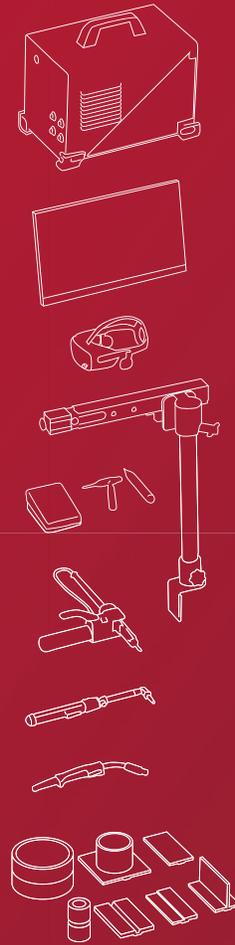


VIRTUAL
WELDING &
CUTTING
SOLUTIONS



VRTEX[®] 360 COMPACT





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YOUR COMPLETE RESOURCE FOR WELDING AND CUTTING EDUCATION

160

DISTRIBUTION AND
SALES OFFICES GLOBALLY

11,000+

EMPLOYEES WORLDWIDE

125

YEARS OF EXPERIENCE

OVER

2,000

PATENTS WORLDWIDE

39



ARC CENTERS
GLOBALLY

56

MANUFACTURING
FACILITIES IN 19
COUNTRIES

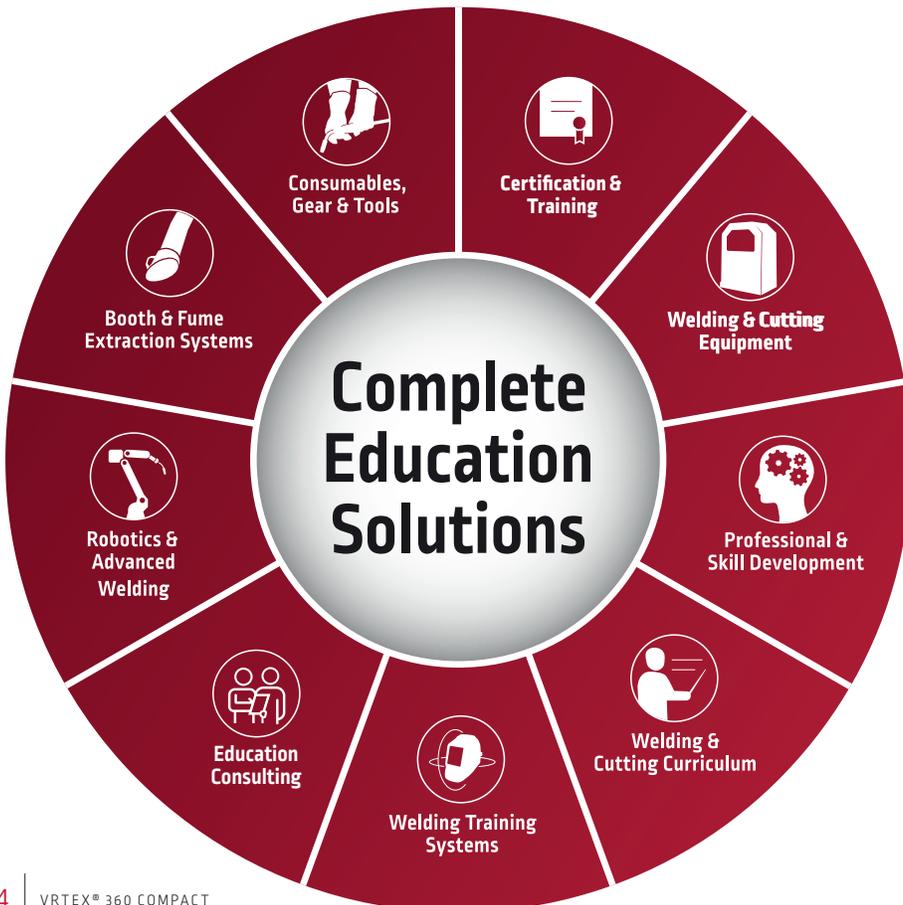
VIRTUAL WELDING ALL ABOUT EFFICIENCY

Five good reasons to use the VRTEX® Virtual Welding Trainer

Virtual welding helps save not only time and costs, it also offers new opportunities in performance-linked training lessons. The VRTEX® 360 Compact virtual trainer supports learning at different levels - from novice to professional - just pick your experience level and start your virtual welding training. Easily pull up and track your savings using the VRTEX® Weldometer™. You can immediately see what you save per lesson, day and year as compared to real welding training sessions.

- 1 Reduce your training costs**
Save on equipment, material, consumables and energy. Benefit from a cost-efficient compact device.
- 2 Reduce your training times**
Achieve faster training success. Get more efficient results with less training time on real welding machines.
- 3 Increase your certification rate up to 42%***
Skill and train more welders, compared to traditional welding training on real machines.

- 4 Track your welding defects**
Welding discontinuities appear when improper welding technique is used. The virtual bend test provides results instantly and reveals what causes a weld to pass or fail.
- 5 Train eco-friendly**
