Computerised training

Organising hands-on training in industrial facilities can be costly and complicated. However, computer-based training can be a useful addition to the curriculum. Ann-Marie Knegt visits a Dutch company that can create virtually any scenario.

VSTEP, based in Rotterdam (the Netherlands), specialises in simulation software for emergency services, industrial emergency response and maritime applications. The company was set up five years ago. "We develop serious training programmes based on video gaming technology," explains co-owner and founder Cristijn Sarvaas.

Cristijn explains that computer-based training is currently very popular, especially in Europe. "Computer-based VR training is most useful for situations that are hard to simulate in real life or for scenarios that are just too expensive to simulate as a hands-on scenario." High-risk industries and emergency services encounter many situations in which these factors are applicable, he continues.

VSTEP developed a virtual training platform, RescueSim, with training products for the petrochemical industry, municipal emergency response and the maritime industry. The company started several years ago with the development of fire training scenario software on-board ship. "This course was not focused on the physical act of extinguishment, but on taking the right strategic decisions executed by either the fire team leader or the duty officer from a control room. For a number of ship operators we developed the Advanced Firefighting Course software, in co-operation with the Falck Nutec maritime training center, and it was approved by IMO several years ago," explains Cristijn.

Dealing with regulation

Industrial incident management is VSTEP's third product on the RescueSim platform. It was developed in co-operation with the Industrial & Harbour Fire Department Rotterdam – a public-private organisation in which 75 per cent of the costs are carried by the 50 largest petrochemical and chemical companies in the Port of Rotterdam and the other 25 per cent by Rotterdam Council – and Shell. Industrial & Harbour Fire Department had trouble getting the right training experiences because it was hard to create a realistic fire or explosion scenario at an industrial facility. Real fires are not allowed for by regulation.

Together they developed a simulation programme which can be used for incident management training by the whole petrochemical industry.

Three-dimensional software model

So how does VSTEP build one of these virtual industrial facilities?

In the process of building realistic virtual surroundings (for an oil refinery for example), the company uses the facility's plans as a basis on which to build a three-dimensional software model. Usually this kind of work is sub-contracted because it is so time and labour insensitive. A basic model of a petrochemical facility has already been developed, which can be specifically adapted or even fully customised to the client's wishes. The costs of this are shared with the Industrial & Harbour Fire Department and Shell.

Cristijn is currently building extra functionality for another chemical company that wants to train staff for incidents with liquid chlorine. The functionality will be built into the engine as a whole and other users will be able to access that.

"It means that our clients do not have to spend tonnes of cash on a single simulation programme. Because we have already designed the basic functionality, we only have to adapt it to specific a client's requirements. The software is available on a subscription model from 22,000 euros a year, this includes a computer and regular update of new scenarios. For a small extra charge your own facility can be modelled in 3D," he summarises.

The largest benefit of using video gaming technology is that it is visually very strong, he explains, "The student really 'experiences' the situation on screen. Secondly, it is interactive; the student is constantly occupied as well as being responsible for his own decisions. Lastly, it is a cost effective way of training and it is much cheaper than traditional simulation technology."

So how does the training work?

VSTEP designed a toolbox that allows the instructor to create an unlimited range of scenarios and incidents via a drag and drop function. Every possible emergency scenario can be simulated, ranging from the behaviour of the weather and movements of fire, smoke and gas to other possible influences that shape an incident.

The response has been extremely positive, says Cristijn. "The fire service had to change its way of training, because firefighters were used to hands-on training, which required a certain measure of guidance, but this caused no problems whatsoever.

"The software can be used by operational staff on the ground as well as commanders. We developed procedural training for operational staff and scenario training for a higher level of command in which leadership, communication and assessment qualities are practised."

Some users train in a classroom, in which an instructor has an overview of how every individual student is performing. Others carry out the training individually.

As with the contents of the software, the set-up can be organised to the client's individual requirements.

Because the simulation system is based on video gaming technology and the realism is very high, students tend to enjoy the training much more. When the students were asked to train for incident response on-board of a ship, they became so familiar with their surroundings, that when they actually set foot on-board they knew their way around.

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