



Technical Specifications

<https://weldvr.com>

VR Welding
Simulator



Introduction

WeldVR is a virtual reality welding training platform developed by industry welding specialists and VR professionals to provide a realistic, safe, and controlled environment for welding education and skills development. The platform enables users to practice and refine welding procedures without material consumption, equipment wear, or exposure to workplace hazards.

The simulator supports multiple welding processes, including MIG, TIG, and Stick welding techniques as well as a variety of joint configurations and welding positions to facilitate comprehensive training across different applications.

By combining immersive simulation with practical skills training, WeldVR delivers a structured learning environment for developing welding proficiency, process understanding, and procedural consistency.

All-in-One

The WeldVR package is delivered in a premium Italian-manufactured compact hard case engineered for maximum durability and portability. The package features shockproof, dustproof, and waterproof protection, along with a custom precision-cut foam insert for secure storage and transportation of all system components. The package includes the latest-generation Meta Oculus Quest VR headset and custom-designed welding torches developed to replicate the ergonomics of real welding equipment for an authentic training experience. A link cable enables real-time casting of the user's perspective to external displays, supporting demonstrations, instruction, and collaborative training sessions. The system is further complemented by a cloud-based analytics platform for performance tracking and reporting, as well as customizable branding capabilities that allow organizations to integrate corporate logos, graphics, and visual assets throughout the virtual training environment.





Main Modules

WeldVR delivers a structured, training system composed of three core modules designed to support progressive skill acquisition and performance optimization:

- **Training**
- **Lessons**
- **Session Replay**

The Training module enables users to engage in targeted, hands-on practice across TIG, MIG, and Stick welding techniques, with the flexibility to select specific workpieces and simulate realistic application scenarios.

The Lessons module provides comprehensive, methodologically structured instruction for each welding category—TIG, MIG, and Stick—focusing on foundational principles, procedural accuracy, and technique development.

The Session Replay module facilitates post-session analysis by allowing users to review previously recorded welding activities in detail, supporting objective performance evaluation, error identification, and iterative skill refinement.

Different Welding Types

WeldVR supports TIG, MIG, and Stick welding processes, with integrated performance tracking and parameter analysis designed to identify areas for user improvement.

Interactive Learning Lessons

Features a structured interactive learning framework designed to facilitate the acquisition of fundamental welding competencies and process knowledge.

Assistance and Guides

Incorporates comprehensive real-time guidance features, including travel speed analysis, work and travel angle tracking, and arc length monitoring to ensure adherence to proper welding parameters and best-practice techniques.

Built-In Grading System and Analytics

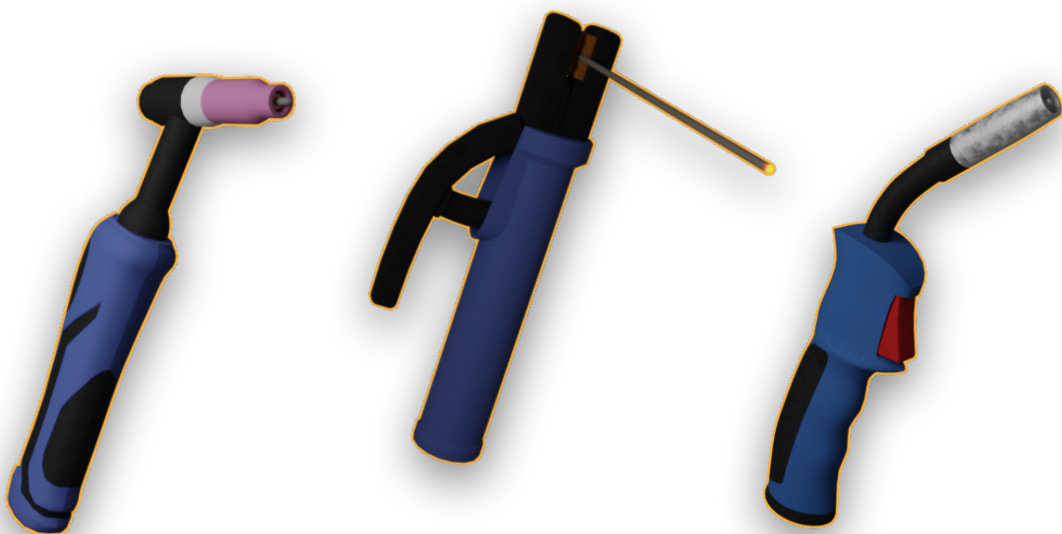
Includes an advanced performance assessment system that evaluates user proficiency based on critical welding parameters, including travel speed, torch angle, and arc distance. The platform records user movements throughout each session, enabling detailed performance analysis, objective scoring, and actionable feedback to support continuous skill development.





