



Educational Resources and Product Guide

Welding



The Miller® LiveArc™ Performance Welding Management System

Careers

Training in welding is mission critical. It's a must to build operator skills faster, screen job applicants, even improve existing techniques for today's demands. For Chris Lacenski and Doug Tennant, welding student and instructor at Northeast Wisconsin Technical College, combining a weld simulator with a live arc MIG welder is the solution. **With LiveArc, we build careers.**

Learning with LiveArc changes everything. See it in action:

MillerWelds.com/livearc



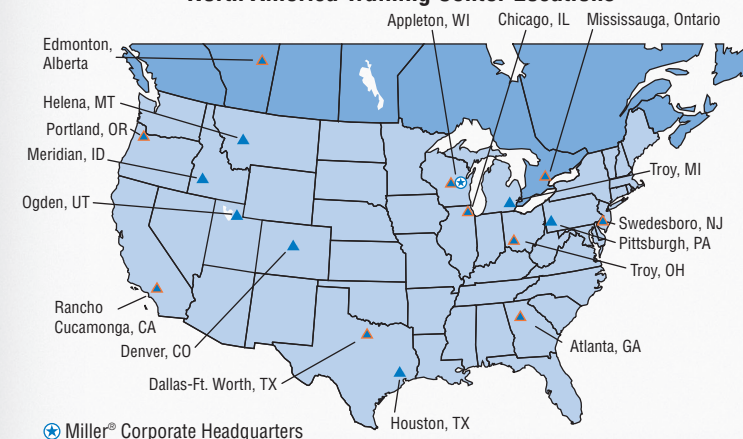
ITW Welding: Committed to the Future of Welding

Training in welding is mission critical — and weld instructors like you are helping the next generation of welder operators shape our future. Miller and Hobart are committed to the future of welding, just as you are. That's why we work to provide you with the resources and tools you need to educate your students for today's demands and tomorrow's needs.

From instructional classes and class materials to apps and weld training systems, you'll find a wide variety of Miller and Hobart welding educational aids within this pamphlet that can help you prepare your students for the future — and their roles in improving our world.

Welding Instructor Seminars

North America Training Center Locations



These seminars are designed to provide welding instructors in the public, private, and industrial sectors with an opportunity to learn about new innovations in welding equipment and process developments in welding. The seminars consist of a series of classroom presentations, followed by hands-on lab activities. Throughout the seminars, participants will also be able to review the latest training materials available from Miller and Hobart. These materials include books, training aids, videos, computer and Internet-based programs.

Due to the variety of programs offered, please call for a description of the course offered in the location that you wish to attend.

To register Contact Peggy Moehn, 920-735-4016 or email pmoehn@millerwelds.com

Welding Publications

Weld Process and Filler Metal Publications

Available in both English and Spanish, these full-color booklets were developed for the purpose of providing a basic set of educational materials that can be used individually or in a classroom setting that are continually updated to contain the latest technologies and developments .



These publications are available for free as an Epub for Apple and Android mobile devices.

Apple Users: Available free through iBooks

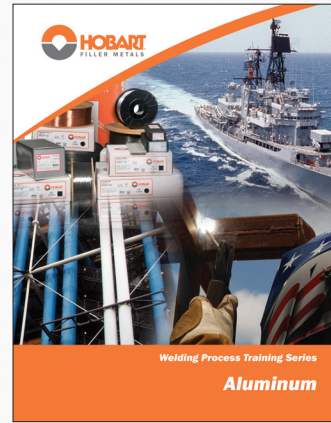
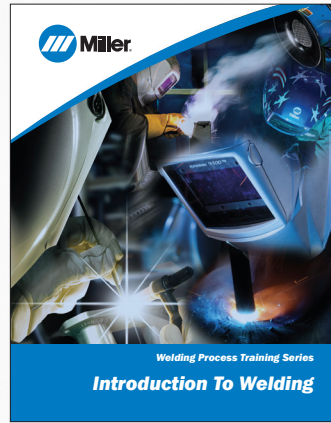
- Link to the Applet E-Pubs: <http://tinyurl.com/hwhpvoh>
- Downloading instructions:
 - Open iBooks on your device
 - Click search in the bottom right
- Type "Miller Electric" in the search bar at the top of the screen
- Download the E-pub

Android Users: Available for \$.99-\$1.99 through Amazon

- Link to the E-Pubs: https://www.amazon.com/s/ref=dp_byline_sr_ebooks_1?ie=UTF8&text=Miller+Electric&search-alias=digital-text&field-author=Miller+Electric&sort=relevancerank
- Instructions for reading E-Pubs: <https://www.amazon.com/gp/digital/fiona/kcp-landing-page>

These publications are also available in printed format.

