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VIRTUAL REALITY AND ITS USE IN OUR INDUSTRY:

HOW PROPER UTILISATION OF TECHNOLOGY CAN IMPROVE OPERATORS' COMPETENCY AND SAFETY IN THE OIL AND GAS INDUSTRY

“Using VR,
trainees can
practice low-
probability, high-
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A typical oil and gas production facility runs using sophisticated computer controls. A highly-skilled individual sits at a computer console and runs the plant. Additionally, several highly-skilled workers or field operators are continuously making sure all the equipment is running properly and smoothly. The computer console operator works with the field operators as a team to manage the facility.

Today, this natural work team is not being trained together. The computer operator trains on a computer console simulator which closely mimics the dynamics of the actual plant. The training instructor gives the console operator a wide array of problems to solve. They are taught to quickly identify an anomaly,

gather the data needed to solve the problem and then to take corrective action before the plant becomes unstable. The field operators, on the other hand, train in a classroom setting and in the field, working with the more experienced operators. It takes about 8-10 years of experience before the field operator becomes proficient enough to be able to work on their own.

Another fact worth mentioning is that oil and gas facilities are becoming increasingly safe and reliable over time. However, the more reliable a plant becomes, the more time passes between major plant upsets. The operators lose their ability to troubleshoot efficiently and may not have the skills needed to put the plant in a safe condition.

To address these concerns, a Virtual Reality simulator provides a



Virtual Reality can give trainees 8-10 years' real-world experience in as little as 6 months

major benefit. This invention couples the computer simulator with a Virtual Reality display that creates an immersive 3D representation of the oil and gas facility. The computer operator and the field worker can now train on the same training scenarios. The computer operator sits at the console simulator and the field worker goes in the Virtual Reality environment. The mass and energy balance data generated by the computer simulator streams between

the simulator and the Virtual Reality device. When the console operator opens a control valve, the field person can see it move in VR and vice versa. This complete operator training system or OTS closely mimics the real plant.

The natural work team can now train together on a wide variety of training scenarios, from simple work tasks such as swapping pumps to more complex scenarios such as fires and explosions. At a minimum,

communication skills can be honed. Better though, trainees can practice low-probability, high consequence events and be ready to respond to any plant anomaly. Our experience indicates that we can give these trainees 8-10 years of real-world experience in as little as 6 months, making them more proficient. ●

Note: The I3TE technology and software are licensed from ExxonMobil Upstream Research Company.

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