

AugmentedArc™ Augmented Reality Welding System

The industry's most realistic welding simulation solution.

The AugmentedArc system improves the efficiency and economy of classroom education with “augmented reality” technology. 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.

The system provides an engaging and immersive student experience and allows instructors to make more effective use of their time. Users of any skill level can start working with the system almost immediately. AugmentedArc offers intuitive, easy-to-understand setup assistance and objective, post-weld feedback to help users quickly gain experience and develop proper welding techniques in SMAW, GMAW, FCAW and GTAW processes.

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The welding positioning arm allows for training in out-of-position applications.

Specially coded coupons provide a wide range of training applications.

Both computer and helmet feature augmented-reality displays



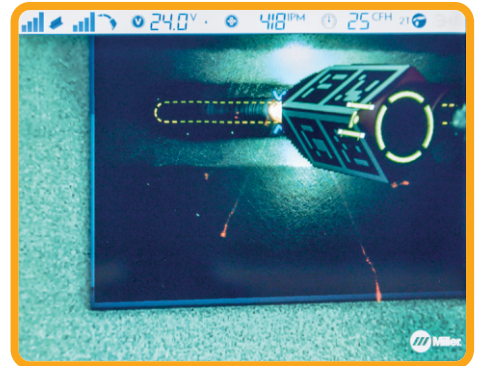
Specially designed gun, torch, stinger and filler metal simulators relay user data to the computer for processing.

Augmented-reality displays

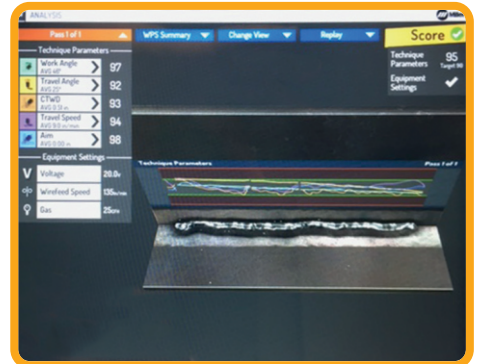
Computer and helmet displays combine real and computer-generated imagery to create a unique interactive environment.



Actual proximity and interaction data is processed by the system via specially coded devices and coupons



During a simulated weld sequence, visual graphical aids guide user to achieve adherence to parameters.



Performance is scored and graphed to allow for evaluation, and recorded for playback.



The AugmentedArc™ system is warranted for one year, parts and labor.

How it works

- Instructors use the system's Teacher Software to develop a curriculum of process theory, quizzes, welding exercises, as well as monitor student performance and create progress reports.
- To complete an assignment, students wear a specially designed welding helmet that contains an external optical sensor, which captures images of coded devices and coupons and sends them to the AugmentedArc system's computer.
- The system's computer generates three-dimensional images of metal workpieces, weld arcs and weld beads, augmenting them into a real-world environment.
- Inside the helmet, the augmented reality environment appears on a specially designed heads-up display panel, precisely showing the user's proximity to and interaction with the workpieces and welding gun/torch. The same images also appear on a second display panel in the system's computer case. Additionally, realistic arc sounds feed through speakers located in the helmet.
- The AugmentedArc system continuously monitors the user's adherence to pre-determined or custom welding parameters—including travel speed, gun/torch angles, distance, aim, contact-tip-to-work (GMAW/FCAW only) and arc length, rod work angle and rod travel angle (GTAW/SMAW).
- The helmet's heads-up display delivers immediate visual feedback on the user's performance, providing confirmation when parameters are being maintained and alerts when they are exceeded. The same images also appear on the second display panel in the system's computer case.
- When the welding exercise is complete, an analysis screen provides feedback on the user's performance in the form of scores and graphs. Video of the welding exercise is also recorded and made available for later playback, allowing instructors to evaluate students' performance.

AugmentedArc provides a simulation that closely resembles live arc welding—without using an actual arc or consumables.

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