

REDWELD WELDING SIMULATOR

RED-WS100



Dimensions: 75cmx75cmx166cm

Weight: 90kg

Welding processes supported:

- SMAW
- GMAW-GTAW
- FCAW
- TIG

Welding positions: PA, PB, PC, PD, PF/PG, PE, PH/PJ, 1F, 2F, 3F, 4F, 5F, 1G, 2G, 3G, 4G, 5G, 6G

Welding joints: V-butt plate, V butt 6" plate, over lapped plate, T-angle plate, T-angle plate, T-angle 6" pipe to plate.

Accessories: Arc welding torch, Gas welding torch, Tig welding torch, VR based welding mask, Stand

Thickness selection: 3-10 mm

Material selection: Carbon steel, stainless steel, and aluminium

Power supply: 100-240 V, 50-60 Hz.

Total power: 1KW

Voltage selection	Yes
Amperage selection	Yes
Shielding gas selection	Yes
Wire speed selection	Yes
Stitch technic selection	Yes
Direction selection	Yes
Hand selection	Yes. Right or left
Real welding torches	Yes
Remote maintenace	Yes

Helmet	Meta Quest 3
Languages	English, Turkish, Spanish, German
Visual Hint	Yes
Area Selection	Yes, welding workshop, construction zone, maintenance center, shipyard
Polarization	Yes
Electrode / wire material selection	Yes
Electrod / wire diameter selection	Yes
User Evaluation System	Yes
Video recording	Yes
Project to Larger Screens	Yes
Display size	21,5" touch screen
Vision technology	Virtual reality
Sound	3D sound
Updates	Yes
Warranty	2 years

Analyzed Parameters:	Analyzed welding errors:
<ul style="list-style-type: none"> • Travel speed, • Work angle, • Travel angle, • Arc length, • Position, • Distance between contact nozzle and workpiece. 	<ul style="list-style-type: none"> • Insufficient penetration, • Slag containment, • Undercut, • Porosity, • Poor bead placement, • Convex, Concave • Wrong welding size, • Excess Spatter, • Melt/Blow through.

Technical Specifications

- 1- In the Welding Simulation Training Set based on the virtual reality (VR) system; It consists of welding machine, welding types and position plates, welding mask, welding table.
- 2- It has original gas metal arc and tig torches and specially designed electrode arc welding pliers (SMAW - Electric arc welding).
- 3- Welds according to at least 6 welding positions (V-butt 6" (150 mm) Pipe, V-butt Plates, T-Inner Corner, T-Inner Corner 6" (150 mm) butt pipe with plate and plate overlay) and straight stitching.
- 4- Working angle, feed rate and angle, feed coordinates, weld seam guide lines and arc length distance can be measured accurately and data (numbers and graphics) can be viewed instantly.
- 5- The thickness of the workpiece can be selected between 3 and 10 mm and material selection (Carbon Steel, Stainless Steel and Aluminum) can be made.
- 6- According to welding types, welding torches, gas metal arc and tig torches have original weight and structure (with their real equivalents), different wire thicknesses can be selected with the electrode selection.
- 7- Device; It can perform electric arc welding (SMAW), gas metal arc welding (GMAW-GTAW), cored wire arc welding (FCAW), TIG welding.
- 8- CO₂, ARGON-CO₂ mixture and ARGON options are available as shielding gas.
- 9- Real-time feedback is provided on the welding technique applied using visual cues.
- 10- Supervision and control of the welding applications and ethernet or wireless access to all data with the teacher's computer.
- 11- Amperes and volts can be adjusted according to welding types and positions.
- 12- In addition to the exercises performed by the users and the analysis results of these exercises, it is possible to store the video of the exercise on the simulator device.
- 13- Scoring can be made by considering how well the student welds according to the welding technique determined by the teacher.
- 14- Student studies or possible welding errors can be analyzed by the system, reported and transferred to the teacher's computer with the simulator screen.
- 15- The welding technique applied by the student is shown with a graph containing lines of different colors, and this graph consists of lines belonging to different parameters.
- 16- There is a scoring system for the evaluation of the user. With the help of this system, users can be tested, and a multiple-choice exam can be applied to users with the teacher software.
- 17- Position of welded joint, distance between contact nozzle and workpiece, working angle, feed angle, feed rate, reaching target, weld porosity, electrode; It simulates the situations where it melts and can be replaced with a new one while using, and splashing slag situations are simulated.
- 18- Overlay welding can be performed from normal and single pass up to 4 passes in the welding simulator.
- 19- It allows manual and automatic trigger options while simulating gas metal, cored wire and tig welds with the simulator.
- 20- There are flat, zig zag, triangular crescent and circular weld seam options.
- 21- With its right-to-left and left-to-right welding feature, the welding apparatus and the software are also suitable for right-handed and left-handed users.
- 22- There is an adjustable work stand in different positions to place the welding parts.
- 23- The welding mask has sufficient inner depth between the screen in the mask and the forehead so that students with glasses can also use it. The apparatus has VR technology.