Training Modules

Users are provided with the option to engage with three distinct welding processes, TIG, MIG, or Stick, each engineered to replicate real-world welding conditions within a high-fidelity simulation environment. The system delivers detailed performance tracking alongside real-time analytical feedback to ensure measurable improvement in technique, consistency, and procedural execution.

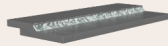


Joint Options and Positions

LAP JOINT



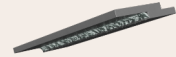
1F



2F

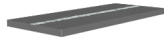


3F



4F

BUTT JOINT



1G



2G

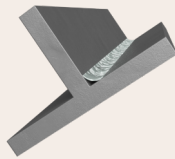


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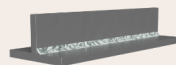


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TEEJOINT



1F



2F



3F



4F

EDGEJOINT



1G



2G

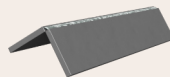


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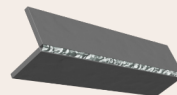


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CORNERJOINT



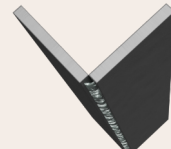
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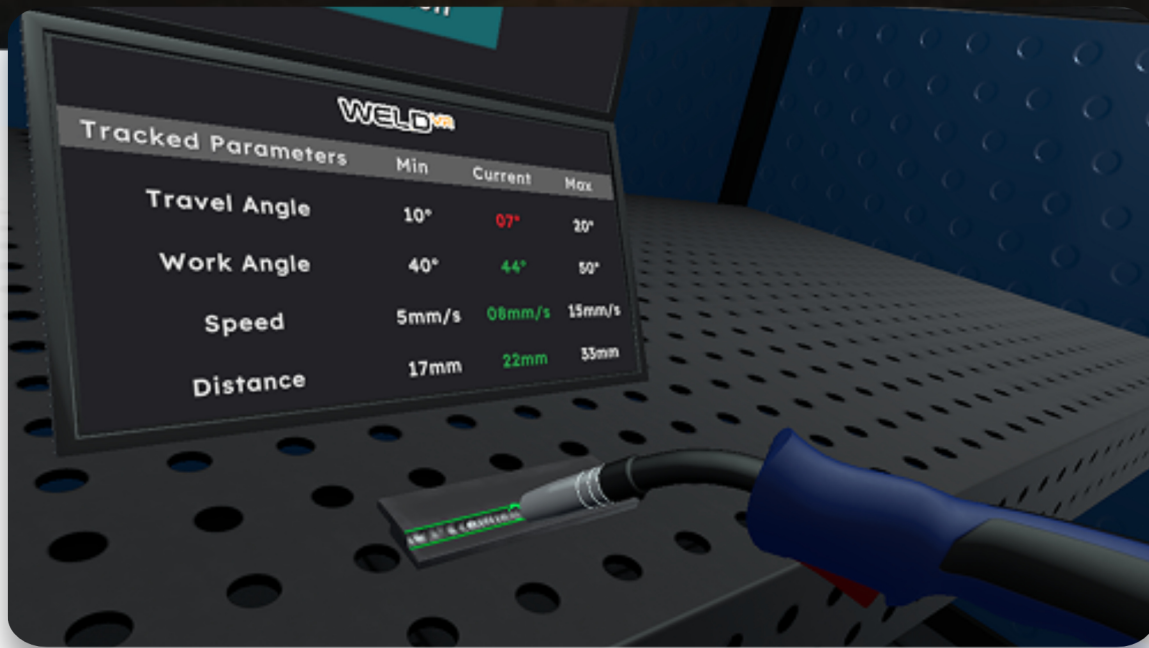
2G



3G



4G



Reticle Aim and Guidelines

The reticle aim ensures precise control by helping the user maintain the correct distance between the weld tip and the workpiece.

