Specification for AWS Certification of Robotic Arc Welding Personnel sets the experience and education requirements for taking the CRAW examination and provides training recommendations:

### EDUCATION

High school graduate or have achieved a state or military approved high school equivalency (e.g., GED).
Operator and Technician

### MANUAL OR SEMIAUTOMATIC ARC WELDING PROCESSES AS A WELDER

At least 6 months.
Operator and Technician

### EXPERIENCE AS A WELDER (INCLUDING ROBOTIC AND AUTOMATIC OPERATOR)

Includes the before mentioned 6 months of manual or semiautomatic arc welding.
Operator = 12 months
Technician = 18 months

### EXPERIENCE IN AN OCCUPATIONAL FUNCTION THAT HAS A DIRECT RELATIONSHIP TO WELDING OR ROBOTICS

Includes welder experience listed above and other functions such as inspector or quality control.
Operator = 3 or more years
Technician = 5 or more years

### POST-SECONDARY SUBSTITUTION FOR EXPERIENCE

Post-secondary education in welding, technical, robotic, technology, electrical, or engineering discipline, may be substituted for an equal number of years, but not more than 2 years.

Post-secondary education may not be substituted for or credited toward the before mentioned experience requirements of (6) months of manual or semiautomatic arc welding processes as a welder.
Operator and Technician
Post-secondary education may not be substituted for the months of experience as a welder.
Operator = 12 months (including robotic and automatic operator)
Technician = 18 months (including robotic and automatic operator)

### CWI CERTIFICATION

Hold current CWI (Certified Welding Inspector) certification. Current CWI certification is a requirement for the CRAW-T certification. Failure to achieve and/or maintain CWI certification will result in the CRAW-O certification ONLY.
Technician only.

### TRAINING RECOMMENDATIONS

Operator: Completion of original equipment manufacturer or equivalent Robotic Programming Course.

Technician: Receive instruction in the operation of quality measuring tools including applicable computer software for measuring the weld cross section. Also, be familiar with personal computers

# CUSTOM ROBOTIC TRAINING
## MEETING YOUR TRAINING NEEDS

## Train your employees using your robotic welding systems

Recognizing that every manufacturing business has its own unique set of challenges, our expert trainers at Wolf Robotics can work with you to develop custom courses tailored to meet the specific needs of your employees and your operation.

Your business can see an immediate return on your investment as your employees put their training to the test right away.

### We can customize any course or program we offer to meet the specific needs of your organization including:

- Heavy Welding / Adaptive GMAW Training
- Optical Tracking with ServoRobot laser camera set up and calibration
- Cycle Time Reduction/Study - For part weld and process cycle time
- Process Development - Specific set up of weld process parameters
- Multimove Training

### ON-SITE COST

USA
$9,450 1st shift
$9,950 2nd & 3rd shifts
Canada or Mexico
$9,950 1st shift
Wolf instructor travel days are Mon & Fri

### SCHEDULE

3 1/2 Days
8 AM to 4 PM Tuesday – Thursday 8:00 AM to 11:30 AM on Friday*
*End time is dependent upon flights available.
Recommend only 2 persons per teach pendant for effective training on-site.

## QUALITY, COST AND CUSTOMIZATION

**As a leader in robotic welding education, Wolf Robotics understands how to engage students both in the classroom and at the teaching pendant. Our unique expertise ensures that our custom training programs provide your employees with:**

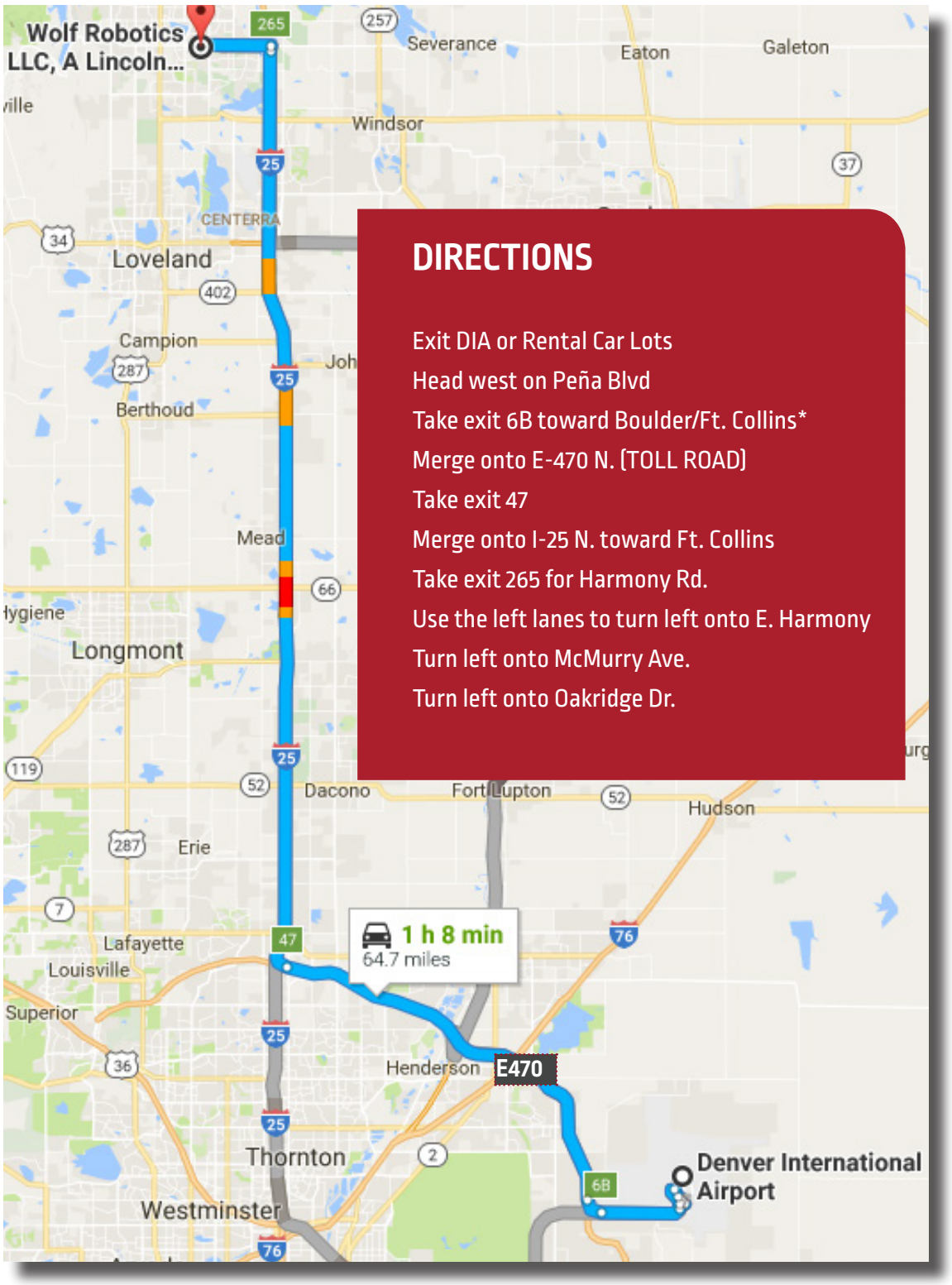
- **Practical knowledge and skills that improve job performance**
- **Engaging instructors with years of robotic welding experience**
- **The highest quality training, where you want it, when you want it and at a competitive price**

