

FLAIM Trainer™ & VIVE Pro Eye Improve Hazardous Firefighter Training Industry With VR

VIVE's VR and eye-tracking technology enables safer, more affordable, and more immersive training experiences for emergency service workers.



Firefighter Training is Hazardous and Costly

Training firefighters is a dangerous and expensive task. Building an effective training facility costs tens of millions of dollars, and even in a controlled environment trainees face significant safety risks. Beyond basic fire hazards, the chemicals used to light and repel the flames can have cancer-causing contaminants. In some countries the use of such chemicals is seriously restricted, leaving training organizations with few alternatives to simulate scenarios.

The FLAIM Trainer: A More Effective Fire Safety Training Solution

These realities prompted Dr. James Mullins, a third-generation volunteer firefighter, to create an alternative training system. His vision was the FLAIM Trainer: An immersive VR simulation that combines patented haptic feedback technology with real-world firefighting equipment. Mullins' primary objectives were to make training less dangerous, less expensive, and more effective.

“These multi-million-dollar training facilities don’t change much over time,” says Dr. Mullins. “Trainees get used to them and stop learning quickly, so we have to set up props. These could be replicas of cars, trains, houses, industrial kitchens, but they can cost between \$300,000–500,000 per simulation.”

Familiarity is a dangerous thing in the firefighter training industry. No two fires are alike.

“For many new firefighters, the first time they experience complex fire behavior will be in the field,” says Mullins. “Often, the reports we get from battalion chiefs is that their trainees can be unprepared for the heat and smoke of a real fire as they are often taught using gas fired training props. We’ve seen firefighters die after falling through floors and from balconies—maybe their training is letting them down. We’re also exposing our firefighting workforce to high levels of carcinogens during training that we know is causing harm to our crews in the longer term. Firefighters have a much higher chance of cancer than the general public and FLAIM is committed to providing alternative training techniques to reduce this exposure.”

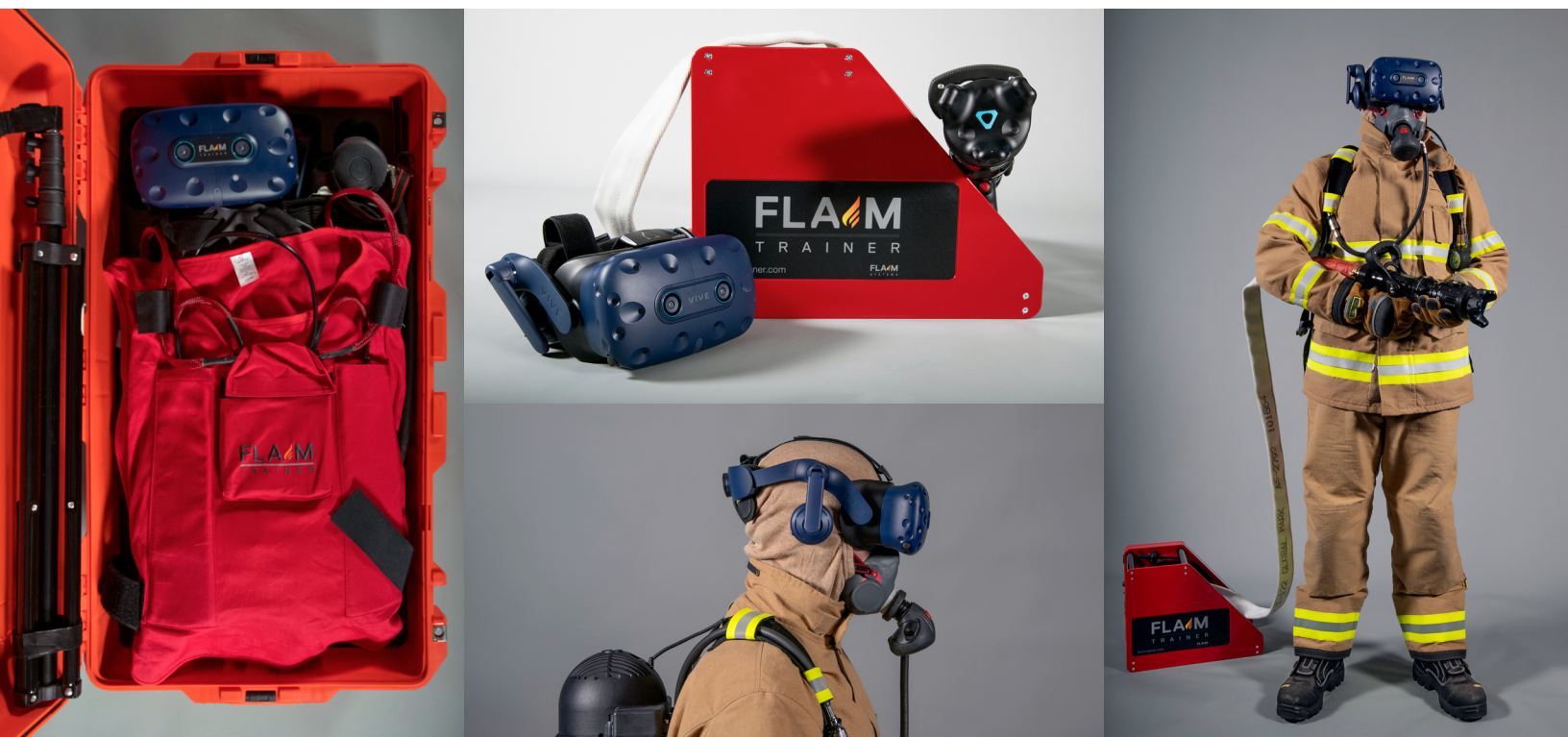
Improving Training Outcomes With FLAIM Trainer & VIVE