Combined with the guidelines, which display two reference lines, users can easily track and align their welding path for optimal accuracy. This dual system enhances overall welding performance, ensuring consistent results and better technique control across various welding positions.

Learning Module

WeldVR delivers a comprehensive suite of interactive instructional modules across MIG, TIG, and Stick welding techniques, structured to build both foundational competence and advanced technical proficiency.

The curriculum encompasses key operational domains, including welding technique, optimal travel angle calibration, and precise configuration of voltage, amperage, and wire feed parameters. It further addresses recommended electrode stick-out tolerances, electrode classification systems and coding standards, as well as advanced manipulation methodologies to ensure controlled weld quality and consistency.

Additional instructional coverage includes polarity selection and application, ignition and arc initiation methods, and post-flow procedure optimization to maintain weld integrity and cooling stability.

Collectively, these lessons establish a structured, performance-oriented learning pathway designed to develop robust fundamental skills while supporting progression into advanced welding expertise.





Session Replay

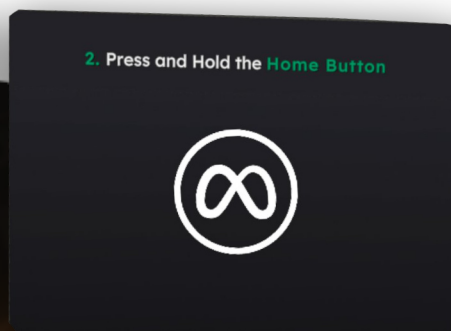
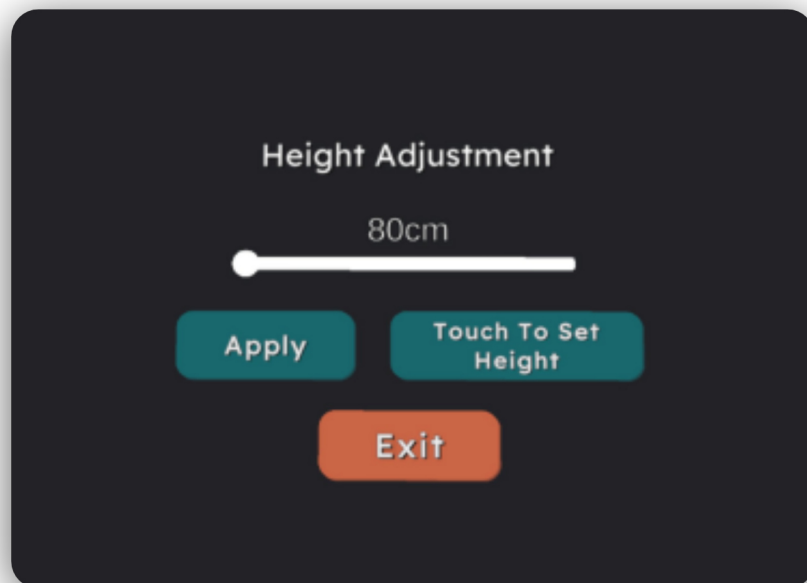
The Session Browser provides users with centralized access to all previously completed welding sessions, enabling efficient retrieval and review of training data. By selecting an individual session, users can load a full recording for detailed playback and performance analysis, facilitating the identification of procedural errors and areas for improvement.

This functionality delivers actionable insights into user performance over time, supporting systematic progress tracking, technique refinement, and continuous skill enhancement across all welding techniques.

Table Height

The table height can be configured through two distinct adjustment methods, enabling flexible ergonomic setup across varying user environments. Users may manually define the height using a precision slider control, allowing adjustment up to a maximum of 120 cm for fine-tuned positioning.

Alternatively, the mixed reality calibration feature enables spatial alignment between the virtual and physical environments. By aligning the virtual table outline with a real-world reference surface, the system automatically computes and applies the corresponding height adjustment, ensuring accurate real-to-virtual synchronization and optimal user ergonomics.





