

THE USAGE OF VIRTUAL REALITY TECHNOLOGIES IN THE TRAINING OF GCP SPECIALISTS

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This article considers ways to use virtual reality technologies in different spheres, and also this article describes the virtual reality application for the GCP specialists training.

In the last years of its developing, virtual reality technologies have been used both in the videogames industry and in the other different spheres of the human's activity, for example: in architecture, computer visualization of future buildings, it allows customers and executors to travel around the virtual buildings before the foundation's erection; in the education schoolboys and students can work in the unique experimental labs, create volume diagrams and perform chemical experiments; in the marketing and advertising spheres while the buying some product clients can hardly imagine the product that they bought. In this cases marketing experts use virtual reality. This is a nice opportunity to demonstrate the product from different sides, including hard technical details and constructions; in the auto-building industry virtual reality used to perform crush-tests, in the knots and the aggregate's assembling; civil engineers define an optimal distributions of the domestic communication, they analyze difficulties of the erecting works in the lodgments, they virtually place an equipment [1].

A lot of big companies already successfully use virtual reality to train specialists' process of production. For example Volkswagen concern instills special virtual reality applications to perform the logistics operations [2]. Siemens set up systems and software of the virtual reality on the developing and making the gears with the controllable rate for the motors [3].

Undoubtedly, for the industry sector facilities, the usage of virtual reality for the staff training is one of the most interesting areas to learn. The usage of the virtual reality in this direction is irreplaceable, because it opens new opportunities and allows to exclude the difficulties with the staff trainings, that appear with the usage of traditional training methods, which are temporarily expensive. According to this the virtual reality application for the GCP staff trainings has been developed, because GCP equipment tuning is difficult and requires high-level accuracy. Mistakes, that can be made while the GCP start, can lead to the gas closure at users houses, which is inadmissible. Also in the case with an accident on the gasification areas, needs instant and high-quality prevention, while that, the specialist, who prevents an accident, has a risk to harm his health (works with gas are dangerous).

Framed application is an exact copy of the real GCP, this application allows to walk around the facility and perform an act of starting and expulsion (fig. 1). If the specialist's actions, which are made in the application, do not conform the instruction, the specialist gets a notification about the mistake and repeat the training.



Figure 1. – Copy of the real GCP

The application also has the accompanying sound, which is fully conform the GCP sounds, which make the presence in the virtual GCP more realistic. One more attribute that makes this presence more realistic is that interaction with virtual objects is analogous to interactions in the reality. It is achieved with the help of recreation the 3D-model of the hand and its movement physics; it is illustrated on the figure 2.

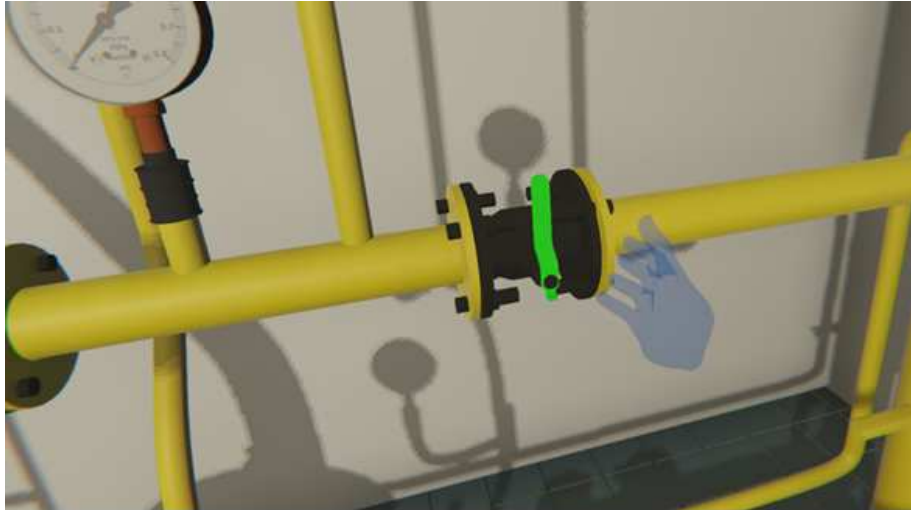


Figure 2. – 3D-model of the hand

The application has two modes: the exam and the training. During the training mode, the user perform an operation of starting the GCP according to the hints, which describe the sequence of actions, which are necessary to reach a successful complete of work. The exam mode means self-dependent actions to complete the starting of the GCP. An examinee has only one attempt to complete the task.

The application works with such virtual reality display systems as Oculus Rift CV1 and HTC Vive. For the creating the 3D-models of GCP equipment, 3D- modeling environment Blender were used. Blender is the most convenient and understandable modeling environment among other free options on the market. For the developing the main functional, the game engine Unity3D were used.

The immersion in the virtual reality allows users fully concentrate on the training without derivation on external stimuli. It is possible to recreate different situations, with the help of which the user will get the particular skill without any harm for the health.

The main merit of the using the virtual reality technologies while training is obviousness. While using the 3D-graphics, it is possible not only to describe the phenomenon, but to demonstrate the phenomenon with all kinds of detailing. Safety is also very important merit. Training the particular situation without harm is important. Virtual reality which is everywhere around the user will allow him concentrate on the training without derivation on external stimuli [4].

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