Description	Part #	Pricing
Introduction To Welding	247358	\$19.00
Welding Safety*	247359	\$4.00
Basic Electricity For Welding*	247360	\$14.00
Engine Driven Welding Power Sources	247362	\$13.00
Shielded Metal Arc Welding*	247363	\$17.00
Gas Tungsten Arc Welding*	250833	\$29.00
Gas Metal Arc Welding*	250834	\$50.00
Metal Cutting	250836	\$15.00
Troubleshooting Welding Processes	250837	\$27.00
Submerged Arc Welding	265558	\$16.00
Introduction To Metals	247380	\$14.00
Low Alloy Steel	247842	\$10.00
Stainless Steel	247843	\$27.00
Aluminum	247844	\$18.00
Hardfacing	250838	\$15.00
*Educational Package	211611	\$100.00
Guidelines for Shielded Metal Arc Welding (SMAW)	155095E	FREE
Guidelines for Gas Metal Arc Welding (GMAW)	154557C	FREE
Guidelines for Gas Tungsten Arc Welding (GTAW)	215994D	FREE
Pipe Welding Handbook	M247250B	FREE
Welding & World of Metals	003336A	FREE
Hobart® Helpful Hints to Basic Welding		FREE



Discounted Education Pkg.



Educational Package - #211611

- (5) Miller Process Books:
 - Welding Safety Book
 - Basic Electricity for Welding
 - Shielded Metal Arc Welding
 - Gas Tungsten Arc Welding
 - Gas Metal Arc Welding
- (6) Posters
 - Safety Warning
 - Good weld/Bad weld
 - Welding Careers
 - Welding Positions
 - Welding Joints
 - MIG Processes

(3) Miller Calculators — Stick, MIG, and TIG

Publication ordering information

Call: 1-866-931-9732 or Email: literature@MillerWelds.com

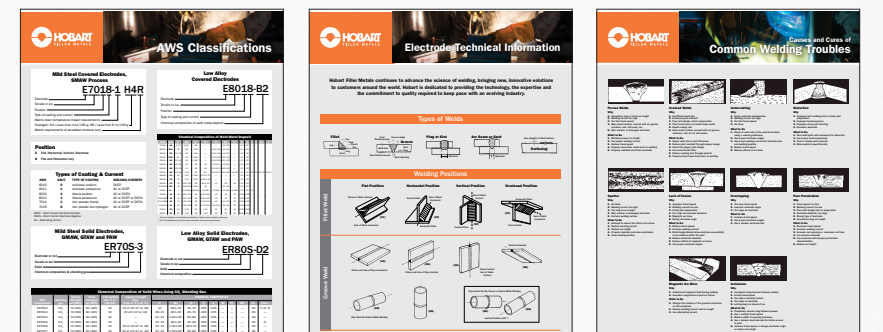
Classroom Posters

Miller Posters



Miller Posters	Part #	Pricing
FCAW-G	263872	FREE
FCAW-S	263873	FREE
Welding Positions	261666	FREE
Welding Joint Types	261664	FREE
GMAW SCMT DRAG	263868	FREE
GMAW SCMT PUSH	263869	FREE
GMAW Spray	263870	FREE
GMAW PULSE	263871	FREE
Good & Bad Welds	211604	FREE
Good & Bad Welds—Spanish	257992	FREE
MIG Processes	261665	FREE
PipeWorx Pulse Fill and Cap	272426	FREE
PipeWorx RMD Root	272427	FREE
Safety	172103	FREE
OXY-Fuel Safety #1	270131	FREE
OXY-Fuel Safety #2	270132	FREE
OXY-Fuel Safety #3	270133	FREE
OXY-Fuel Safety #4	270134	FREE
OXY-Fuel Safety #5	270135	FREE
OXY-Fuel Safety #6	270136	FREE
Complete Set of Miller Classroom Posters (18)	274532	FREE

Hobart® Posters



Hobart Posters	Part #	Pricing
Oven Storage & Reconditioning of Stick Electrodes	275468	FREE
AWS Classifications	275469	FREE
Tension, Strength & Impact Tests	275471	FREE
Electrode Technical Information	275472	FREE
Causes and Cures of Common Welding Troubles	275473	FREE
Complete Set of Hobart Classroom Posters (5)	275474	FREE

Poster ordering information

Call: 1-866-931-9732 or E-mail: literature@MillerWelds.com

Multimedia Resources

iPad® and iPhone® Learning Applications



iPad and iPhone Applications

Currently available in the App Store®, there are three FREE apps that interactively discuss the fundamentals of the welding process. You will find videos, images, and interactive pages that will display information when touched. Search for *Miller Electric Mfg. Co.* in the App Store.