Minimize your material waste and environmental footprint, save shielding gas, welding electrodes, weld coupons and weld fume removal. Less energy is consumed than with a traditional welding machine, wire feeder and a weld fume control system.



Our educational offerings reflect our company's experience serving every industry segment with advancing technology. We deliver total welding & cutting education solutions to the right people at the right time, enabling your success.

*All referenced data is supported by the Iowa State University welding research study.

THE SMARTEST WAY TO A REAL WELDING & CUTTING EXPERIENCE

Discover virtual welding training in a new, compact size

Lincoln Electric's VRTEX® 360 Compact virtual reality welding trainer is a new, small virtual reality welding simulator for mobile-use in multiple environments. It provides a flexible, powerful, cutting-edge solution for cultivating welding talent quickly and resourcefully. The cost-effective small-sized solution offers superior graphics, which creates the most realistic and responsive welding puddle available and it convinces with accurate sounds and movements. With the new VRTEX® 360 Compact welding simulator, virtual welding training can seamlessly transfer into real-world, hands-on welding training.

The first virtual welding trainer with optional cutting mode

The VRTEX® 360 Compact VR welding simulator offers welding training and optional thermal oxy-fuel cutting training in one virtual device. This unique feature enables students to also experience torch cutting in a virtual environment. Every aspect of the thermal oxy-fuel cutting feature is designed to address real-world cutting applications – from setting up the torch to executing the cut.