Enterprise Mode

The Enterprise Version provides secure login functionality and supports the creation and management of multiple user accounts within an organizational framework, enabling structured access control and individual performance tracking across all trainees.

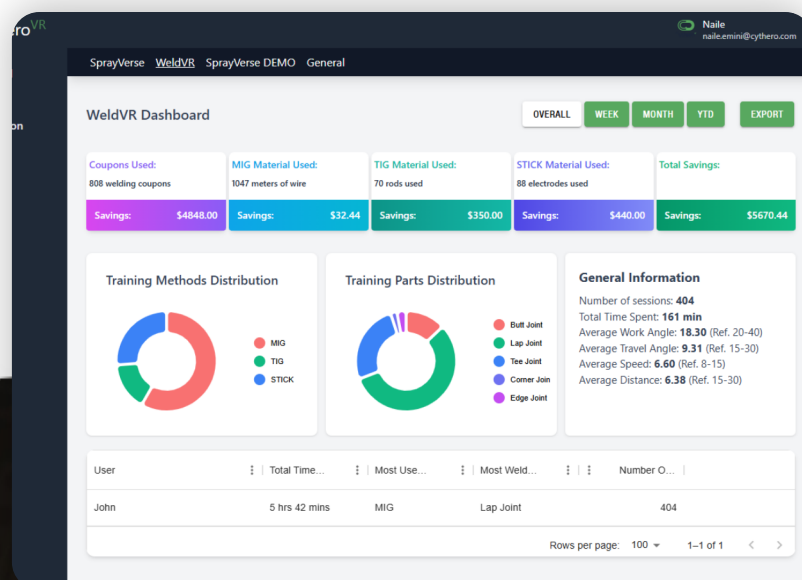
It includes a centralized, web-based administration panel designed for comprehensive system governance. This interface enables administrators to manage user accounts, configure organization-level parameters, monitor trainee progress, and generate detailed operational and performance reports to support training optimization.

