

WELDING SIMULATOR

Virtual Reality Welding Trainer



Welding Process

- SMAW
- GMAW
- GTAW

WELDING
SIMULATOR

SPARK 360

SPARKLINE
WELDERS

WELDING TORCHES

SMAW

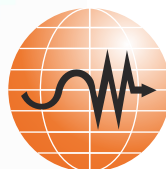
GTAW

GMAW

HAPTIC WORK PIECES

MODEL

SPARK 360



SPARKLINE
WELDERS

ISO 9001 : 2015 Company

Technical Specification For Welding Simulator

Product	Welding Simulator
Vision Technology	Virtual Reality
Input Supply	Single Phase 110-230v, 50 - 60 Hz, (5 amp) Current Rating 0.5-11A
Learning Concepts	Didactic and Simulation
Process Simulated	SMAW , GMAW , GTAW
Joint Configuration	Butt, Fillet, Lap, Pipe To Plate And Pipe To Pipe
Welding Position - Basic	1G To 6G and 1F to 4F (Flat , Horizontal , Vertical, Overhead)(PA, PB, PD, PE, PF & PP)
System Sensors	Welding Guns has sensors. Detection by sensors placed on Torch Head
Skills Learned & Measured	Arc Length, Weld Speed, Work Angle, Travel Angle & Straightness, Position, Stick out, Tacking Training
Type Of Work pieces	Haptic Work Pieces/ Virtual Work pieces. (Non-Metalic)
Work Stand	Initial positioning and Setting of Torch / Virtual. Flexibility to fix job in all positions.
Analysis Modes	Video Replay And Graphical Report
Evaluation Methodology	Objective (score) / Graphical (trends)evaluation
Viewing Points	Precision co-ordination & realistic experience of welding from both viewing point 360° 3D View from helmet
Thickness Of Materials	3.0, 5.0 & 10.0, 15 mm.
Simulator Parameters	CC / CV Function
Welding Parameter Adjustments	Current, Voltage , Wire feed speed & Gas pressure
Ghost Mode	To guide the welder while welding
Special welding options	Root run & multi pass

Features of The Welding Simulator

- The simulator is with Real environment simulation with smooth , jerk free welding simulation.
- **Machine is not producing any real arc and real fume.**
- *Welding simulator with display & C.P.U.*
- Viewing from helmet - HD Vision (3D)
- Simulator Provides 360° Environment with simulation of virtual Smoke , Spark and Welding Sound during Welding training
- Three process simulation Training module : SMAW/MMAW(ARC), GTAW (TIG), GMAW (MIG/MAG/CO2)
- Smart Real Welding Torches can Simulate SMAW/GTAW/GMAW welding, with Virtual Electrode for SMAW, GTAW with filler rod.
- VR Resolution - High Resolution • Colour -32 Bit True colour
- Touch Screen Display Monitor 21" 3D with the Facility to connect External Projector.
- Guidance for Skill parameters during welding (Continuously) like Welding Position , speed ,angle, stickout etc.
- Guidance for Ideal vision of welder during welding (Continuously). Live Insta Correct Feedback system
- Weld analysis on Gaps, Shape and Size of Weld Bead, Spatters.
- Every weld bead is evaluated by the simulator , Facility to monitor Performance of each student
- Free Teacher software with Create, Edit and Delete options for Courses, Modules and Student details.
- Networking of simulators can be possible. Possibility to include PDF uploads.
- Remote Maintenance and updates through online support.
- Machine includes pre-defined courses .E learning Videos , Various Audio visual s related to welding and safety.
- Administrator and Trainer Login is available to monitor and evaluate students activity .
- Multi Level Graded Learning is provided. Motion Error Captured through smart torch sensor
- Height Adjustment stand with Tilt option.
- Multi Pass Welding technique. Vertical and Over Head Welding Position.
- Operating System is Licenced Windows 7 /10

In view of continuous Development, We reserve the rights to modify the design, specifications and or dimensions without notice.

SPARKLINE WELDERS

Works : 7&8, Noble Industrial Estate No.2, Navghar, Vasai (East), Dist. Palghar - 401210 Maharashtra, India. Telephone : 80800 27775 / 76662 17775

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E-mail : sparkline78@gmail.com • Visit us - www.sparklinewelders.com