Cases optional

PRODUCT FEATURES

THE VRTEX® 360 COMPACT VIRTUAL REALITY WELDING TRAINER (K4914-1) OFFERS THE SAME VIRTUAL WELD OPTIONS FOUND ON A STANDARD 360 [+].	APPLY TO WELDING PROCEDURE			
	MMA	GMAW	FCAW	GTAW
	SMAW	MAG/MIG	GAS/SS	TIG
JOINTS/POSITIONS				
GROOVE				
PLATE V-BUTT	✓	✓	✓	
PIPE V-BUTT	✓	✓	✓	
GROOVE POSITIONS INCLUDE				
PLATE PA-1G, PC-2G, PF/PG-3G, PE-4G	✓	✓	✓	
PIPE PC-2G, PH/PJ-5G, H-L045/J-L045-6G	✓	✓	✓	
FILLET				
T-PLATE	✓	✓	✓	✓
PIPE ON PLATE T-ANGLE	✓	✓	✓	
FILLET WELD POSITIONS INCLUDE				
T-PLATE PB-2F, PF/PG-3F, PD-4F	✓	✓	✓	(PB-2F)
PIPE ON PLATE PB-2F, PD-4F, PH/PJ-5F	✓	✓	✓	
LAP				
PLATE OVERLAPPED	✓	✓		✓
LAP POSITIONS INCLUDE				
PB-2F (SMAW, GMAW, GTAW), PF/PG-3F (SMAW, GMAW), PD-4F (SMAW 6010)	✓	✓		(PB-2F)
PLATE				
PA-FLAT	✓	✓	✓	✓
BASE MATERIALS				
TYPE OF MATERIAL				
CARBON STEEL	✓	✓	✓	✓
STAINLESS STEEL		✓		✓
ALUMINIUM		✓		✓
MATERIAL THICKNESSES				
3 MM - 10 GA	✓	✓		✓
6 MM - 1/4 IN.	✓	✓	✓	
10 MM - 3/8 IN.	✓	✓	✓	
Schedule 40 and 80 Pipe (XXS Thickwall - SMAW)	✓	✓	✓	
FILLER MATERIALS				
STICK ELECTRODES				
LOW HYDROGEN E7018 - 2.4 mm - 3/32 in.	✓			
LOW HYDROGEN E7018 - 3.2 mm - 1/8 in.	✓			
RUTILE E6013 - 3.2 mm - 1/8 in.	✓			
CELULOSIC E6010 - 3.2 mm - 1/8 in.	✓			
MILD STEEL SOLID WIRE				
ER70S-6 - 0.9 mm - 0.035 in.		✓		
ER70S-6 - 1.2 mm - 0.045 in.		✓		
ER70S-6 - 1.4 mm - 0.052 in.		✓		

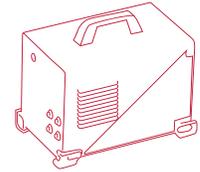
THE VRTEX® 360 COMPACT VIRTUAL REALITY WELDING TRAINER OFFERS THE SAME VIRTUAL WELD OPTIONS FOUND ON A STANDARD 360 [*].	APPLY TO WELDING PROCEDURE			
	MMA	GMAW	FCAW	GTAW
	SMAW	MAG/MIG	GAS/SS	TIG
FILLER MATERIALS				
FLUX-CORED WIRE				
E7IT-1 - 1.2 mm - 0.045 IN.			✓	
E7IT-8 - 2.0 mm - 5/64 IN.			✓	
STAINLESS STEEL SOLID WIRE				
ER308LSI - 1.2 mm - 0.045 in.		✓		
ALUMINIUM SOLID WIRE				
ER4043 - 1.2 mm - 3/64 in.		✓		
FILLER RODS				
CARBON STEEL				
ER70S-6 - 1.6 mm - 1/16 in.				✓
STAINLESS STEEL				
ER308L - 1.6 mm - 1/16 in.				✓
ALUMINIUM				
ER4043 - 2.4 mm - 3/32 in.				✓
TIG (GTAW) TUNGSTEN ELECTRODE				
Pure Tungsten				✓
Thoriated Tungsten				✓
POWER SOURCE FEATURES The VRTEX® 360 Compact settings can be easily modified.				
POWER SOURCE SETTINGS				
AC	✓			✓
DC+ / DC- (POLARITY)	✓	✓	✓	✓
VOLTAGE		[V/Trim]	✓	
AMPERAGE	✓			✓
WIRE FEED SPEED		✓	✓	
PULSE		✓		✓
ARC STRIKING MODES				
SCRATCHING - LIFT ARC	✓			✓
HIGH FREQUENCY				✓
SHIELDING GASES				
CO ₂		✓		
ARGON-CO ₂		✓	✓	
ARGON		✓		✓
ANALYSIS AND DIAGNOSTIC				
LIVE ACTION STUDENT EVALUATION REPORT	✓	✓	✓	✓
DEMO	✓	✓	✓	✓
REPLAY	✓	✓	✓	✓
VIRTUAL BEND TEST (MILD STEEL GROOVED AND 150 mm PIPE)	✓	✓	✓	
OPTIONAL ITEMS AND ACCESSORIES				
K4485-1 Oxy-fuel Cutting Software and Hardware				
K4915-1 VRTEX® 360 Compact Travel Case Set (2 cases)				
K4916-1 VRTEX® 360 Compact 360 Stand Kit				
K4917-1 VRTEX® Tabletop Armrest				