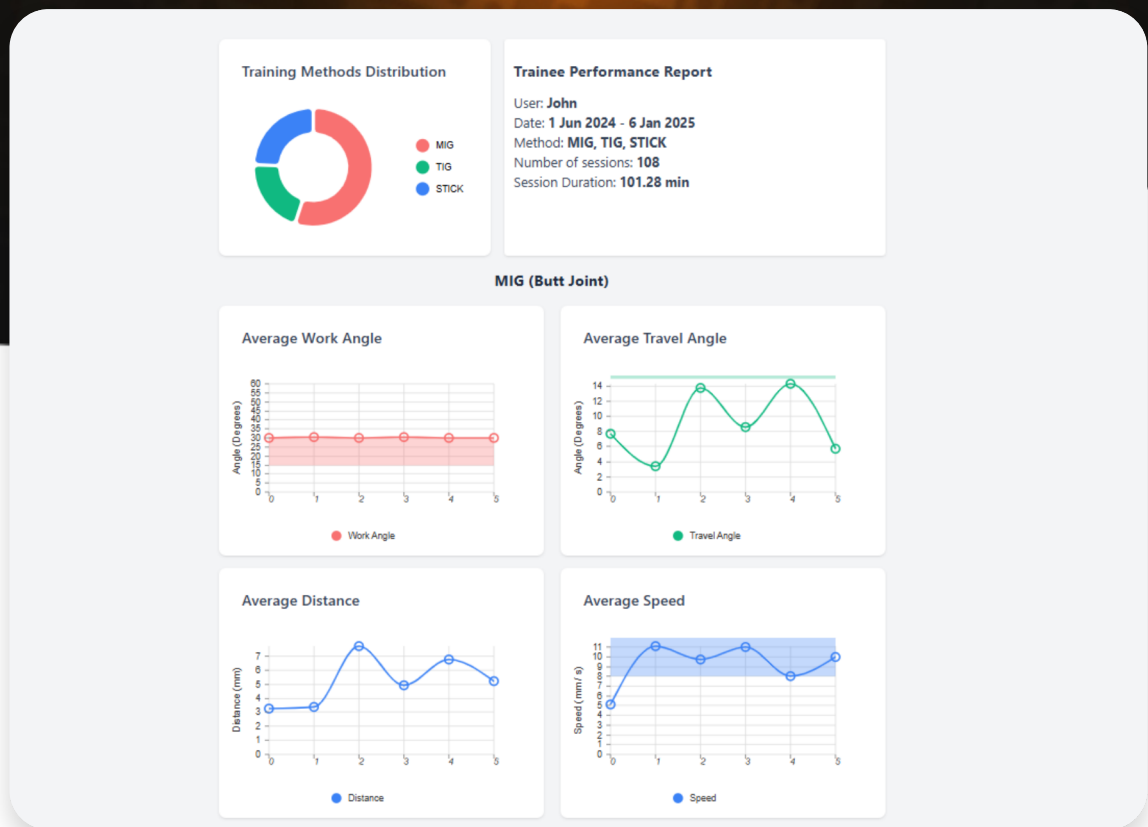
Cloud Analytics and Reporting

Each WeldVR All-in-One package includes five(5) years of complimentary access to the cloud-based web portal, designed to deliver advanced analytics, reporting, and performance intelligence. The platform provides a streamlined, user-centric dashboard that consolidates key training metrics into actionable insights.

Within the portal, users can monitor detailed material consumption across MIG, TIG, and Stick welding processes, evaluate cost efficiency and savings, and analyze training distribution across methods.

In addition, the system presents comprehensive session-level analytics, including total session counts, average travel angle, welding speed, and travel distance metrics. This integrated reporting framework enables both trainees and organizations to systematically evaluate performance, optimize training strategies, and drive continuous improvement in welding proficiency and operational efficiency.





Trainee Performance

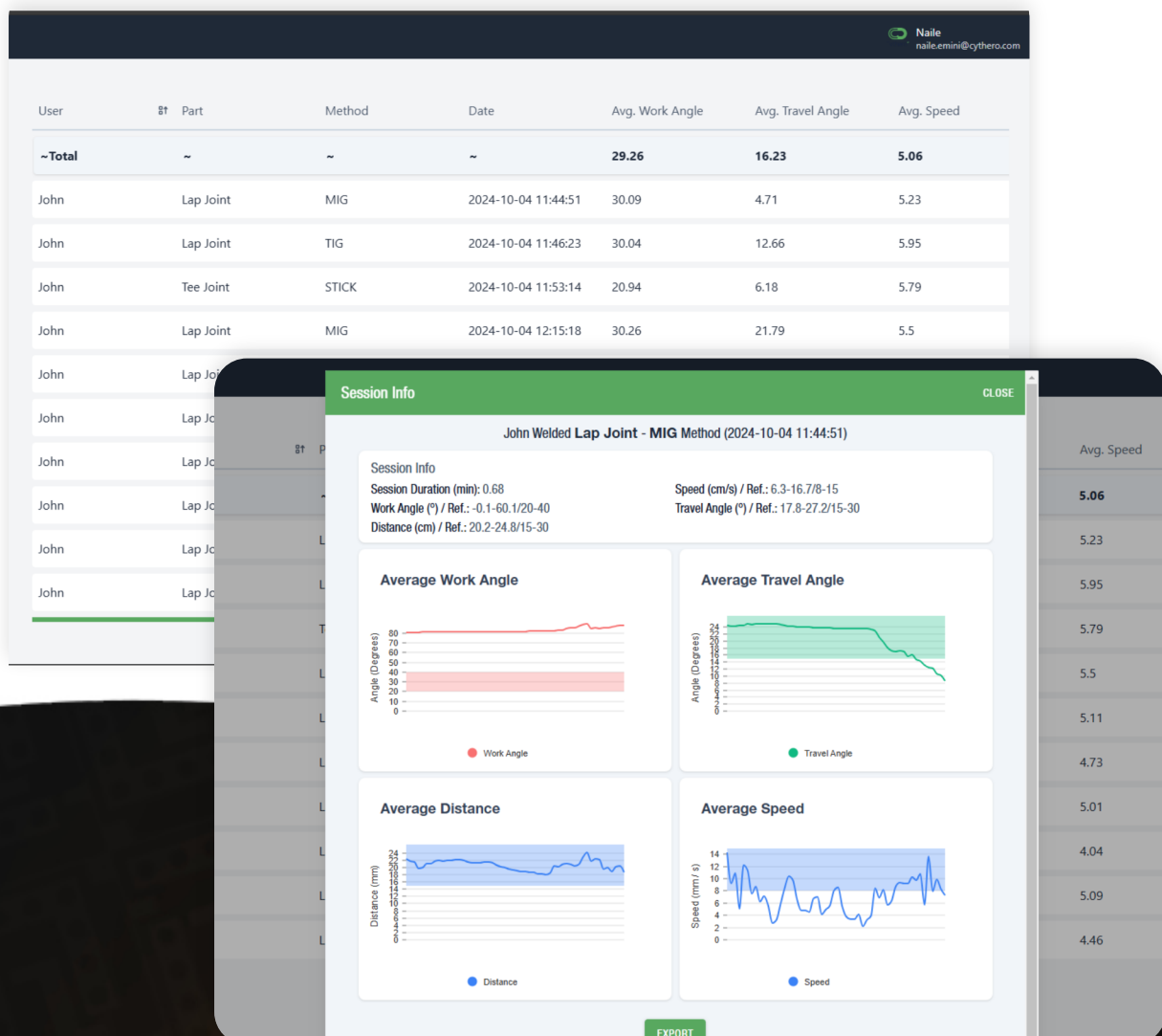
The Trainee Performance Report provides a structured overview of trainee progression, documenting completed joint types alongside longitudinal performance scoring to enable objective skill assessment over time. It delivers clear visibility into performance trends, allowing for precise benchmarking of improvement and consistency.

