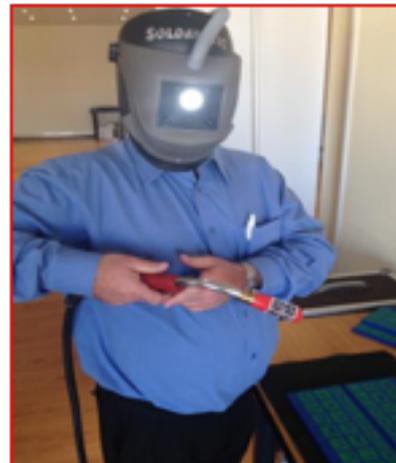# Environmentally-Friendly Augmented-Reality Welding Simulators For Welding Students At TVET Colleges

The new augmented-reality welding training solution from Sangari Education

Bez Sangari, CEO, Sangari Education

The blue collar skills shortage in South Africa is estimated at around one million jobs. To meet this demand, training is essential, but the machinery needed is expensive. Providing theory and no practical training is insufficient.

To address this, a widely-acclaimed augmented-reality welding simulator is available in South Africa as a cost-effective alternative to traditional training that provides the same level of skills but offers significant cost saving that can run into millions of rands per annum.

"The Soldamatic welding simulator, which has won top honours at the Worlddidac Awards for the most innovative educational product, requires no costly welding consumables and reduces training time by half," says Bez Sangari, CEO Sangari Education, sole distributor of the product.

"Consumables such as welding rods, steel plates or oxygen are not needed, and because the equipment has no gas emissions, it is eco-friendly," he says.

"In addition, the AR simulator can be used in any environment with no need for special clothing or ventilation. The welding can be done in a classroom or even an office. It is 100% safe, simply because it provides a augmented-reality welding environment. The system is based on augmented-reality 3-D vision through the trainee welder's headgear."

"Payback for a large training institution is about 18-24 months. The quick payback period is achieved because no consumables are used and there is no wastage of materials," Mr Sangari says.

The simulator consists of a hardware unit the size of a standard PC, with a built-in screen that allows the trainer to view the student's progress in real-time, as well as the student's welding process being recorded. The trainee wears the virtual-reality headgear which simulates a real-world welding environment.

The headgear generates realistic welding graphics such as the weld pool and beam. It emits simulated smoke, sparks and heating of the affected area, all through the student's headgear. It also simulates cracks, filler material, gravity and undercutting.

"Welding skills can be learnt for specific applications and the student's performance measured in a fair, reliable and unbiased manner. The unit includes 93 different training lessons and customised lessons can also be added," says Mr Sangari.

The facilitator and trainee are able to analyse and assess the trainee's welding performance in a video afterwards and evaluate their skills level such as the welding velocity, stick-out, travel and working angles. The system will report on each student's progress and retains a detailed portfolio of their learning progress.

The system supports SMAW, GTAW and GMAW processes and a variety of welding joints such as V-butt joint, Lap, T-joint, pipe to square butt joints and pipe T-joints and a variety of angle welding exercises. When required, maintenance and upgrades of the software can be done remotely.