- Work stand: Height adjustment with Tilt option to fix the job in all position.
- Equipment should be capable up to 50 C and relative humidity upto 98%.
- In case of failure of cooling system, the plant will stop automatically.
- The control circuit is protected by MCB.
- Possible to include additional process and improvement in the same machine.
- Learning through didactic and trainer guidance.
- Protection against- Over Current, under voltage, Over Voltage and Short-Circuit.
- Simulator hardware used are complied with CE/FCC regulations.
- Machine has pre-defined courses although difficulty can be varied by user.
- Software should allow user defined courses.
- Software is upgradable in future.
- Welder can have their personal login ID and able to track complete history.
- Machine is upgradable, If ordered will be provided at extra cost.
- Robotic welding simulator can be upgradable.
- Provision for 2 step & 4 steps operation in GMAW (MIG/MAG) and GTAW/TIG process CC/CV Function.
- Each welding seam is recorded and can be played with ghost for evaluation purpose.
- In course mode, the activation of next steps to happen only after successful completion of the previous skill.
- Welder can have their personal login ID and able to track complete history.
- Machine is upgradable, If ordered will be provided at extra cost,
- RFID based card access system must be inbuilt for enhanced data security and administration of machine.
- Machine alerts for wrong parameter selection & wrong welding.
- Evaluation result is produced in form of marks or graphs or both.
- Software suggests pass/ fail after completion of each course.
- Provision for ranking for passed students.
- Data management and storage through USB device.
- Menu Language: Hindi and English.
- Voltage and Current Range :
SMAW Current Range - 50 Amp to 240 Amp
GMAW Voltage Range -10V to 32V and Current Range - 25 Amp to 270 Amp
GTAW Current Range - 25 Amp to 270 Amp
- Optical Tracking System-Advanced and latest tracking methodology using HTC Virtual Reality Set, which comprises of Torch Trackers, Camera and Helmet.
- Length of Weld Bead on workpiece is 150mm for welding practice
 - Few Process Upto 24 Mm
 - User-friendly Wireless Positioning

TRACKING SYSTEMS

- Advanced Optical Infrared Lighthouse Tracking Systems Which Protect From Interference.

For Wireless Tracking Optical Infrared Lighthouse Tracking Methodology

SPECIAL WELDING OPTIONS

- Root Run & Multi Pass Upto 8 Layers Welding

LANGUAGE OPTION

- English And Hindi
- Any Regional Language Will Be Added

RESULTS

- Graphical Trends Analysis For Arc Length, Work & Travel Angle And Welding Speed.
- Pass/fail Indication With Score

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FEATURES OF THE WELDING SIMULATOR

The Simulator Is With Real Environment Simulation With Smooth, Jerk Free Welding Simulation. Completely GREEN Learning VR Technology. Machine Is Not Producing Any Real Arc And Real Fume. Viewing From Helmet – Hd Vision (3D) And Display Monitor. Live Sound, Video & Data On Display Monitor During Welding. Simulator Provides 360 ° Environment With Simulation Of Virtual Smoke, Spark And Welding Sound. Three Process Simulation Training Module : SMAW/MMAW (Arc), GTAW (TIG), GMAW (MIG/MAG/Co2) Smart Real Welding Torches Can Simulate SMAW/GTAW/GMAW(FCAW) Welding, TIG With Filler Rod. VR Resolution – High Resolution and Colour – 32 Bit True Colour Touch Screen Display Monitor 21” 3D Inbuilt And External Display 43 Inch.

Virtual Reality Environment For Virtual Learning Environment - Welding Training Booth ,Shipyard Environment and Construction Site Environment. No Real Environment is Visible From VR Headset. Realistic Work Piece Training Student Can Practice In Virtual Jobs Of :Oil And Gas Pipeline, Shipbuilding & Shipyard, Factory/Workshop Construction Equipment, Aviation, Cargo and Railway Coach. Guidance For Skill Parameters During Welding (Continuously) Like Welding Position, Speed, Angle, Stickout Etc. Guidance For Ideal Vision Of Welder During Welding (Continuously). Live Insta Correct Feedback System. Weld Analysis On Gaps, Shape And Size Of Weld Bead, Spatters. Every Weld Bead Is Evaluated By The Simulator, Facility To Monitor Performance Of Each Student.

Free Teacher Software With Create, Edit And Delete Options Of Courses, Modules And Student Details. Networking Of Simulators Can Be Possible. Possibility To Include Pdf Uploads. Remote Maintenance And Updates Through Online Support. Machine Includes Pre-Defined Courses. E Learning Videos, Various Audio Visuals Related To Welding And Safety. Administrator And Trainer Login Is Available To Monitor And Evaluate Students Activity. Multi Level Graded Learning Is Provided. Motion Error Captured Through Smart Torch Sensor. Height Adjustment Stand With Tilt Option. Multi Pass Welding Technique. Vertical And Over Head Welding Position. Operating System Is Licensed Windows 10. Welding On Respective Industry Work Piece Virtually. Viewing Experience 360 Degree 3D Immersive Viewing Expeirnce Through The Virtual Reality Headset.