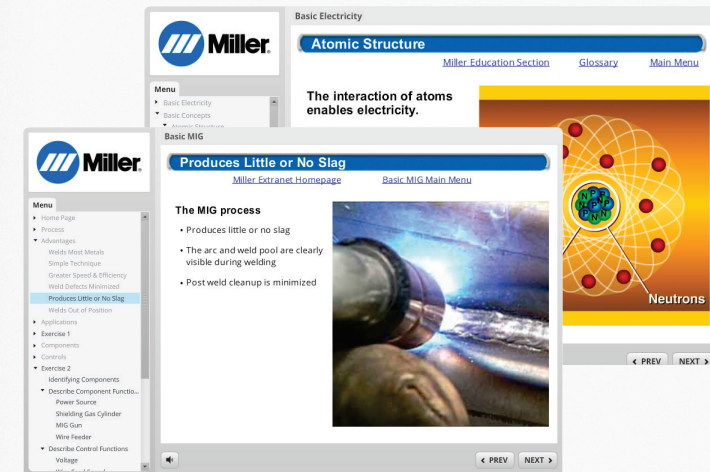
Additional Apps

- Mobile Weld Settings Calculator
- Miller Discussion Forums
- Mobile Owners Manuals

Available for Android and in the App Store



Online Learning Modules



Students can learn about the basics of electricity and GMAW through online learning modules.

<https://www.millerwelds.com/resources/welding-resources/mig-welding-resources/basic-mig>

<https://www.millerwelds.com/resources/welding-resources/basic-electricity>

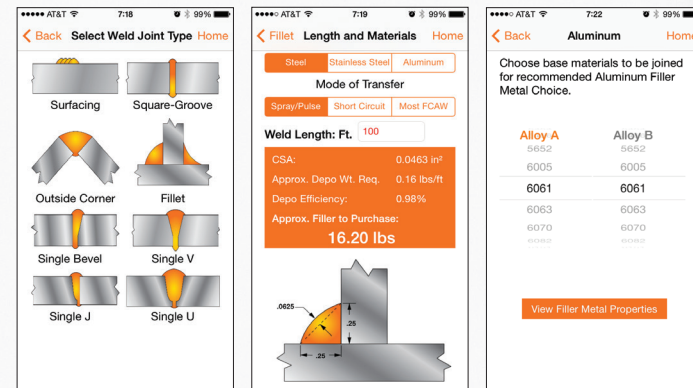
Presentations and Quizzes

Web based PowerPoint presentations are available for instructors, assisting them in classroom discussions. Topics range from basic electricity for welding, SMAW, GTAW, GMAW, aluminum, etc. The presentations coincide with the Weld Process and Filler Metal publications available in print and epub format. When finished delivering the PowerPoint, quizzes are available to gauge student learning.

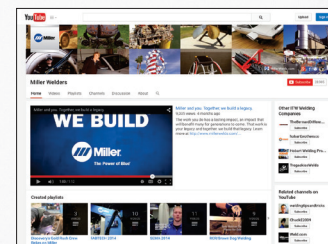
<https://www.millerwelds.com/resources/welding-resources/presentations-and-quizzes>

Hobart Filler Metal Calculator

Hobart® Filler Metals Selector for iPhone, iPad and Android now available on the App Store®. The Hobart Filler Metal Selector and Calculator is a FREE quick reference tool with a number of functions. These functions include a Filler Metal Selector for: Aluminum, Carbon Steel, Stainless Steel. A Heat input calculator, Hardfacing Product Cross Reference tool, and a Filler Metal Volume Calculator.



Videos



VISIT OUR YOUTUBE CHANNEL:

<https://www.youtube.com/user/nielsmiller>

Instructor Website

The Instructor web page is a useful tool for instructors to find information and resources for the classroom and the lab. Use this site to find welding training related articles, welding resources for the classroom, sign up for the Instructor e-newsletter, and find recommended equipment and filler metals for the classroom.