## How we work together...

We offer fully customized robotic training solutions addressing the manufacturing needs and learning objectives of our customers. We understand that your business and training goals are unique, and many operations, such as yours, may need a very customized training course for improving production time, employee performance and product quality.

Starting with conversations between our expert training team and your key stakeholders, we build your training from the ground up. We'll work together to identify and understand your training objectives and goals. From there, we'll select the specific skills, strategies and the appropriate delivery style to accomplish the objectives, develop the content, and activities for participation. You'll have an opportunity to discuss your training and development objectives with our hand-selected trainer who will incorporate your input into the training day.

# TRAVELING TO WOLF ROBOTICS
## THE DETAILS




## DIRECTIONS

Exit DIA or Rental Car Lots
Head west on Peña Blvd
Take exit 6B toward Boulder/Ft. Collins*
Merge onto E-470 N. (TOLL ROAD)
Take exit 47
Merge onto I-25 N. toward Ft. Collins
Take exit 265 for Harmony Rd.
Use the left lanes to turn left onto E. Harmony
Turn left onto McMurry Ave.
Turn left onto Oakridge Dr.

## HOTELS

* Request Wolf Robotics Special Rate

Hampton Inn*
1620 Oakridge Dr.
970-229-5927

Courtyard by Marriott*
2921 E. Harmony Rd.
970-267-9000

Comfort Suites
1415 Oakridge Dr.
970-206-4597

Holiday Inn Express
1426 Oakridge Dr.
970-225-2400

Homewood Hilton Suites
1521 Oakridge Dr.
970-225-2400
Free transport to Wolf

Marriott Hotel
350 Horsetooth Rd.
970-226-5200

Hilton Hotel
425 W. Prospect Rd.
970-482-2626

Hilton Garden Inn
2821 E. Harmony Rd.
970-225-2900

Residence Inn
1127 Oakridge Dr.
970-223-5700

Candlewood Suites
314 Pavilion Ln.
970-223-0200

Embassy Suites
4705 Clydesdale Pkwy.
Loveland, CO 80538 970-612-2385

## WHAT TO DO IN FORT COLLINS, CO

1. Brewery Tours: New Belgium and Odell's breweries both call Fort Collins home. Make sure to make reservations in advance.

2. Fly Fishing: Cache La Poudre river is a short drive away. You'll want to add a day to your trip if your going to spend some time enjoying our world-renown fishing.

3. Hiking: Horsetooth Mountain Open Space is only 15 minutes away. Enjoy an early morning or evening hike.

4. Rocky Mountain National Park: If you have a weekend, take advantage of being 1 hour away from Rocky Mountain National Park. You'll see deer, elk and maybe even mountain sheep.

5. Old Town Fort Collins: A short 15 minute drive puts you in picturesque Old Town. You'll find great shopping and yummy eats. Disneyland Main Street was designed after Fort Collins Old Town, see if you can see any resemblance.


# ABOUT WOLF ROBOTICS TRAINING

At Wolf Robotics we understand the importance of having properly trained personnel to help ensure that your company is operating at optimal performance. Our training courses will provide your personnel with the skills and understanding they need to keep your robot and production running at its full potential.

The expert training instructors at Wolf work one-on-one with your personnel to provide them with a hands-on and comprehensive learning experience. With over 50 years of knowledge and experience, our training staff is very well qualified to provide your personnel with the highest quality training.

In 2015, Wolf Robotics was acquired by Lincoln Electric, a world-leader in the design, development and manufacture of arc welding products, robotic arc welding systems, plasma and oxyfuel cutting equipment and has a leading global position in the brazing and soldering alloys market.

Wolf Robotics
A Lincoln Electric Company

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LINCOLN® ELECTRIC