

## Learning to weld the easy way

Fronius has launched its new Welducation Simulator to better enable welders to learn, train and consolidate their welding skills using augmented reality under realistic conditions. Edric van der Walt of Fronius South Africa outlines the advantages.

Using the newly available Welducation Simulator, welders can learn, train, and consolidate their welding skills step-by-step under realistic conditions without any risk to safety and with no additional costs for materials, gases or wear parts. "The new augmented reality glasses make the weld, the welding process and hence the entire welding experience astonishingly realistic, while the Welducation Campus rounds off the entire training package by teaching the theoretical aspects of welding," says Edric van der Walt of Fronius South Africa.

The saying 'a trade in hand finds gold in every land', has by no means lost its relevance in the present day. But when it comes to highly qualified welders, the shortage of skilled workers is an ever-present issue. "Excellent welder training and the high degree of user friendliness of all our welding solutions are two ways in which Fronius is addressing this challenge," he says.

Virtual training with the new Welducation Simulator is the perfect instrument to simulate complex processes and tricky situations in a risk-free and cost-effective way, and to repeat them time and again without wasting resources. Thanks to these exercises, beginners can improve their

welding skills in a safe environment and learn directly from their mistakes, perfectly preparing them for welding on a real seam.

### High-tech training for the challenges of tomorrow

With its latest welding simulator, Fronius is not only focusing on virtual reality or VR, but also on augmented reality (AR). Another concept mentioned in this context is extended reality. This technique is characterised by the insertion of digital elements into the real world – be it on a screen or on a pair of glasses – directly in front of the viewer's eyes. Employing AR technology and using original welding torches, hosepacks and the housing of a real Fronius welding system create a genuine welding experience.

Trainees can use the Welducation Simulator to practice three processes: manual metal arc welding (MMAW), gas-metal arc welding (GMAW/MIG/MAG) and gas-tungsten arc welding (GTAW/TIG). They do this while using various materials (steel, stainless steel and aluminium), material thicknesses, and welding positions in the welding simulation.

Common practice workpieces and adjustable welding parameters complete the realistic conditions because the training is



not only about achieving the perfect weld: as with a welding challenge in the real world, it is also necessary to complete tasks before, between and after joining. This includes such activities as installing the return lead cable, setting the correct welding parameters and replacing the electrode. The tablet with the simulator also shows the standard interface of a Fronius welding system so that participants can become familiar with using real welding systems.

### Safe, sustainable, and efficient

Welding is one of mankind's oldest joining processes and it is hard to think of life without it in workshops and industry. However, the arc, UV radiation and welding fumes all raise safety issues. It is essential to protect all welders against these dangers as best we can. Risk minimisation is becoming increasingly important during training, and the best way to ensure safety is to eliminate all risks. The Welducation Simulator offers a protected virtual environment in which trainee welders are not exposed to any risks or pollutants. This means they can have fun learning to weld before creating their first welds in the real world.

What is more, virtual welder training is significantly more efficient and resource-conserving than conventional training. Expensive consumables, such as metal, wire and shielding gas, are not required, and the bulk of the component training can be done on the simulator. The arc time achieved by trainee welders is as much as 65% higher.

As the workflow between welds on the simulator is very simple, up to three times as many welding tests can be carried out on the simulator in the same amount of time they would take in the welding booth, saving resources, costs and time.

### Practice makes perfect

Each welding task requires different techniques and manual skills. The stand sup-



Providing an "astoundingly realistic" experience is an augmented reality headset, which enables welding challenges to be created in a simulated real-life environment.

plied with Fronius' Welducation Simulator offers a variety of options for attaching various workpieces in different positions. An additional large stand is available to provide even more variation. Whether an overhead fillet weld or a single-V butt weld, participants can practice nearly any welding position.

Virtual training offers three difficulty levels: easy, medium and difficult. For example, beginners with no prior knowledge receive plenty of assistance, while experienced users have to form their welds without any visual feedback on distance, angle of the welding torch or speed. In addition, wide-ranging analyses help trainees improve their technique and identify mistakes. All welds can be recorded and recalled at any time.



Augmented reality (AR), original welding torches and the housing of a real welding system create a stunningly realistic welding experience.

### Theoretical content from the Welducation Campus

With its integrated Welducation Campus platform, the new Fronius simulator provides a complete teaching concept comprising theory and practical training units. Trainee welders can also acquire knowledge and skills on their own with the help of courses, rather than requiring continual guidance from instructors.

The training tool manages the results and learning progress itself, but there is also room for personalised learning, as instructors can make their own theoretical material available in the Campus if they wish. By spurring one another on and being assessed professionally, trainee welders learn quickly and effectively. The sophisticated assessment system delivers an objective and verifiable re-

sult, while the ranking of their own welding performance encourages trainee welders to realize their full potential.

At the SCHWISSEN & SCHNEIDEN 2023 trade fair, Fronius sent a strong signal regarding the shortage of skilled workers by donating a Welducation Simulator to two welding training institutes: Caritas in Austria and the BerufBildungsWerk Greifswald in Germany.

Locally, the Welducation Simulator will be available from Fronius Sales Partners: PROAC Engineering in the Eastern Cape Province, and Bolt and Engineering Distributors (B.E.D.) across the rest of South Africa.

[www.fronius.com/en-za/south-africa](http://www.fronius.com/en-za/south-africa)

The multipurpose configuration supports various welding positions, materials and material thicknesses and the package includes standard workpieces and a stand.



Theory and practice are combined: the didactic concept enables trainee welders to deepen their knowledge while developing their practical skills at the same time.