<https://www.millerwelds.com/applications/industry/welding-instructors>

The website features a top navigation bar with links for Miller, Resources, Support, About, Sign In, Shopping Cart, Where to Buy, and Search. Below this is a secondary menu for Equipment, Safety, Accessories, Consumables, and Applications. The main content area is titled 'Industry Welding Instructors' and includes a grid of icons for MIG (GMAW) Welding, TIG (GTAW) Welding, Stick (SMAW) Welding, Metal Cutting, Safety Precautions, Basic Electricity, Weld Setting Calculators, and Welding Dictionary. There is also a 'Videos' section with three featured videos: 'Brown Dog Welding: Tips for Beginner TIG Welders', 'Ingalls Shipbuilding and the Dimension NT 450 ArcReach System', and 'Miller XMT ArcReach System - Remote Control Power Source Without a Cord'. A 'Products' section highlights Linear Training System, Training Materials, Helmet & Welding Protection, and Fume Extraction. The footer contains links for Partner Login, Terms of Use, Privacy Policy, and Miller Electric Mfg. Co.

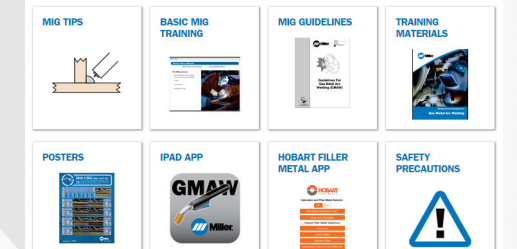
Find best practices and welding training related articles.

Industry Demands Spark Welding Technology Changes

The fabrication and manufacturing industries are constantly evolving, challenging companies to seek out new technologies to help them stay competitive. From the introduction of new materials to an increased need for welding automation, weld data monitoring and more, changes are driving companies to acquire solutions to help them maintain the highest levels of quality and productivity.



MIG Welding Resources



Find welding resources for the classroom.

Find products for the welding lab and classroom, and search for a local Authorized Miller Distributor to see if you can save using the Educational Discount.



Sign up for the Instructor e-newsletter.

Education and Training Solutions



**From classroom to laboratory.
From laboratory to career.**

Miller welding education systems help weld students build skills and confidence, keeping them fully engaged and delivering immediate feedback. Using the Miller® AugmentedArc™ augmented reality welding system in the classroom, beginner and intermediate-level students can experience the most realistic multiprocess welding simulation available — and then seamlessly transition to the Miller® LiveArc™ welding performance management system in the laboratory for the industry's most complete live arc experience. When it's time to interview for that first job — or maintain qualifications in an existing job — LiveArc can evaluate candidates and employees, too.

The best tools build the best weld operators

Miller welding education systems deliver exceptional benefits:



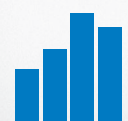
Optimize instructor efficiency



Deliver real-time feedback



Reduce overall training time



Access weld operator skills and performance



Minimize material cost



Enhance job candidate recruiting and screening



Build a larger, more-skilled workforce

Education and Training Solutions

AugmentedArc™ Augmented Reality Welding System

The industry's most realistic welding simulation system

The AugmentedArc system improves the efficiency and economy of classroom education with augmented reality technology that's ideal for beginner and intermediate-level students. Users wear a specially designed helmet that shows them images of the real world, augmented with computer-generated images of metal workpieces, weld arcs and weld beads. The result is a simulation that closely resembles live-arc welding — without using an actual arc or consuming wire, shielding gas or coupons.



LiveArc™ Welding Performance Management System

The industry's most complete live arc welding training system

Ideal for lab training, the Miller LiveArc welding performance management system provides both a simulation/pre-weld setup mode as well as a live-arc training mode, allowing the user to gain experience and build techniques in pre-weld exercises before seamlessly transitioning into real welding on GMAW, FCAW and SMAW processes.



**For more information visit:
MillerWelds.com/trainingsolutions**

Miller® Product Offering

Miller is committed to the future of welding and providing you with the resources and tools you need to educate your students. For special educational pricing, visit an authorized Miller welding distributor.

Multiprocess



XMT® Series

Portability and excellent multiprocess arc performance make the XMT family the most popular in the industry. With many models to choose from the XMT family has the right solution for your business.



PipeWorx Welding System

Simplicity-driven performance for pipe fabrication with simple process setup, and quick process changeover in a streamlined system.



Dimension™ Series

Multiprocess performance in a reliable package. Designed for demanding applications, with 100 percent duty cycle for extended arc-on time.



Shopmate™ 300 DX

An economical single-phase DC multiprocess power source that provides versatility and outstanding arc performance in CV mode (MIG) and CC mode (Stick and TIG).



