TRAINING EQUIPMENT

Revolution in Welding Education

Manufacturing's workforce challenge

Anyone who interfaces with the manufacturing sector knows this cold, hard fact: we need more people, we need more investment in training and we need them now.

Consider this - more than 600,000 skilled positions are unfilled in the United States.

The manufacturing sector needs to improve its image in order to draw future workers to these skilled trades.

THE QUESTION: HOW?
THE ANSWER: VIRTUAL REALITY WELDING

More than 80 percent of U.S. employers report they have a moderate to severe shortage of skilled workers.

In a world where skilled labor shortages are rising, the investment and need to not only train but also attract and engage new skilled workers is at an all-time high.

Today's youth — the future workforce — relies on the virtual world. This means the tactics to engage and interest them in learning the skills needed for future careers need to change.

Virtual reality welding is ideal as:
- An interactive, engaging teaching tool.
- An HR screening tool for testing applicants' welding skills.
- A tool for refreshing the welding skillset and knowledge of an existing workforce.

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LINCOLN ELECTRIC GOES VIRTUAL

Introducing Lincoln Electric's VRTEX® Simulated Welding Training Solutions

VRTEX® 360 / VRTEX® Mobile / VRTEX® Engage™

The systems offer hands-on training that's consistent with standard industry methodology and evaluation criteria in a fun "gaming" inspired environment, thanks to a speciallyequipped virtual reality welding helmet.

VRTEX® welding training simulators:

- Attract and engage students.
- Measure and record real-time results.
- Enhance welding training programs.
- Reduce energy consumption, waste and scrap.
- Provide tangible savings.

All the VRTEX® 360, VRTEX® Mobile and VRTEX® Engage™ systems have rich, vivid graphics and feature real-world welding and fume removal equipment.