VRTEX[®]

360 COMPACT

TECHNICAL SPECIFICATIONS

Vision Technology	Virtual Reality
Power Supply	115-230VAC
Dimensions (Without accessories)	16.6 in. x 11.6 in. x 15.1 in. [42.1cm x 29.5cm x 38.4cm]
Weight (without helmet)	10.4 kg [23 lbs]
Weight (with helmet)	10.6 kg [23.5 lbs]
Machine	K4914-1 VRTEX [®] 360 Compact
Processor	Intel [®] Core i7
Chipset	Intel [®] Q370 Chipset
RAM	4GB DDR4-1600
Graphics Card	NVIDIA [®] GeForce GTX-1050Ti
Hard Disk	Solid State, 120GB SSV NVMe, SATA 2.5 in.
Audio	Realtek [™] ALC888, High Definition Audio
Operating System	Windows [®] 10 Pro
Display Size	22 in.
Display Resolution	HD LCD 1920x1080
Port for External Display/Projector	HDMI
Vision Module Resolution	UltraSharp [™] Headset Resolution, 2160x2160 Per Eye
Operating Temperature	0-45 Degrees Celsius
Humidity	10-80%
Remote Maintenance/ Upgrades	Yes
Master Software	N/A- No "Master"/ Admin Software available at this time
Server Hardware	N/A- No server at this time
Regulations	CE, CSA, RCM, EAC
Certifications	ISO 9001, ISO 14001



COMPLETE SYSTEM OVERVIEW



ALL FEATURES AT A GLANCE

1 Compact size, mobile & remote use

- Dimensions: Height 15.1 in. (38.2 cm), Length 18.2 in. (46.2 cm), Width 11.6 in. (29.4 cm)
- Option to utilize without headset to reduce shared tools
- Remote Learning/Streaming Capabilities [video conference software]

2 Virtual welding simulations

- Simulated processes: GMAW (Short Circuit, Spray, Pulse), GTAW (with Filler, Pulse with Filler, without Filler), FCAW (Gas Shield, SelfShield), SMAW (E7018, E6010, E6013)
- Included base materials: Mild Steel, Stainless Steel, Aluminum
- Filler material: Stick Electrode, included E6010, E6013, E7018, MIG Wire, included 0.035 in. (.889 mm) ER70S-6, 0.045 in. (1.143 mm) ER70S-6, 0.052 in. (1.3208 mm) ER70S-6, ER4043, ER308L, Flux Core, included E71T-1, E71T-8

3 Purchase add-ons

- Oxy-fuel Cutting feature with simulated torch
- Large welding stand
- Transport Cases
- Tabletop Armrest

STAND

SMAW DEVICE

GTAW DEVICES

GMAW DEVICE

Oxy-fuel ASSEMBLY

VRTEX[®]

360 COMPACT

● TOUCHSCREEN

● VR HEADSET

● VRTEX[®] 360 COMPACT

5

1

● COUPONS

4 Hardware

- 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 welding guns and torches
- Practice flat, horizontal, vertical and overhead 5G and 6G

5 Software

- Welding theory included
- Embedded lessons on safety and measurement

6 Curriculum & training

- GMAW, SMAW & FCAW curriculum books on a usb stick
- Free training available
- Welding procedure specification booklet to replicate proper machine set-up

● CURRICULUM

6

REALISTIC VIRTUAL WELDING ENHANCES LEARNING RESULTS

The VRTEX® 360 Compact virtual reality welding simulator helps you to build confidence, reduce mistakes and train to weld in a variety of situations and orientations. The virtual simulator creates a safe welding environment and enables practicing repetitive welding without the time needed to tack plate and toss scrap. To optimize the teaching and training experience for the whole class, 3 screens are viewable by the audience: the helmet view, the scoring screen and the instructor view.