Multimatic™ 215

Easy-to-use and versatile MIG, Stick and TIG welder that helps build skills. Color screen featuring Auto-Set™ Elite. This all-in-one welder connects to 120 or 240 volt input power. Welds up to 3/8 inch mild steel.

Stick



Maxstar® 210 STR

Provides maximum flexibility by automatically connecting to any input power while maintaining the best DC Stick welding performance in its class.



CST™ 280

Designed for Stick/TIG welding pipe and plate in the construction industry, this small, durable, goes-anywhere welder delivers 280 amps of superior Stick performance, up to 3/16 inch diameter. LiftArc™ delivers smooth TIG starts without high frequency.

Miller® Product Offering

TIG



Dynasty® Series

Advanced AC/DC TIG technology for all metals. Provides faster travel speeds, optimum arc and puddle control in a compact and mobile design.



Maxstar® Series

Industry standard DC TIG/Stick for exceptional welding performance. Compact designs offer superior arc performance and control that set new standards for productivity and weld quality, while lowering the cost of installation and operation.



Syncrowave® 210

Total system solution designed to meet your TIG and Stick welding process needs with optional MIG capabilities. This design features an operator-friendly interface and offers superior arc performance.



Weldcraft™ Series TIG Torches

Synonymous with versatility and performance, Weldcraft™ TIG torches can handle the most demanding TIG welding challenges. From 125-amp hand-held MicroTIG® torches to 900-amp machine-held water-cooled models, there's a Weldcraft torch for nearly every TIG application.

MIG



Millermatic® Series

Millermatic all-in-one MIG welders come in a variety of packages to fit your needs and budget in the classroom.

Plasma Cutters



Spectrum® Series

Spectrum plasma cutters provide big cutting power in portable packages.

Miller® Product Offering

Miller is committed to the future of welding and providing you with the resources and tools you need to educate your students. For special educational pricing, visit an authorized Miller welding distributor.

Engine-Driven



Bobcat™ Series

Cost-effective multiprocess machine with dependable power and weld output. Available in gas (EFI), LP, & diesel.



Trailblazer® Series

Unbeatable, smooth, stable arc performance and an independent welder and generator power system. Available in gas (EFI), LP, & diesel.

Submerged Arc



SubArc Digital Portable Welding System

SubArc Portable Welding System is a ready-to-weld submerged arc system for pressure vessel, pipe and welding that requires positioning equipment which can adapt to your application. - See more at: <https://www.millerwelds.com/equipment/welders/submerged-arc/subarc-portable-welding-systems-m30092#sthash.z5ITqAwm.dpuf>

Welding Automation



PA 250M Automation Solution

Small footprint, high productivity and ROI makes it ideal for first-time users with a lower volume of automation projects. The manually activated table allows you to control the table index, eliminating unexpected table motion and keeping operators safe.

Miller® Product Offering

Welding Safety and Health Additional models available on MillerWelds.com

HEAD & FACE



Classic Series

Helmets for the value minded welder. Models feature a 5.15 sq. in. viewing area, variable lens shades, industry-leading graphics and auto-on/off circuitry. Backed by Miller's 2 year warranty.

HAND & BODY



MIG (Unlined)

TIG

Work

Performance Gloves

Three-dimensional pattern provides an excellent fit, resulting in unprecedented comfort and dexterity. Premium materials enhance wear, extending glove life.

WELD FUME



FILTAIR 130



FILTAIR Capture 5



FILTAIR SWX

FILTAIR® Fume Extraction

The complete line Miller FILTAIR fume extractors are designed specifically for welding – drawing weld fumes away from the welder's breathing zone and keeping your facility clean. We offer many types of Fume Extraction equipment to best fit your environment and fume control needs.



Classic Cloth Apparel

Protect your welders with preshrunk, flame-resistant garments that features finished hems and reinforced stitching for enhanced durability. Barracuda style stand-up collar provides necessary neck protection. Available in jackets, sleeves, cape sleeves, bibs and aprons.



N95 Disposable Masks

Features a flame retardant outer layer that offers necessary protection for welding applications.



Starter & Performance Paks

Arc Armor Protection Paks group welding protection products into ultra-convenient packages appropriate for the hobbyist to the professional welder.

Hobart® Product Offering

Products Include:

▶ Hobart is pleased to support educational facilities with a measurable discount on filler metals through the distributor of their choice. This program includes stick electrodes, tubular wires and solid wires. Contact your distributor for full product list.



