



*XALTER was asked to develop a VR training module to help employees identify safety issues with railcars.*

# Railcar Training

## Challenge

Downstream operations in the United States include the distribution of refined fuels from dozens of terminals across the country to thousands of retail gas stations. The gasoline is blended with special additives based on the specific requirements of each customer, location and applicable regulations and then loaded into a fleet of specialized tanker trucks and rail cars for distribution.

Before a railcar can be used, it must have the correct licensing, be up to date on all regulations, and not have any damage or maintenance issues. Operators must view a rail car and be able to accurately assess the condition of the car and its ability to operate safely. Attempting to train users to identify damage issues, maintenance issues, etc. is not always easy to do using real-world, life-size rail cars.

The first challenge is the sheer size and space constraints of storing damaged and broken rail cars in the yard as training props. Not only do

they take up a significant amount of physical space, but they are also expensive.

Second, large fixed asset training such as railcars means significant travel expense for multiple employees to visit a training location. The travel and accommodation costs for each training session had historically totalled thousands of dollars.

A third challenge of physical railcar training was the lost worker productivity for each trainee. Not only does each trainee lose work time for the physical travel, but they also have to spend time in the railyard with live trainers.

Building on the success of prior VR training that XALTER had built for the downstream petroleum refiner, XALTER was asked in early 2021 to develop a VR training module to help employees identify issues with railcars before they are put into use.

# Solution

XALTER built a virtual railyard environment containing various types of railcars in various conditions. Each railcar had varying correct and incorrect markings, damage, or unmaintained parts that needed to be identified by the user. A master list showed a wide range of issues the trainee was tasked to identify and then suggest remediation.

## Private and Secure Multiplayer Support

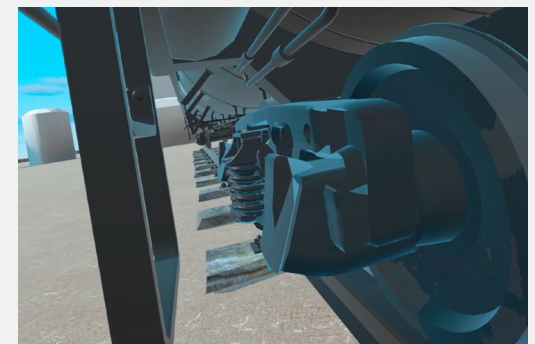
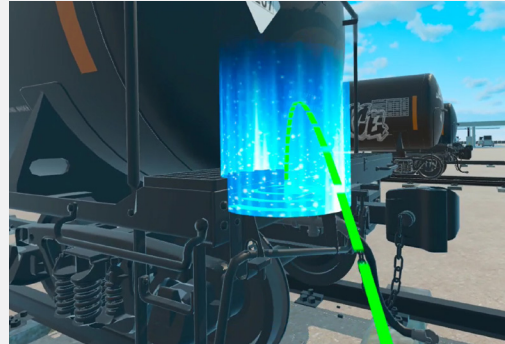
The entire system was built with a secure and private multiplayer server for the downstream petroleum refiner that runs on their networks. The design allowed for scalability and running multiple sessions with multiple rooms containing multiple users per room. Up to 50 trainees can join a single room without any performance degradation.

User trainees can log into the railcar training, assign themselves a custom room, and invite others to train and work with them. Voice Chat is leveraged to allow users to talk to each other in real time, giving a real sense of “being there” in the same space with collaborators.

## Virtual Lab for Remote Classroom Instruction

Combining the sandbox experience with full multiplayer capability has created an interesting classroom use case, where instructors are taking students into the railcar experience to discuss concepts, show examples of functionality, and use it for a variety of other tasks as a teaching aide.

### VR Training Experiences





# Results

Upon deploying the virtual railcar training in Q4 2021, the downstream petroleum refiner has already saved tens of thousands of dollars in travel costs and lost productivity.

Initial observations include several instances of multiple trainees joining the virtual environment to review various instructions. Trainers report high levels of engagement, strong feedback from users, and a variety of unique use cases as a collaboration and communication tool to improve critical-thinking and problem-solving skills.

Data will be collected throughout 2022 to track learning efficacy in the railyards for correlation to productivity gains and improved worker safety.



XALTER

XALTER develops virtual, augmented and mixed reality solutions that are delivered through the proprietary XALTER platform. The company has revolutionized the use of 3D modeling and simulation in training and operations support and offers measurable ROI, enhanced safety, content retention and environmental impact metrics.

Now customers can deploy multi-user and multi-platform programs anywhere in the world, gather data and derive valuable insights about their business. Scenario planning, user tracking and subsequent analytics facilitates data

visualization on sophisticated dashboards that showcase business intelligence. The program benefits learners, trainers and the client company.

XALTER engineers and training professionals harness the latest research and training technology to provide clients highly individualized solutions. The platform engages learners in immersive VR/AR/MR custom training environments tailored to specific industry sectors and ensures effective knowledge acquisition and skills mastery.

**XALTER**

1820 S. Boulder Avenue,  
Tulsa, Oklahoma 74119

[www.xalter.com](http://www.xalter.com)