VRTEX® 360

VRTEX® Mobile

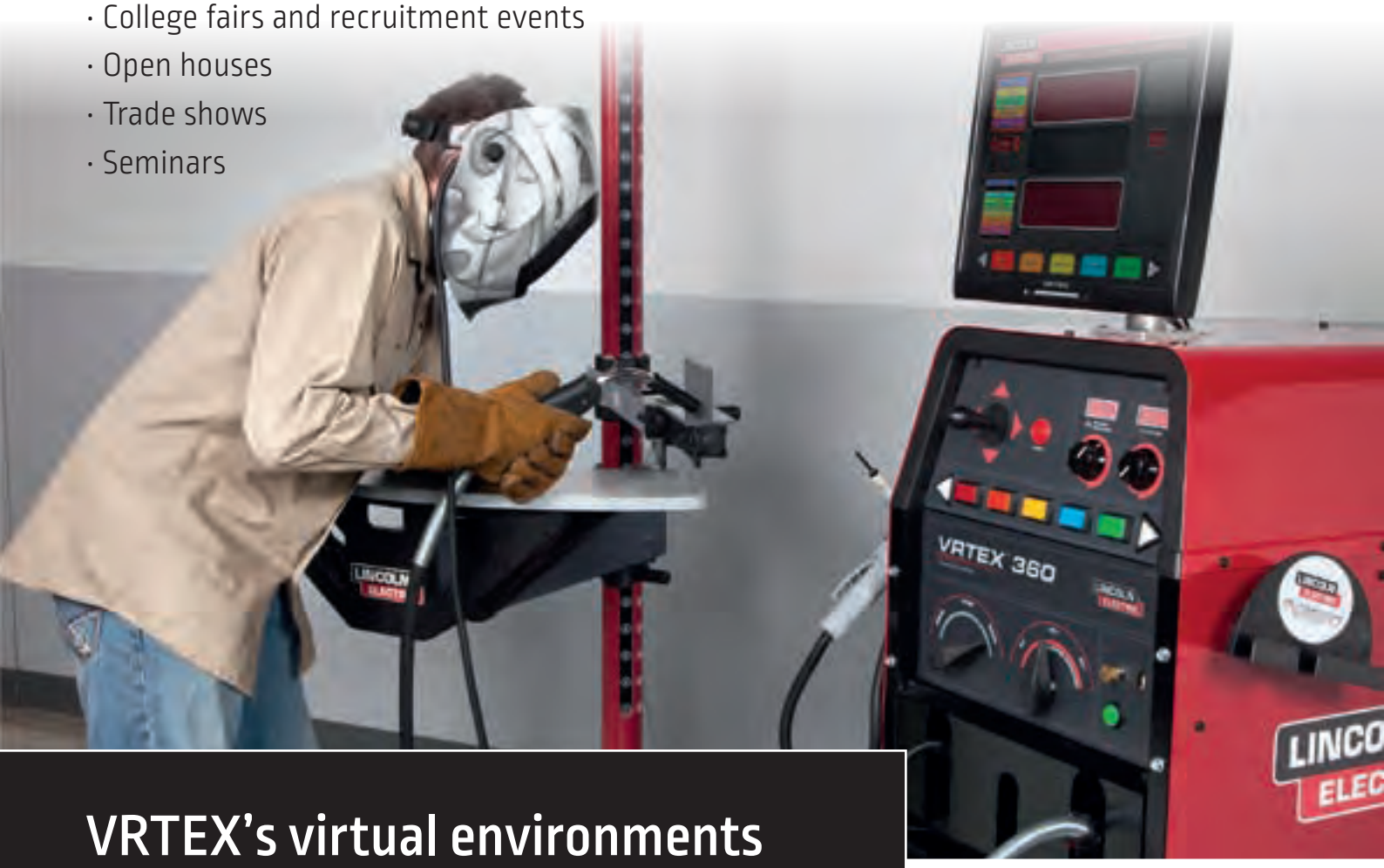
VRTEX® Engage™

ENGAGING. EXCITING. ENHANCING.

In today's digital society, virtual training systems allow students of any age to try welding in a safe, virtual environment with realistic imagery and scenes, from a military base to a motorsports garage.

VRTEX® simulators can be used at:

- College fairs and recruitment events
- Open houses
- Trade shows
- Seminars



VRTEX's virtual environments are realistic...and fun.

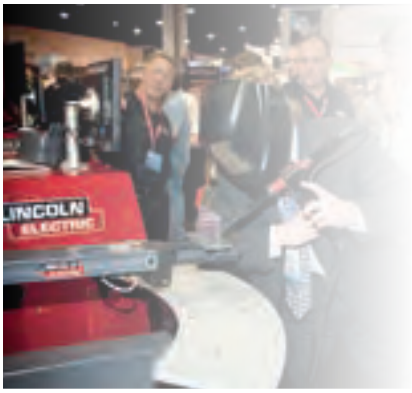
Students have access to the THEORY functionality which provides on-screen welding terminology and definitions to enhance additional comprehension.

INCREASED COMPREHENSION THROUGH INTERACTION

Virtual reality welding training doesn't replace hands-on welding – it enhances it.

Connect a projector or large LCD display to the VRTEX® unit so an entire classroom can see what the welder sees under the helmet.
This brings a sense of teamwork to the learning process and increases comprehension through interaction.
Multiple views show accurate, real-time measurement of such key variables as contact tip to work distance, work angle, travel angle, travel speed and position.

People will line up to try their hand at virtual welding and learn about what it takes to build a career as a skilled trades worker.



The VRTEX® system even replicates proper machine set-up. Before they can "weld", students must enter the proper material type, process, gas flow and amperage / voltage / wire-feed speed into the system.

Challenging out-of-position welding training becomes simple with VRTEX®. Students understand what they will see and what it will feel like before they ever pick up a real welding gun.

EFFECTIVE RESULTS EXPLAINED TO THE REAL WORLD

From a realistic welding puddle to accurate sounds and movements, what students learn virtually with VRTEX® seamlessly transfers into real-world, hands-on welding training.

Students move from a VRTEX® machine and into a real welding training booth feeling confident about set-up and welding procedures.

Efficient Virtual Learning = Reduced Costs, Improved Safety

Using VRTEX® as the first-line training method helps reduce waste and scrap, to create a cleaner training environment.

Students can practice repetitive welding without the time needed to tack plate and toss scrap. There's no real coupon - only one that appears virtually - and quickly -with the press of a button.

