

Solutions Brief

Virtual Reality Welding Trainer



The Virtual Reality Trainer uses a real welding torch attached to a device that simulates pressure and resistance, a head-mounted display to view the 3D computer-generated environment, and a tracking system for both the torch and the trainee's head to monitor and display all movements in the virtual workspace.

Immersive technology from SGI and VRSim speeds welder training, reduces costs, and improves productivity

Benefits

- Improve manufacturing efficiency
- Improve workforce skills and productivity
- Minimize training time and costs
- Immersive hands-on learning
- Real-time learning and feedback

Features

- Silicon Graphics Prism™ for Linux®
 - 4 Intel® Itanium® 2 processors
 - 2 ATI® graphics pipes
- VRSim EndeaVR™ (software) Suite with Welding Module
- FCS Robotics HapticMASTER System
- Motion-tracking head mount display
- Instructor Console
- Scalable to multiple training bays per Instructor Station

Because 90% of all learning is visual, immersive virtual reality welding training presents an exceptional opportunity to provide learning by doing. Unlike manual

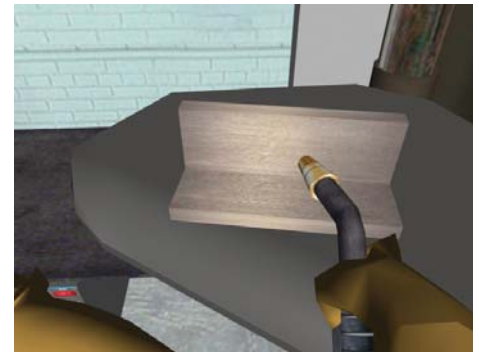
or computer-based training, virtual reality creates a hands-on experience that augments visualization with muscle memory and kinetic awareness. As a result, welding trainees learn faster and increase productivity sooner. Manufacturers are able to realize significant labor and materials cost-savings over conventional training methods.

A More Cost-Effective Solution

The Virtual Reality Welding Trainer from SGI and VRSim can be tailored to your exact training requirements and optimized for your success. VR training provides a cost-effective solution that reduces your annual training budget while increasing ROI and the overall quality of workmanship. Key virtual reality training benefits include:

- Improve workmanship
- Decrease reworks and repairs

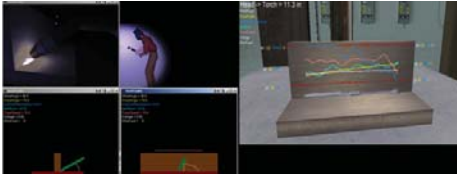
- Increase trainee retention
- Reduce first-time injury rates
- Improve trainee/worker safety



The use of haptics, a head-mounted display, and a motion-tracking system enable trainees to visualize real work scenarios.

The Virtual Reality Welding Trainer can also help increase welders' success rates in industries where complex and critical welds are necessary and mistakes could cause expensive components to be rejected, flammable materials may be present, or other safety issues exist.

Virtual Reality Welding Trainer



Welding instructors can easily demonstrate, instruct, and critique each weld

Real-Time Instruction and Feedback

The Virtual Reality Welding Trainer from SGI and VRSim speeds welder training by eliminating the tedium of instruction manuals and videos, and moving into an immersive environment of real-time, hands-on instruction and trainee evaluation.

The VR Welding Trainer provides an automated mechanism that displays the entire welding process and final weld in a virtual environment. Educational measurements are easily customized and captured.

Example metrics include:

- Tip-to-workspace
- Tip angle
- Weld speed values

Each recorded session is available for immediate playback and evaluation, including structural analysis of the resulting weld (through CFD, FEA), providing optimal learning for the trainee. Studies to date have shown that participants have enhanced retention rates and are more effective in repeating tasks after virtual reality welding training. Training sessions may also be stored and used to monitor trainee proficiency over time.

Virtual Reality Welding Trainer Components

The key compute/software components of the Virtual Reality Welding Trainer are Silicon Graphics Prism and VRSim Endeavor Suite, with welding module.

Silicon Graphics Prism is a complete visualization system that addresses terabyte-sized, highly complex data as a single contiguous data set in memory. A combination of scalable visualization, large memory, and scalable computing ensure that users experience the most realistic and effective immersive visualization possible.

"The VRSim Virtual Reality Welding Trainer is a time- and cost-saving productivity tool that provides excellent gas metal arc welding simulation for new recruits and experienced welders. The system has far exceeded our expectations." Nancy Porter, Project Manager, Edison Welding Institute at Navy Joining Center.

VRSim's Endeavor Suite enables users to create real-time immersive virtual reality environments for industrial, educational, defense and business intelligence applications. Operating as middleware on Silicon Graphics' Operating Systems, Endeavor provides a seamless connection between state-of-the-art components for motion capture, haptic feedback, and disparate human I/O devices such as data capture gloves and head-mounted displays.

Professional Project Management and Support Services

SGI Professional Services is your single point of contact for the procurement, implementation, and installation of your Virtual Reality Welding Trainer. With SGI's world class Support Services organization and best of breed partnerships, SGI provides complete, comprehensive, and high quality support for the Virtual Reality Welding Trainer. SGI services are designed to optimize the return on your technology investment, while reducing the time and costs associated with using your human resources. Professional Services and support offerings for the Virtual Reality Welding Trainer include, but are not limited to:

- Hardware, software, and device integration
- Project management
- Delivery and installation
- Total solution support

SGI Professional Services has in-depth knowledge of current and future virtual reality technologies, world-class skills and a history of delivering superior solutions.

Turn Virtual Reality Into Real ROI

Within structural fabrication-intensive industries it is critical that production costs and time to market continue to shrink as productivity rises. The Virtual Reality Welding Trainer from SGI and VRSim addresses these issues by providing a fast, efficient, and cost-effective way to improve worker productivity that results in increased ROI. To learn more, contact your local SGI sales office, or call 1(800) 800-7441 (U.S. and Canada).



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