PC Unit i7 , Win 10, Ram 8Gb And Storage 500Gb with inbuilt Stereo Audio System. Material Selection: Low Carbon Steel, Stainless Steel and Aluminium Position Flexibility - Ability To Place The Real Work Piece In Any Positions And Synchronization With Virtual Work Piece.Each Torch has a Positioning Button To Synchronize Real With Virtual Work Piece. GMAW Welding Process: Real Industrial Shape Of The Gun with 2 Step-4 Step Control(2T and 4T) Welding Parameter Selection For The Following; CC/CV Option, Polarity: Dc+,Dc-, And Ac, Type Of Wire : Solid Wire, Flux Cored Wire, Aluminium Wire Wire Diameter : 0.8, 1.0, 1.2 & 1.6 Mm, Shielding Gas : Co2, Argon Mixture, Argon Gas Flow : Up To 10M/Min, Wire Feed Rate : Upto 10M/Min Guidance For Skill: Arc Length, Work & Travel Angle And Welding Speed. Voltage & Current Range Gmaw: 12V-32V & 25A-270A SMAW Welding Process - Real Industrial Shape Of The Gun with Different Electrode Selection Size Of Electrode : 2.5,3.15 And 4.00 mm 100% Virtual Electrode (Not Physical) with Consumption Of Electrode 100% Virtually Automatic Virtual Electrode Replacement Must Happen After Complete Consumption Of Electrode.

Guidance For Skill: Travel Angle & Welding Speed.Current Range: 50A-240A Clamping Angle Option Present (90,120,180 Degree) 90° To 180° GYAW Welding Process - TIG Gun With Filler Rod Real Industrial Shape Of The Gun, Current Range Gtaw : 25A-270A Filler Rod- 2.0 & 2.4 Mm and Current/Voltage Setting.

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Welding Option To Set Desired Current/Voltage. If The Ratio Of Current/Voltage Is Incorrect, Error Indicators Appears And Training does not begin. Penetration Level Analysis - Ability To View The Penetration Level Through Cut Sectional View At Any Desired Cross Section available. Video Playback - 360 Degree Video Playback With The Ability To Check Welding From All Angle With Zoom In And Zoom Out Facility For Checking Welding Bead Ghost Training - Feature To Follow The Ghost Gun In Welding Practice. Ghost Gun Provides Live Feedback When Followed Correctly Multi Level Practice - Basic, Primary, Intermediate, Advanced And Professional. Activation Of Next Course Only Happens After Completion Of Previous Course Successfully.

Real Time Viewing Angles - The Teacher observes Real Time Welding With 360 Degree Angles With The Facility To Zoom In And Zoom Out, Adjust The Angles At Any Desired Position and This does not Disturb The Student View While Performing Welding. Every Weld Bead Is Evaluated By The Simulator, Facility To Monitor Performance Of Each Student. Free Teacher Software With Create, Edit And Delete Options Of Courses, Modules And Student Details. Networking Of Simulators Can Be Possible. Possibility To Include Pdf Uploads.

Remote Maintenance And Updates Through Online Support. Machine Includes Pre-Defined Courses. E Learning Videos, Various Audio Visuals Related To Welding And Safety. Administrator And Trainer Login Is Available To Monitor And Evaluate Students Activity. Multi Level Graded Learning Is Provided. Motion Error Captured Through Smart Torch Sensor. Height Adjustment Stand With Tilt Option. Multi Pass Welding Technique. Vertical And Over Head Welding Position. Operating System Is Licensed Windows 10. Teacher Student Software Server(Database Management Software) Each Student will Have A Username And Password For Login. Teacher Can Add, Edit & Delete Student Names, Evaluation Of Student Performance, Administrator And Trainer Login Available To Monitor And Evaluate Welder Activity And Data Back Up. Homework And Practical Exam Facility. Achievement Ranking Of Student Performance. Results To Be Downloaded In Pdf Format.

Scope Of Supply

Real Welding Torch With Virtual Reality Trackers: 1 No. Each (4 Nos. Total)

Virtual Reality Kit (VR Headset And Base Station Camera) : 1 Set

Monitor Touch Screen: 1 No. 21 Inch

External Display: 1 No. 43 Inch

CPU: 1 No.

Software Pendrive: 1 No.

Workstand: 1 No.

Physical Work Pieces: 1 No. Each (5 Types)

UPS (1 Kva): 1 No.

Document: Manual, Installation Guide and Warranty Sheet

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Scope of Supply

- WELDING SIMULATOR UNIT : 1 No.
- ONE Torch each for SMAW/GTAW/GMAW with Tracker : Total 4 nos. virtual 3D tracker (3 Torch & 1 GTAW filler rod)
- Virtual Reality HD Helmet (3D View) : 1 No.
- Display Monitor (Touch Screen) - 21" : 1 No.
- Virtual Reality Sensor Camera with Telescopic Stand : 1 Set
- UPS 1 kva with Tubular battery : 1 No.
- Work stand including work with holder : 1 No.
- Work pieces (Butt weld, Fillet weld, Pipe joint) : 1 No.
- Components and accessories to meet the Operative need of the above specification & Manuals (Hard & Soft copy)



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