VRTEX® 360

Engaging. Exciting. Enhancing

In today's digital society, virtual training systems allow students of any age to try welding in a safe, virtual environment with realistic imagery and scenes, from a military base to a motorsports garage.
VRTEX® simulators can be used at:
• college fairs and recruitment events,
• open houses,
• trade shows,
• seminars.
The systems offer hands-on training that's consistent with standard industry methodology and evaluation criteria in a fun "gaming" inspired environment, thanks to a specially equipped virtual reality welding helmet. VRTEX® welding training simulators:
• attract and engage students,
• measure and record real-time results,
• enhance welding training programs,
• reduce energy consumption, waste and scrap,
• provide tangible savings.

Features

- Full featured, advanced and scalable welding simulator.
- Rich, vivid graphics and feature real-world welding and fume removal equipment.
- Students have access to the THEORY functionality which provides on-screen welding terminology and definitions to enhance additional comprehension.
- Virtual reality welding training doesn't replace hands-on welding — it enhances it.
- The VRTEX® system even replicates proper machine set-up. Before they can "weld", students must enter the proper material type, process, gas flow and amperage / voltage / wire-feed speed into the system.
- Connect a projector or large LCD display to the VRTEX® unit so an entire classroom can see what the welder sees under the helmet.
- Multiple views show accurate, real-time measurement of such key variables as contact tip to work distance, work angle, travel angle, travel speed and position.

Additional Features

- Advanced Scoring Module (ASME/D1.1)
- AWS Bend Test
- GMAW Aluminium
- GMAW Stainless

Processes
• SMAW
• GMAW
• FCAW-GS
• FCAW-SS

Joint Configurations
• Flat Plate
• Tee Joint
• Groove Joint
• 6" diameter schedule 40 Pipe
• 2" diameter XXS Pipe

Positions
1G/PA, 2F/PB, 2G/PC, 3F/PF-PG, 3G/PF-PG, 4F/PD, 4G/PE

Usability
Flexible, multi-position stand

Functionality
GMAW gun and retractable SMAW stinger (45° / 90° angle adjustment)

Number
• **AD2433-1** CE Model Standard Frequency
• **AD2433-2** CE Model Alternate Frequency

Key Options
• **AD2435-2** VRTEX® 360 Upgrade 2
- AWS virtual bend test for multi-pass pipe and groove welds and a virtual bend test certificate upon successful completion
- Advanced scoring modules based on the American Welding Society D1.1 or ASME
- Motorsports garage virtual welding environment
- Instructor panning view function
• **AD2435-3** VRTEX® 360 Upgrade 3
-GMAW aluminium welding support including visual and audio sound differences
-Shielding gas and THEORY additions specific to aluminium welding
-Video replay for instructor or student review and analysis on the welding process
-Entry, intermediate and advanced welder learning levels are available from the instructor view
• **AD2435-4** VRTEX® 360 Upgrade 4
-GMAW stainless welding upgrade includes multiple tolerance levels, equipment settings, discontinuities plus visual and sound differences
-Expanded THEORY functionality
-Demo Weld functionality allows the instructor or student to view an example weld or a demonstration of proper technique, prior to a weld being made
-Expanded support includes 0.052 in (1.3 mm) solid wire and SMAW on thinner material
• **AD2435-5** VRTEX® 360 Upgrade 5
-Lap Joint-Scoring a pad-Additional pulse welds
• **K3205-1** VRTEX® 360 curriculum contains spiral bound guide and DVD video series.

Technical Specifications

Product	Item Number	Input Power	Input Current	Positions	Dimensions HxWxD (mm)	Weight (kg)
VRTEX® 360 Std.	AD2433-1	115/230/1/50/60	4A @ 115, 2A @ 230	1G/PA, 2F/PB, 2G/PC, 3F/PF-PG, 3G/PF-PG, 4F/PD, 4G/PE	Machine: 1803 x 762 x 1270 Stand: 1981 x 990 x 1194	Machine: 163 Stand: 46
VRTEX® 360 Alt.	AD2433-2					

VRTEX® Mobile

Engaging. Exciting. Enhancing

The VRTEX® Mobile is a basic, entry level welding training system. It is designed to provide mobility in an easy to use and engaging welding training tool. The VRTEX® Mobile is ideal for initial, basic welding training, as a recruitment and engagement tool for educational and industry and for employment and screening for human resources or as an evaluation tool for instructors and educators to get a baseline on student knowledge.