- 24- In electrode and cored wire welding, there is a shell cleaning feature for observing before and after the removal of the welding shell.
- 25- The welding simulator has licensed teacher software. The software can be updated in accordance with the technological requirement.
- 26- Supervision and control of the welding applications and ethernet or wireless access to all data with the teacher's computer
- 27- Student studies or possible welding errors can be analyzed by the system, reported and transferred to the teacher's computer with the simulator screen.
- 28- There is a scoring system for the evaluation of the user. With the help of this system, users can be tested, and a multiple-choice exam can be applied to users with the teacher software.
- 29- Simulator computer specifications: Intel i5 12400F 2.5GHz, RTX3060 8GB, 16GB Ram, 500GB SSD
- 30- VR Helmet specifications: Capacity 128 GB, Screen Type: LCD, Resolution Per Eye: 2064x2208, Refresh Rate: 120 Hz., Viewing Angle: 110 °
- 31- Since the system is a computer simulation, there is a 21" monitor and other equipment, internal USB, ethernet, HDMI cable in order to watch the images in the system.

SPECIFICATIONS

VR / AR welding simulation system equipment:

- Welding simulator machine,
- Arc welding torch
- Gas metal arc welding torch
- TIG welding torch
- Virtual reality supported welding mask.

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PART AND MATERIAL SELECTION

Welding part positions (ceiling, perpendicular, horizontal, cornice) can be changed.

Part and Material Selection

- Welding part positions (ceiling, perpendicular, horizontal, cornice) can be changed.
- Parts for welding and connecting positions can be chosen.
- PA, PB, PC, PD, PE, PF, PG, PH, PJ welding positions can be chosen.
- The thickness of the items to be welded might range from 3 to 10 millimetres.
- Carbon steel, stainless steel, and aluminium are all options for part materials.



HELP (VISUAL HINT)

Visual hints can be observed before or during the welding process, assisting the operator in welding with more precision.

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- Use the guideline assistance to see where the welding should be done.
- Speed assistance can be used to ensure that progress is maintained at optimum levels.
- By looking at the angle assistance, you can keep the travel and work angle at their best.
- By examining at the distance assistance, you can keep the arc length at its best.



AREA SELECTION

The welding environment can be changed and welding experience can be experienced in different areas.

Welding in different areas can be experienced by changing the environment to be welded. It is possible to move in all directions within the selected virtual environment.

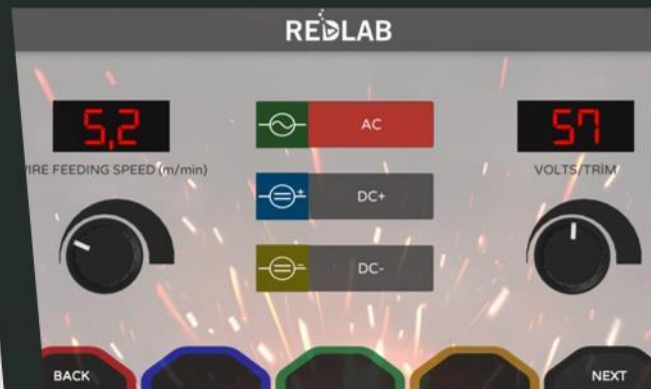
- The construction area (open environment) can be selected.
- Welding workshop environment (indoor environment) can be selected.
- Maintenance facility environment (open environment) can be selected.



WELDING PARAMETERS SELECTION

Current, volt, wire feeding speed values can be adjusted.

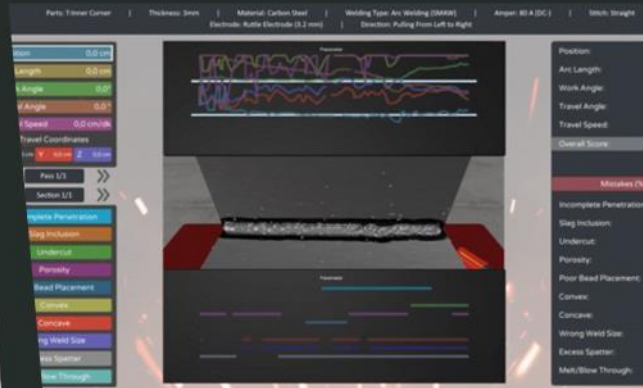
- Current, volt, wire feeding speed values can be adjusted.
- AC, DC+, DC-polarization can be selected.
- Gas mixture and gas flow can be adjusted.
- Electrode material and diameter can be selected.
- Welding seam direction and seaming technique can be selected.



ANALYSIS OF WELDING

Instant analysis of welding parameters and mistakes is provided.

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- On the data screen, all data may be displayed graphically.
- It is possible to inspect a live welding seam.
- Welding failures are displayed along with their location on the material.
- Analysis can be used to evaluate the welding.
- Separate analyses can be performed on welded sections and passes.
- It is possible to capture the welding report as well as the welding video.



USER EVALUATION SYSTEM

All data of the welding performed by users can be accessed.

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- Video footage of users recorded during the welding can be viewed.
- Multiple-choice exams can be created to evaluate users.
- Exam result data can be examined.



