

BETTER TRAINING AND REDUCED RISKS AT POWER FACILITIES THROUGH VIRTUAL REALITY AND GAMIFICATION

Virtual Reality is changing the way companies keep their workforce trained, regardless of their experience in the job. Junior staff is thoroughly trained faster and experience of senior professionals is refreshed and enhanced more easily.

With over 200 Defense simulators for 51 clients across 23 countries, Indra ranks among the top companies in terms of production of specific digital training content and cataloging in the Spanish market. This knowledge has for some years been used to provide solutions for the energy market (utilities and oil & gas industry).

Indra's digital training solutions realistically reproduce the operating environment of energy facilities and the corresponding operational procedures. Training can then be carried out for standard or exceptional situations, always with the highest possible HS&E conditions. Time to train, results significantly shorter than conventional methods, as physical transfer to training sites is not required, staff can be trained simultaneously, training can be repeated by just rerunning the simulation, and programs can be easily readapted by reusing parts of existing programs such as graphical objects, procedures, sequences of test cases, etc.

"Content reuse is guaranteed, determining savings in development costs", explains Francisco Donato, Indra's Simulation Manager for Distribution and Utilities in the Energy Market. "but also, a greater motivation and a more thorough understanding of the mechanics and of the work surroundings in detail," added Mr. Donato.

The portfolio of Digital Training includes the use of new immersive technologies (training simulators, Serious Games and gamification) and other digital platforms (virtual and augmented reality).

Through simulators the trainee can learn and practice complex tasks that would otherwise require the presence of one or more very experienced trainers, the physical presence in the facility where that training needs to be carried out (generally the power plant or electrical installation) and a much more consistent number of hours, if it were to be done through conventional training. Time to train can be reduced by almost five folds. "A further differential factor provided by simulators is the possibility to reproduce unexpected occurrences or dangerous situations that would otherwise be nearly impossible to train people on," says Leonardo Benítez, Global Utilities Director at Indra.

3D Serious Games®, includes applications based on immersive technologies particularly indicated suitable where spatial orientation is important, and have proved to be essential in HS&E (e.g. maintenance, emergencies and evacuation of facilities).



Projects and recognitions

Indra has provided digital training services to European and Latin American energy companies, in the operation and maintenance of conventional and renewable energy power plants, in the HS&E procedures to evacuate and oil rig, in responding to distribution grid incidents and others.

In simulator-based training, the company has been providing services to Gas Natural Fenosa for over fifteen years. Most of the operators at the utility's coal-burning and combined-cycle power plants in Spain and its subsidiaries in Mexico presently receive training from Indra instructors. Some other noteworthy experiences of the company with training simulators in Latin America include Costa Rica (Instituto Costarricense de Electricidad, ICE) and Colombia (XM).

It's also worth noting that Indra's Serious Games® application recently earned the technology and consulting company recognition as the most innovative supplier of the year by Scottish Power, Iberdrola's subsidiary in the United Kingdom. Currently undergoing testing, this training tool will be used for training the electricity company's employees to guarantee compliance with mandatory HS&E measures when executing maintenance tasks on wind turbines installed at its wind farms.

The pilot project for the "Gas Tank loading simulator" developed for Enagas is encompassed within the 'CORE LNGas hive' project selected by the European Union for promoting liquefied natural gas (LNG) as a fuel in the transport industry, especially for maritime shipping, across the Iberian Peninsula.

Serious Games® and Gamification, the future

"Flexible training solutions to be run autonomously by trainees, are in growing demand for reasons ranging from ease of integration with corporate e-learning platforms, to appealing the youngest generations of employees – natively digital. Indra's developments with 3D Serious Games® and gamification respond to these challenges," says Benítez, and adds that "the full potential of simulators is yet to be unleashed, as they are still used as traditional classroom learning."

Serious Games® leverages on the developments in the video-gaming industry for applications in the professional environment. A graphics engine (Unity) enables real-like scenarios for training of situational awareness. These tools are employed for ordinary maintenance operations, emergency situations (evacuations), etc.

Gamification techniques are in turn meant to motivate the trainees, while they are carrying out a training sequence, putting into practice knowledge they have previously learned. "So, we're dealing with, for example, scores, game levels or medals assigned as tasks are completed and tests passed. Solutions of this sort are particularly suitable for induction of new junior employees", explains Leonardo Benítez.

Indra's Energy and Utilities solutions have been successfully implemented in the last two decades at over 140 companies (electricity, water, oil and gas) in nearly 50 countries. Indra's technology currently enables the direct management of over 100 million customers by companies worldwide. Indra has 9 specialized centers of excellence across Europe, Africa, Asia and Latin America. The company provides solutions for the entire sector value chain (generation, distribution, retailing, etc.).