

HEAVY EQUIPMENT SIMULATOR FOR TRAINING

INVENTION DESCRIPTION

The training of heavy equipment operators involves different problems from the point of view of occupational risk prevention as from an economic perspective. The use of this equipment by an inexperienced user implies high risk, and a greater suffering for machinery. Moreover, the use of civil equipment for training tasks involves a high cost. The use of equipment simulators for training and learning tasks provides a solution to these problems and it is as an essential tool in the context of risk prevention and safety, as well as, decreases training costs.

Researchers from the Institute of Robotics and Information Technology (IRTIC) of the Universitat de València have developed new heavy equipment simulators for training. The simulators use instruments similar to those used in real equipment and recreate a virtual environment that allows the user to have the feeling of working “there.” The simulator allows as many repetitions of an exercise as the instructor deems necessary, analyze what has been done and the use of the equipment in situations that are not feasible with

the actual equipment, i.e. operation with equipment failure, extreme weather conditions, operating under pressure, etc. In addition, simulators provide a tool for objective and reliable evaluation of new equipment operators and can be used not only for the learning phase, but also for recycling or proficiency testing.

The developed simulators use the latest technologies in 3D graphics and virtual reality, employing technologies applied to “serious games.” Moreover, simulators use movement platforms to simulate acceleration and immersive visualization systems. With all this elements, the immersive experience of the users is maximized.

BUSINESS APPLICATION SECTORS

Simulators are applicable to several industries, being specifically designed for:

- Transport: train and / or tram, cars, trucks, etc.
- Construction: heavy equipment like Mobile crane, Tower crane, Forklift, excavator/loader, etc.
- Maritime sector: harbour equipment such as Gantry crane, Trastainer crane, Reach-Stacker and RoRo tractor.

TECHNICAL ADVANTAGES AND BENEFITS

The use of simulators has the following advantages:

- Low cost, since the equipment is not used for training and reduces the training period and also saves costs in maintenance procedures.
- Objective and measurable evaluation, due to the integrated automatic evaluation system of the developed simulators.
- Security, there is no accident risk.
- Risk prevention, training by simulator allows exercise in dangerous situations and in diversity of conditions (weather, rhythms of work, etc.) that are not possible in real situations.

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DEVELOPMENT STATUS OF TECHNOLOGY

There are fully developed market-ready prototypes.

INTELLECTUAL PROPERTY RIGHTS

The technology is protected by intellectual property rights that apply to software.

COLLABORATION SOUGHT

- License agreement, manufacturing or marketing.
- R & D project to complete the development or apply to other sectors.

RELATED IMAGES



Image 1: Simulator with motion platform



Image 2: Tower Crane Simulator

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