Hobart 418 Stick Electrode

Provides low-hydrogen, x-ray quality welds with self-peeling slag and low spatter. Excellent arc starts and re-starts. E7018



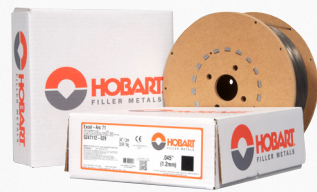
Hobart 335A Stick Electrode

Superior arc drive for deep joint penetration. Ideal for galvanized, dirty, or coated metals. E6011



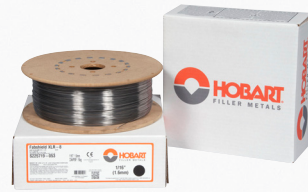
Hobart 610 Stick Electrode

Delivers consistent, superior arc control without fingernailing – from the first electrode to the last. Excellent vertical down capabilities. E6010



FabCO® Excel-Arc™ 71 Gas-Shielded Flux-Cored Wire

Low-hydrogen, high-penetrating weld deposit, along with best-in-class operability and easy slag removal. E71T-1



Fabshield® XLR-8 Self-Shielded Flux-Cored Wire

Excellent mechanical properties within a wide range of heat inputs. Usable for AWS D1.8 Demand Critical Welds. E71T-8



Quantum Arc™ 6 Solid Wire

Features high deoxidizer levels to weld through light rust or mill scale. Excellent wetting characteristics and feedability. ER70S-6

It's the tie that binds

SCIENCE + PEOPLE

Filler metals are more than just a component of welding – they are **The tie that binds science and people.**

You shape the future of welding with your students, training to make them more successful welders – the **people** part of welding.

The proper filler metal can make a welding process more efficient, more productive and more cost effective. Hobart Filler Metals collaborates with our customers to develop the right solutions. We provide the strength of **science** behind the weld.

Contact your distributor for more information about our educational program. Let us collaborate with you!

Bernard™ and Tregaskiss™ Product Offering

MIG Gun Product Offering

Equip your students with the same industrial-duty, semi-automatic MIG guns from Bernard that are used by top companies in agriculture, ship-building and fabrication shops across North America.



For special educational pricing, visit an authorized Bernard welding distributor.



BTB MIG Guns

Our rugged, flexible BTB MIG Guns are designed with maximum configuration options and the industrial grade performance that customers depend on.

One year manufacturer's warranty.

Amperages: 200, 300, 400, 500, and 600 amps

Cable lengths: 8, 10, 12, 15, 20, and 25 feet

Wire size range: 0.023" (0.6 mm) to 1/8" (3.2 mm)

See Bernard literature no. SP-BTB or visit BernardWelds.com/BTB



Fume Extraction MIG Guns

Maintaining a clean working environment is important and Bernard understands the need for a reliable fume extraction solution. Extract fumes at the weld using Bernard FILTAIR® or Clean Air™ Fume Extraction MIG Guns.

See Bernard literature no. SP-FFE (FILTAIR) & SP-CLA (Clean Air) or visit BernardWelds.com/FumeGuns



Dura-Flux™ Self-Shielded Flux-Cored Guns

For structural steel applications, bridge construction and heavy equipment repair, Bernard offers its 350 amp Bernard Dura-Flux Guns.

See Bernard literature no. SP-DF or visit BernardWelds.com/Dura-Flux

Automation Products

Teach your students about the importance of uptime and throughput in today's industrial manufacturing plants by equipping your facility's robotic cells with Tregaskiss Robotic MIG Guns and Peripherals.



For special educational pricing, visit an authorized Tregaskiss welding distributor.



TOUGH GUN™ CA3 MIG Guns

TOUGH GUN CA3 Robotic Air-Cooled MIG Guns are designed for dependable performance in high volume production environments. The new replaceable unicable increases uptime through faster replacement and extended service life.

See Tregaskiss literature no. SP-CA3 or visit Tregaskiss.com/CA3



TOUGH GUN TA3 MIG Guns

Designed for today's through-arm style robots, the TOUGH GUN TA3 Robotic Air-Cooled MIG Gun is designed for durability and ease of maintenance to ensure maximum production uptime and throughput.

See Tregaskiss literature no. SP-TA3 or visit Tregaskiss.com/TA3



TOUGH GUN TT3 Reamers

This robotic nozzle cleaning station is tough on spatter and operates reliably in even the harshest welding environments. NEW! TT3E Ethernet model provides greater control optimization, remote monitoring capability and faster troubleshooting to facilitate increased productivity.



ITW Welding



MillerWelds.com



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