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ENHANCING FUEL CELL TRAINING THROUGH THE USE OF A VIRTUAL REALITY SCENARIO

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Summary: To be competitive in a global market where competition is sometimes distorted by local aid, European companies must be innovative and flexible. They must therefore be able to count on competent and responsive staff capable of adapting to the various workstations. The initial and continuous training of personnel is therefore a crucial need today^[1]. The arrival on the market of AR (Augmented Reality) and VR (Virtual Reality) technologies makes it possible to imagine new training models^[2]. This is especially relevant when dealing with renewable energies, such as hydrogen, which are called to play a crucial role in the current energy transition.

The work carried out in this study consists of offering novice users a set of educational scenarios and an virtual reality device for handling a fuel cell didactic bank test for hydrogen utilization. In a first scenario, the students rebuild a fuel cell by correctly assembling the different components. A second scenario make them draw the polarization curve and studying the influence of the operating conditions of fuel cell management, namely temperature and current or tension piloting of the fuel cell. A first work carried out on a small group of students tests the autonomy of the users with this new device. A second experiment carried out on first-year engineering school students and master students made it possible to quantify usability using a standardized SUS questionnaire.

The results show that the level of usability varies from good to excellent, regardless of whether the user has used a VR headset before. They also validate the transmission of technical skills from post-bac learning levels (French *Licence Pro* and BTS) to Master level through the cooperative work of students from different disciplines, from technicians to engineers. To obtain this result, the observed criterion is the effective assembling of the fuel cell system, the evaluation of the security risks associated to hydrogen and the piloting of a fuel cell system in an autonomous manner. The global work in progress aims at providing relevant training scenarios for the training and the use of fuel cells.

References:

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