



VIRTUAL TRAINING - REAL RESULTS

ACHIEVE A HIGHER STANDARD OF WELDING PERFORMANCE WITH VRTEX[®]

LINCOLN[®]
ELECTRIC

Experience Welding Training on a Whole New Level

Lincoln Electric's VRTEX® virtual reality arc welding trainers provide a powerful, cutting-edge solution for cultivating welding talent quickly and resourcefully. From superior graphics creating the most realistic and responsive welding puddles available, to exceptionally accurate sounds and movements, what can be learned virtually with VRTEX® seamlessly transfers into real-world, hands-on welding training.

VRTEX® Transport & 360 models available with no head set mode



VRTEX® Engage

- SMAW, GMAW and FCAW-S
- Includes universal welding handle with attachments for both a welding gun and a manual welding stick electrode holder
- K4299-1



VRTEX® Transport™

- Uni-gun™ device is used for SMAW, GTAW, GMAW and FCAW welding. TIG filler metal and adaptive current foot pedal included
- Practice flat, horizontal and vertical welds
- K4603-1 (Pallet) / K4603-3 (Crate)



VRTEX® Transport™ + Dual User

- Uni-gun device is used for SMAW, GTAW, GMAW and FCAW welding. TIG filler metal and adaptive foot pedal included
- Two of each device are included
- Dual stands allow for training two welders at a time on one machine
- K4633-1 (Pallet) / K4633-3 (Crate)

Best Seller, Best Value!



VRTEX® 360 Single User

- Retractable SMAW stick stinger, GMAW/FCAW gun and GTAW TIG torch, filler metal and adaptive foot pedal devices realistically simulate the look, feel and action of actual guns and torches
- Practice flat, horizontal, vertical and overhead 5G and 6G
- K4601-1 [Pallet] / K4601-3 [Crate]



VRTEX® 360+ Dual User

- Retractable SMAW stick stinger, GMAW/FCAW gun and GTAW TIG torch, filler metal and adaptive foot pedal devices realistically simulate the look, feel and action of actual guns and torches
- Two of each device are included
- Dual stands allow for training two welders at a time on one machine
- K4602-1 [Pallet] / K4602-3 [Pallet]

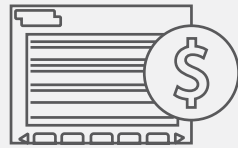
Why Choose VRTEX[®]?

Build confidence, reduce mistakes and train to weld in a variety of situations and orientations. VRTEX[®] creates a safe environment in addition to saving on material costs.

Practice repetitive welding without the time needed to tack plate and toss scrap.



**Reduce
Training Costs**



ROI Calculator

Track material usage on every weld with the VRTEX[®] Weldometer™



**42%
Certification
Rate Increase***



**23%
Faster
Training***



Safer

No metal, sparks, heat, gas or fumes



Mobile Learning



Remote Learning

Stream VRTEX use through video conference software



Lesson Mode

*Average increase using virtual reality equipment, according to Iowa State University study.

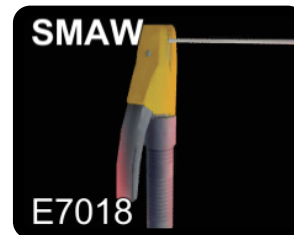
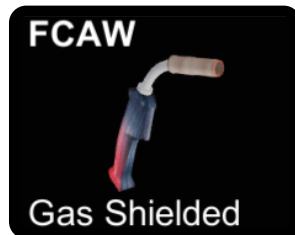
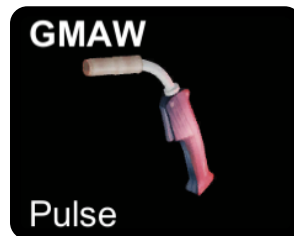
Welding Processes and Materials

Use VRTEX® to teach welders of varying skill levels to weld using the most common welding processes and materials.