The FLAIM Trainer offers firefighter training organizations realistic, dynamic, and hazard-free virtual environments with a host of custom variables. Trainees can experience these simulations through training hardware, including:

- **A head-mounted display** that incorporates a VR headset with a breathing apparatus
- **An industry-standard-hose-line system** with a jet reaction force component
- **Industry-standard-protective clothing** with heat generation elements

To assist these efforts, VIVE provides FLAIM with an end-to-end enterprise solution that enables them to present their training experiences in the highest possible fidelity. This enabled FLAIM to deploy an interactive 360° environment while accommodating end-user support.

“We can control every aspect of the simulation,” says Mullins. “We put people into a suit that can reach



nearly 200°F. If you walk up to a fire, you'll feel the heat. We have a jet reaction force on the hose that can pull a couple of people off their feet if they're not holding it properly. Flow rates, water used, where a person moves—we can capture that with VIVE Trackers. These are the kind of real-world challenges that we can only do in the VIVE ecosystem."

Even better, FLAIM Trainer offers leading-edge-immersive VR at a fraction of the cost of traditional firefighter training. For around \$50,000, organizations can obtain a complete FLAIM Trainer system, easily transport it by car, and set it up in less than 15 minutes.

The Unique Benefits of VIVE Pro Eye

The more information FLAIM Trainer can provide to organizations and their trainees, the better. With VIVE Pro Eye's integrated eye tracking, they can identify and analyze eye movements and patterns. This helps to provide an unprecedented level of data, analysis, and insight into trainee behavior.

"New firefighters often miss the big picture," says Mullins. "They get tunnel vision. They might not see

the hazards in the environment. With VIVE Pro Eye, instructors can see what they're seeing and offer real-time, first-person feedback. Trainees get better visualization through heatmapping. As a result, fewer things get dropped and missed, and better habits are instilled. Trainees are looking less at the fire and more at electrical or chemical hazards and the integrity of the ceiling—little things that can become big problems fast."

VIVE Pro Eye also gives FLAIM Trainer the ability to create more detailed and immersive environments with foveated rendering. By using integrated eye tracking, they can follow trainees' pupils and enhance graphics in their line of sight. This technology allows FLAIM Trainer to push the limits of their modeling and simulations—as well as improve the visual quality of fire, smoke, and water elements.

By giving organizations the ability to see what users see, it provides them with a more detailed and immersive environment. FLAIM Trainer and VIVE play an integral role in preparing firefighters for the challenges ahead, while reducing risk in training and beyond. "VR is a game-changing technology in the firefighting industry," says Mullins. "The interest is exponential."