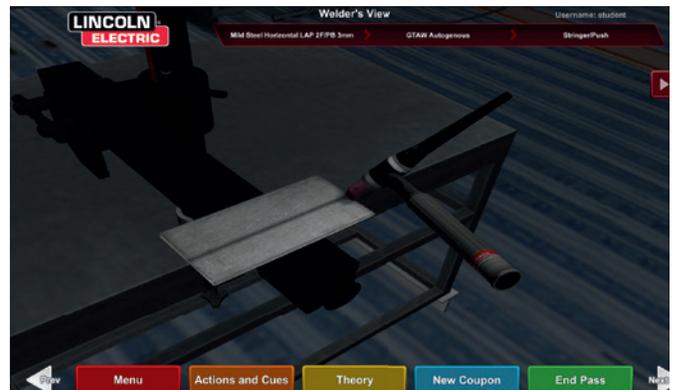
Life-like welding environment

- Realistic puddle and actual welding sound help welders learn to respond and adjust welding technique
- Simulation of 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

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

All instructions in 15 different languages



VIRTUAL CUTTING TRAINING

Thermal Cutting as add on feature

- Designed to address real-world cutting applications
- From setting up the torch to executing the cut

Cutting & Analysis

- Similar to the VRTEX® virtual reality welding trainers, 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

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



WE OFFER COMPLETE EDUCATION SOLUTIONS

REAL WELDING & CUTTING

- ① WELDING LAB
- ② CUTTING TABLES
- ③ POWER SOURCES
- ④ FUME CONTROL UNITS
- ⑤ LOGISTICS
- ⑥ TOOLS AND TOOL BUILDING

VIRTUAL TRAINING

- ⑦ EQUIPMENT FOR WELDING TRAINING BOOTHS
- ⑧ VIRTUAL TRAINING EQUIPMENT



LINCOLN ELECTRIC EDUCATION

ONE STOP - ONE PARTNER

Lincoln Electric offers the broadest Welding & Cutting Education Portfolio – from products to trainings, all the way up to complete education solutions on all levels. We provide virtual applications like the VRTEX® 360 Compact, real welding & cutting training solutions and turnkey welding schools. Our vision is it to create a unique welding education universe to train welders anywhere at any time at the highest standards.



ACCELERATE YOUR TRAINING SUCCESS

The new VRTEX® 360 Compact welding trainer is a perfect example of how Lincoln Electric supports you to attract the next generation of welders. We try to engage welders, both those in schools/universities and those in industry, through smart virtual training devices, curriculum and our complete welding education solutions.

The new VRTEX® 360 Compact welding trainer is an important part, and often a welder's first access to our global education spectrum.



Benefits of Virtual Education

- Train the next generation of welders **smarter and faster**
- Educate **more students** with the existing lab infrastructure
- Increase arc-on times, **reduce lab training times**
- Helps achieve a **higher certification rate**, up to 42%*
- **Reduce costs, consumable and material waste**
- Prepare your students for competitions, certifications and industry



Benefits to Industries

- **Helps close the skills gap** between education and industry
- **Helps reduce training times** & failure rates, improve productivity
- Skill-up your welders **internally**
- **Reduce cost**, consumable and material waste
- Book **customer specific trainings**, also on-site and for upscaling.



KICK START YOUR VIRTUAL WELDING EDUCATION SOLUTION.

Get more return on your investment.

Buy multiple systems and profit from better pricing and service options. Get in touch with our experts: VRTEX@lincolnelectric.com

CUSTOMER ASSISTANCE POLICY

The business of Lincoln Electric is manufacturing and selling high quality welding equipment, automated welding systems, consumables, cutting equipment, and educational products. Our challenge is to meet the needs of our customers, who are experts in their fields, and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or technical information about their use of our products. Our employees respond to inquiries to the best of their ability based on information and specifications 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, or to provide engineering advice in relation to a specific situation. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

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