Simulated Processes:

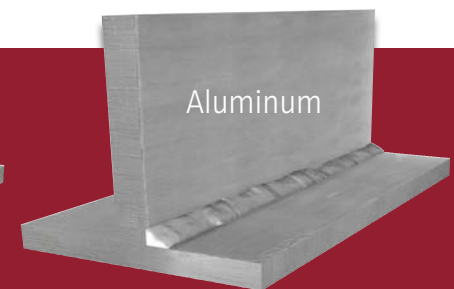
NEW!

GTAW with and without filler metal exclusively on VRTEX® Transport™ and VRTEX® 360 and 360+



Realistic Simulated Materials:

With stunningly realistic look and feel, embedded with actual welding sounds for each alloy.

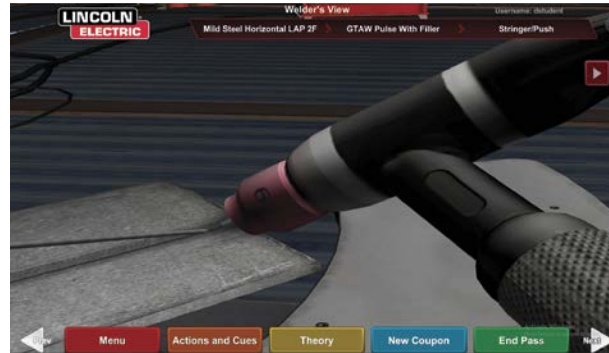


Learn and Improve Welding Skills With Virtual Reality

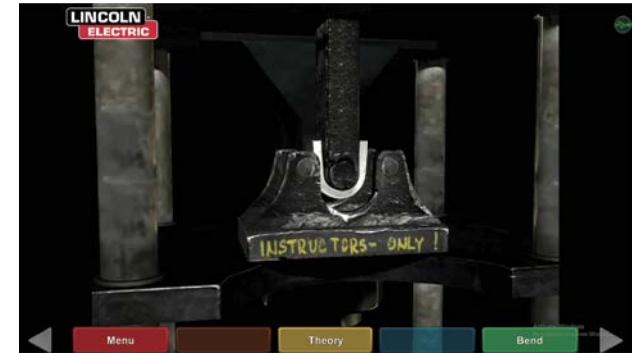
A More Realistic and Valuable Welding Experience:

Life-like Welding Environment:

- Realistic puddle and actual welding sound helps welders learn to respond and adjust welding technique
- Simulates sparks, slag, grinding and weld cooling
- Welding discontinuities appear when improper welding technique is used
- Virtual bend test provides results instantly and reveals what causes a weld to pass or fail



Realistic Experiences



AWS Bend Test

Reinforcement for Students:

- Demos of successful welds
- Replicates proper machine set-up using a Welding Procedure Specification. Students must select gas type, process, gas flow, amperage/voltage and wirefeed speed
- Tracks and scores key weld parameters including work angle, travel angle, travel speed, distance and position



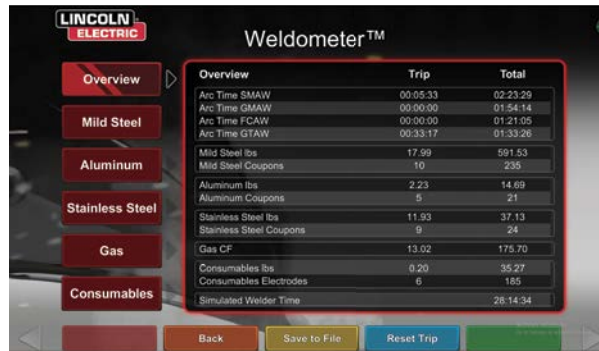
Machine Set Up



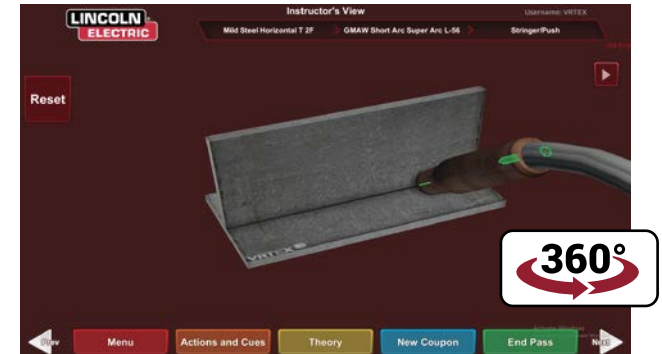
Instant Feedback for Students

Support for Welding Instructors:

- Curriculum includes SMAW Welding Training, GMAW Welding Training, Project Lesson Guides for Students and Instructors
- Weldometer tracks virtual consumables, base material and gas usage to assist with calculating the cost savings of VR training.
- Encourages more consistent feedback than traditional training
- Replay mode (in multiple views) helps instructors and welders identify what went wrong or well
- Intuitive software program designed to bridge welding curriculum with hands-on training
- Instructors can view and rotate coupon during welding to check for proper angles
- Lesson Mode-Lessons include Safety, Welding Standards, Measurement, Principles of Welding



Track your Savings



Unique Views of the Weld



Replay Mode



Safety Lessons Reinforce Safe Practices

Support for Student Learning:



Available Upgrade

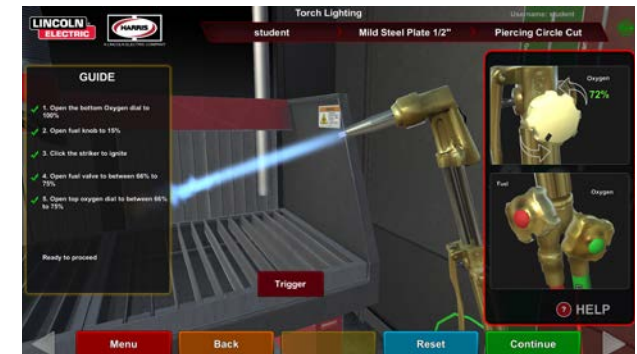
Lincoln Electric's VRTEX® Oxyfuel Cutting feature, made possible through an ongoing partnership with The Harris Group, enables welding instructors and students to experience torch cutting in a virtual environment. From setting up the torch to executing the cut, every aspect of the Oxyfuel Cutting feature is designed to address real-world cutting applications.

Cutting Set up Procedures:

- Select quick connect valves & fuel pressures in proper safety sequence.
- Fuel choices include Propane or Acetylene.
- Step by step torch lightening sequence follows safety protocols and reinforces the importance of reading the flame.



Choose from Multiple Fuels



Correctly Set Torch

Cutting and Analysis:

- Similar to VRTEX® welding, each cutting exercise allows users access to Visual Cues to assist with aim, angle, distance and speed.
- Feedback is provided on the LASER scoring screen with each single line of data on the chart representing the performance parameter of individual technique



Reinforce Proper Technique



Instant Feedback for Students

VRTEX[®] Comparison Chart

| Processes/ Transfers | Engage | Transport™ | Transport™+ | 360 | 360 + |
|-------------------------------|--------|------------|-------------|-----|-------|
| GMAW - Short Arc | X | X | X | X | X |
| GMAW - Axial Spray | X | X | X | X | X |
| GMAW - Pulse | X | X | X | X | X |
| FCAW - Gas-Shielded | | X | X | X | X |
| FCAW - Self-Shielded | X | X | X | X | X |
| SMAW - E6013 | X | X | X | X | X |
| SMAW - E7018 | X | X | X | X | X |
| SMAW - E6010 | | X | X | X | X |
| GTAW with Filler Metal | | X | X | X | X |
| GTAW without Filler Metal | | X | X | X | X |
| Oxyfuel Cutting - NEW! | | X | X | X | X |

| Positions | Engage | Transport™ | Transport™+ | 360 | 360 + |
|-------------------------|--------|------------|-------------|-----|-------|
| 2F | X | X | X | X | X |
| 3F | X | X | X | X | X |
| 4F | | | | X | X |
| 5F (Pipe on Plate Only) | | | | X | X |
| 1G | X | X | X | X | X |
| 2G | X | X | X | X | X |
| 3G | | X | X | X | X |
| 4G | | | | X | X |
| 5G | | | | X | X |
| 6G | | | | X | X |