Features

- Easily transported from classroom to classroom or to a recruitment event or open house. The VRTEX® Mobile can be ready to go in a matter of minutes.
- Touchscreen user interaction provides equipment and procedural set-up on an intuitive, resistive touchscreen. All screens mirror the VRTEX® 360, making transfer of interaction seamless between the systems.
- Universal gun handle allows to connect of a MIG/MAG gun attachment for GMAW and FCAW welding and an optional accessory for SMAW.
- Tabletop coupon stand easily attaches and stands on a standard table for welding and is taken apart for quick and simple storage inside the VRTEX® Mobile.
- Consumable and environmental savings
  - No welding consumables, wire or waste
  - Track savings with the Weldometer™.

Additional Features

- No software upgrade package

Processes
- GMAW standard
- FCAW-GS standard
- FCAW-SS standard
- SMAW optional

Joint Configurations
- Flat Plate
- Tee Joint
- Groove Joint

Positions
1G/PA, 2F/PB, 2G/PC, 3F/PF-PG, 3G/PF-PG

Usability
Tabletop stand with optional arm rest

Functionality
Unigun – standard unit includes GMAW attachment. Optional virtual / fixed 90° angle SMAW attachment

Number
- **AD2436-1** – VRTEX® Mobile – Standard frequency
- **AD2436-2** – VRTEX® Mobile – Alternate frequency

Units Include
- **K3165-3** – SMAW kit
- **K3268-1** – Arm Rest

Technical Specifications

Product	Item Number	Input Power	Input Current	Positions	Dimensions HxWxD (mm)	Weight (kg)
VRTEX® Mobile Standard frequency	AD2436-1	115/230/1/50/60	4A @ 115, 2A @ 230	1G, 2F, 2G, 3F, 3G	Machine: 826 x 496 x 978	Machine: 57 kg; Monitor: 9 kg; Crate: 70 kg; Armrest: 3.1 kg
VRTEX® Mobile Alternate frequency	AD2436-2				Monitor: 366 x 392 x 204	

NEW!

VRTEX® Engage™

Welding starts here

For some, the first step into the virtual learning environment can be a big one. Lincoln Electric makes that first step easier with VRTEX® Engage™. This standalone foundational system is designed to introduce students to the skilled trades – specifically arc welding. VRTEX Engage includes a touch screen monitor, welding gun, tracking device and a work surface. It's all contained in a lightweight and portable carrying case that can be deployed in any setting – industrial, educational or elsewhere.

VRTEX Engage is a cost-effective tool designed to help educators train welders more efficiently and engage students to explore a career in welding. The system addresses introductory welding lessons, including safety, machine and process selection, welding procedure set up, welding theory and more. The road to educating a skilled welding workforce starts with one small step. Make that small step a giant leap with VRTEX Engage.

Features

- Learn Anywhere – sets up anywhere to introduce skilled trades to students who are ready to explore a possible career in welding or consider degree programs in engineering and related fields.
- Capable Education Tool – provides instant feedback and assessments on safety and correct welding procedure settings.
- One Small Step - provides an introductory environment that incorporates STEM features, exposure to welding safety, procedures and techniques.
- No Fees. No Waste – helps your program reduce overall operating costs, as there is NO waste – no use of steel, electrodes, wire, shielding gas. And, with VRTEX Engage, there is no licensing requirement and no annual fees.

Components and Specificationss
- MS Windows® 7 Professional 32-bit
- Intel® Core® i5 Quad Core processor
- 4GB DDR memory
- 128 GB Solid State Drive
- 2GB high-powered graphics card

Monitor
17" LCD monitor - resistive touch screen

Speakers
USB 2.0 powered speakers

VRTEX Welding Transfer Modes
Simulates short arc, spray and pulse

Language Support
English

Item Number
- **K4299-1** - Standard Frequency
- **K4299-2** - Alternate Frequency 1
- **K4299-3** - Alternate Frequency 2
- **K4299-4** - Alternate Frequency 3

Technical Specifications

Product	Item Number	Input Power	Input Current	Operating System	Processor / Memory	Hard Drive	Dimensions HxWxD (mm)	Weight(kg)
VRTEX® Engage™	K4299-1	115/230/1/50/60	1A @ 115, 0.5A @ 230	MS Windows ® 7 Professional 32-bi	Intel ® Core® i5 Quad / 4GB	128 GB Solid State Drive	622 x 492 x 310	22.6
	K4299-2							
	K4299-3							
	K4299-4							