

WELDING SIMULATOR

VR-AR Based Simulator

VOCATIONAL TRAINING SIMULATOR

SANLAB combines deep expertise in robotics and simulation with a customer-focused approach to deliver industry-leading vocational training simulators.

Welding Simulator provides realistic training environment powered by VR and AR technologies, offering realistic training with a highly precise mask and torch motion tracking system. Designed to support skill development in SMAW, MIG/MAG, TIG, and FCAW welding processes.

APPLICATIONS

- Technical & Vocational Schools
- Industrial Training Centers
- Technical Colleges & Universities
- Shipbuilding
- Automotive
- Aerospace



ADVANTAGES

- Cuts costs
- Eliminates accident risks
- Increases safety
- Lowers operating & maintenance costs
- Protects equipment
- Enables all-weather training
- No worksite required
- Eco friendly use
- Realistic experience
- Multi language support
- QR Code Enabled Automatic Calibration System
- Internet Independent Wireless Image Transmission
- Operating Temperature: 0°C to 45°C
- Operating Humidity: 10% to 80%

PRODUCT NAME: WELDING SIMULATOR

PRODUCT MODEL: ALL IN ONE

DIMENSIONS

Overall Dimensions (L-W-H)	0.78 m - 2.37 m - 2.00 m
Net Weight (product only)	140 kg
Shipping Dimensions (L-W-H)	2.30 m - 2.30 m - 1.30 m
Crate Weight (total)	190 kg
Packaging Type	Wooden crate
Dimensions	38 cm x 52 cm x 152 cm
(Without Accessories):	Weight (Without Helmet): 45 kg

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SPECIFICATIONS

Display System	43" TV
Touch Screen	13.3" touch screen
Audio System	Realtek High Definition Audio
4 Real Torchs	SMAW, MIG/MAG, TIG, FCAW
Work Table	3 adjustable height levels, 14 different welding parts in various positions
Work Pieces	T-Angled plate toplate, V-Butt pipe, Overlap plate, V-Butt plate, T-Angled pipeto plate, Flat Plate, L-Piece
Welding Mask	AR/VR supported headset, Camera System: Integrated VR tracking system with equivalent or higher performance than 640x480 / 800x600 autofocus
Camera Resolution	Minimum 640x480 / 800x600 Autofocus, provided through advanced VR tracking system compatible with Meta Quest 3 or equivalent
Wire Feed Speed	Adjustable and configurable for GMAW (MIG/MAG) and FCAW welding processes
Power Supply	100V - 240V
Minimum System Requirements	Intel(R) Core(TM) i7, Chipset: Intel B760M - 16 GB Ram - 500 GB SSD NVidia GeForce RTX 3060 - Windows 11, Wireless Combo Keyboard Mouse
Back Panel Ports:	Screen: HDMI/Display Ports USB: 4 x USB 3.2 Gen 1 Connection: 1x Integrated LAN Port + External LAN Adapter (USB to LAN) – Total 2x LAN Supported 2x Antennas Intel® WiFi6 Dual Band Audio: microphone & speakers ports
Front Panel Ports:	Voltage and Amperage analogue buttons, Real SMAW/MMAW Connector, Real GMAW (MIG/MAG) Connector, Real FCAW Connector & Real GTAW (TIG) Connector Voltage Range: 12–40V Amperage Range: 50–400A



Interface Screen



Analysis Screen



Front Panel

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SOFTWARE

- **Welding Techniques:**
 - 1-Weld options: straight pass, curved weave, zigzag, triangular pattern
 - 2-Weld direction selection: left-to-right and right-to-left
 - 3-Compatible with both left and right-handed use
 - 4-Torch angle adjustment for push and pull techniques
- Support for American (AWS) and European (ISO) welding standards
- Virtual materials: Carbon steel, stainless steel, copper, and aluminum
- Real-time error detection and feedback
- Adjustable parameters: amperage, voltage, material thickness, wire thickness and speed. **Voltage Range: 12–40V Amperage Range: 50–400A**
- Software Platform: Developed with Unity
- **Electrode / Filler Rod Diameter:** Adjustable for SMAW, GMAW (MIG/MAG), and GTAW (TIG) processes across different materials including Carbon Steel, Stainless Steel, and Aluminum.
- **Gas composition:**

Metal	GMAW	GTAW	FCAW
Carbon Steel	Argon - CO2	Helium*	Argon - CO2
Aluminum	Argon	Argon	-
Stainless Steel	Argon - O2	Argon	-

SOFTWARE

- Analysis of position, distance, speed, and angle parameters
- Defects Analysis: Porosity, Spatter, Penetration
- Session recording, video playback with rewind/fast-forward, angle adjustment, and scoring system
- Student-based data storage and training history tracking
- Customizable scoring parameters with advanced management interface
- Touchscreen interaction without removing the welding mask
- Supported welding positions: PA, PC, PF/PG, PE, PH/PJ, H-L045/J-L045, PB, PD, 1F, 2F, 3F, 4F, 5F, 1G, 2G, 3G, 4G, 5G, 6G
- Metal thickness: 3 - 10mm
- Pipe: Different diameters (5cm & 12cm)
- T-Angled pipe: Different diameters (5cm & 12cm)

SERVICE & SUPPORT

Committed to customer satisfaction, we deliver tailored support solutions designed to meet your specific operational requirements.

SCENARIOS

- SMAW-Shielded Metal Arc Welding
- MIG-Metal Inert Gas Welding
- TIG-Tungsten Inert Gas Welding
- FCAW-Flux-Cored Arc Welding

OPTIONS

- Portable version



Scenario Screen



QR Code Integrated



Welding Simulator Table