| Technique | Engage | Transport™ | Transport™+ | 360 | 360 + |
|-------------------|--------|------------|-------------|-----|-------|
| Push | X | X | X | X | X |
| Drag | X | X | X | X | X |
| Straight Stringer | X | X | X | X | X |
| Weave | X | X | X | X | X |
| Whip | | X | X | X | X |





| Languages | Engage | Transport™ | Transport™+ | 360 | 360 + |
|------------|--------|------------|-------------|-----|-------|
| English | X | X | X | X | X |
| Spanish | X | X | X | X | X |
| German | X | X | X | X | X |
| French | X | X | X | X | X |
| Russian | X | X | X | X | X |
| Portuguese | X | X | X | X | X |
| Polish | | X | X | X | X |
| Japanese | | X | X | X | X |
| Chinese | | X | X | X | X |
| Turkish | | X | X | X | X |
| Finnish | | X | X | X | X |
| Italian | | X | X | X | X |
| Korean | | X | X | X | X |
| Swedish | | X | X | X | X |

| Coupons | Engage | Transport™ | Transport™+ | 360 | 360 + |
|--------------------------------------|--------|------------|-------------|-----|-------|
| Practice Plate | X | X | X | X | X |
| Pad | X | X | X | X | X |
| Lap Joint | | X | X | X | X |
| Tee Joint | X | X | X | X | X |
| Groove 3/8 in. (9.3 mm) | X | X | X | X | X |
| Groove on 2 in. XXS Pipe (50 mm) | | | | X | X |
| Groove on 6 in. Sch 40 Pipe (150 mm) | | | | X | X |
| Pipe on Plate | | | | X | X |

| Materials | Engage | Transport™ | Transport™+ | 360 | 360 + |
|-----------------|--------|------------|-------------|-----|-------|
| Mild Steel | X | X | X | X | X |
| Aluminum | | X | X | X | X |
| Stainless Steel | | X | X | X | X |

| Features | Engage | Transport™ | Transport™+ | 360 | 360 + |
|---|--------|------------|-------------|-----|-------|
| Discontinuities shown in the weld and scoring | X | X | X | X | X |
| Scores travel speed, work angle, travel angle, contact tip to work distance, and aim | X | X | X | X | X |
| Free two-day training at the manufacturer site | X | X | X | X | X |
| Multi-Pass Welds | X | X | X | X | X |
| Real Welding Sounds | X | X | X | X | X |
| Instant Scoring/Performance Feedback | X | X | X | X | X |
| Theory | X | X | X | X | X |
| Demo Welds | X | X | X | X | X |
| Replay Mode | X | X | X | X | X |
| Lesson Mode - Lessons include Welding Standards, Measurement, Safety, Principles of Welding | X | X | X | X | X |
| Visual Cues | X | X | X | X | X |
| Tolerance Levels - User Customization | | X | X | X | X |
| Bend Test | | | | X | X |
| Restarts (Tie-ins) | | | | X | X |
| Multiple Users at Once | | | X | | X |
| Learning Levels | X | X | X | X | X |
| Additional Score Modules - D11 and ASME | | | | X | X |
| Stream and Remote Students | X | X | X | X | X |
| Removable VR Headset | | X | X | X | X |

| Virtual Environments | Engage | Transport™ | Transport™+ | 360 | 360 + |
|-----------------------|--------|------------|-------------|-----|-------|
| Pipe Processing Plant | X | X | X | X | X |
| Motorsports Garage | X | X | X | X | X |
| Construction Site | X | | | X | X |
| Desert Base | | X | X | X | X |
| Weld Booth | | X | X | X | X |
| Shipyards | | | | X | X |



For more product information and specifications,
visit lincolnelectric.com/VRTEX or contact VRTEX@lincolnelectric.com



CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company® is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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