In addition, the report highlights specific areas requiring enhancement, enabling targeted skill development and focused training interventions.

Session Report

The Session Report provides a comprehensive breakdown of an individual training session, consolidating key operational and performance metrics into a structured overview. This includes total session duration, materials consumed, and aggregated averages of critical tracked parameters such as travel angle, work angle, welding speed, and travel distance.

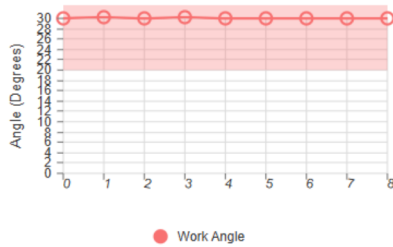
By centralizing these data points, the report enables precise post-session analysis, supporting objective performance evaluation, identification of procedural inefficiencies, and continuous refinement of welding technique.



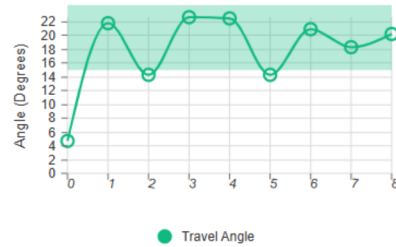
Lap Joint (MIG)

Welded: 9

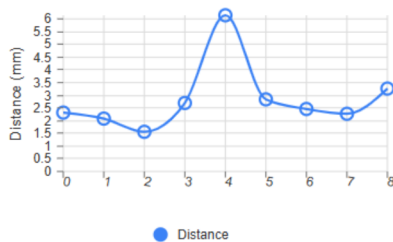
Average Work Angle



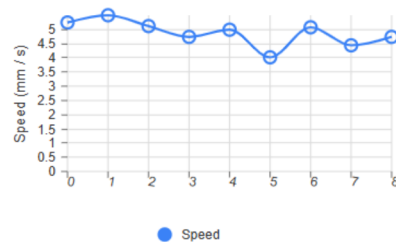
Average Travel Angle



Average Distance



Average Speed



Part Report

The Part Report delivers a granular breakdown of a trainee's performance on a specific joint or task, providing structured insight into progression across a defined training period. It aggregates performance data from each attempt or session, enabling longitudinal comparison and trend analysis.

The report systematically highlights achieved scores per iteration, offering clear visibility into performance consistency, improvement trajectories, and variance across attempts.



weldvr@cythero.com

<https://weldvr.com>

info@cythero.com

<https://cythero.com>

