# Case Study

## Firefighters tackle real life scenarios with immersive AV

County Durham and Darlington Fire and Rescue Service

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Castle Grange Technologies is one of the leading technology companies in the North East, specialising in providing data cabling and AV solutions for businesses and schools throughout the North of England.

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**Challenge:** In its new state-of-the-art fire training centre, County Durham and Darlington Fire and Rescue Service wanted to create immersive interactive firefighting training simulations with various scenarios projected as huge images.

**Solution:** Castle Grange Technologies, installed two Optoma ProScene EH505 projectors edge blended together to create huge 5.4m wide seamless images in each of the four training rooms. Linked to external speakers, they provide the sights and sounds of real-life scenarios that firefighters face.

**Results:** Simon Le Monnier from Castle Grange Technologies, said: “The training simulations provide a realistic and immersive experience that prepares the firefighters with the kind of incident that they may face on a call-out.”

## Challenge

The County Durham and Darlington Fire and Rescue Service (CDDFRS) wanted to create interactive and immersive training simulations for members of the service to participate in firefighting training exercises in its new state-of-the-art fire training centre.

Bowburn Fire Training Facility is a dedicated training centre incorporating BA training, fire behaviour facilities as well as a dedicated motorway/highway impact training area. It has classrooms, lecture theatres, an incident command simulation suite and three fire engine bays.

As part of this new centre, it needed to create a huge image in each of the classrooms with audio that would show simulations of various scenarios. Firefighters would act out their responses to the training simulations. It was vital that the image quality was perfect with no shadows cast by participants for the experience to be as fully immersive and as real as possible.

## Solution

In each of the four training rooms audio visual experts, Castle Grange Technologies, installed two Optoma ProScene EH505 projectors with short throw lenses. These were edge blended together with the powerful image blending and warping processor, Chameleon GB200 to create a huge 5.4m wide seamless image.

The imagery is projected straight onto the wall, which was painted with high gain projection paint. The eight projectors were installed at only 1.8m from the wall to eliminate any shadows from firefighters as they undertake the exercises. They were linked to external speakers via the audio output to provide the sights and sounds of real-life scenarios that firefighters may face.

## Type of Solution:

9x Optoma ProScene EH505 projectors with short throw and standard throw lenses. 4x Chameleon GB200. 2x HD300X.

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The remaining EH505 projector was installed with a standard throw lens in the main lecture theatre to show videos and de-brief presentations following the training sessions.

The 5,000-lumen EH505 projector with WUXGA resolution and powerful image blending tools delivers spectacular image quality and outstanding brightness – ideal for the training rooms.

It has multiple lens options, with zoom and focus adjustment to get the exact image size needed, while the wide lens shift range gets the image exactly where it is wanted. This combination of zoom, lens shift and choice of lens ensured that installation was straightforward.

All Optoma projectors use DLP technology, pioneered by Texas Instruments. This uses millions of mirrors to produce high quality imagery which does not suffer colour degradation over time, as sometimes experienced in other projector technologies. The dust-sealed, filter free design prevents dust and dirt from affecting the system ensuring optimal image quality with minimal maintenance. With full support for Crestron, Extron, AMX, PJ-Link and Telnet LAN commands, the projector can be controlled and monitored remotely over a LAN.

Ideal for museum installations, tourism attractions and exhibitions, the Chameleon GB-200 can merge the overlapped edges of two or more projectors to create one seamless image. It provides a simple and fast solution to an otherwise complicated and labour intensive procedure and has two channels, so a single processor can serve two projectors.

It includes both black level uplift and multi-region colour correction, which makes matching multiple projectors quick and easy. In addition, it allows sub-pixel control of the alignment of both images with up to 289 individual points of adjustment on each projector enabling use on both flat and curved surfaces.

The Chameleon can also be used for stacking, when a project needs higher lumens.  Stacking overlays images from multiple projectors to produce a higher brightness.

An Optoma HD300X projector was installed in each of the two smaller and conjoining lecture rooms, separated only by a retractable wall. This solution installed gives the fire service the option of using both rooms as one lecture theatre by retracting the wall. Due to the precision of the install, the 1,600 lumens of brightness and the projector's Full HD 1080p image quality, the presentation can be viewed clearly from all angles.

## The Results

The new £5.5m state-of-the-art facility training centre opened in August 2015. It includes a four-storey drill tower, a stretch of road with roundabouts and junctions to simulate car crashes, training rigs to demonstrate how fires behave, animal rescue trenches, a drill ground, breathing apparatus teaching area and an auditorium for lectures and presentations.

The imagery and audio of burning buildings and other scenarios in the training rooms create an immersive experience for the firefighters who can act out their roles close to the wall without it affecting the visuals.

They communicate with the control room via a screen and camera to create a similar scenario as they would encounter in a real incident.

These facilities will not only be used by CDDFRS incident commanders but also by Durham Constabulary, which will use the Hydra Minerva suite to train and test their senior police officers in a range of incidents simulated via a control room on site.

Simon Le Monnier, Electrical Engineer at Castle Grange Technologies, said: "The simulations are incredibly realistic and impressive. The imagery is brilliant, bright – and big! As the firefighters are so close to the wall whilst they run through the incident, it is vital that the image quality is perfect.

"The training simulations provide a realistic and immersive experience that prepares the firefighters with the kind of incident that they may face on a call-out."

Stuart Errington, the Chief Fire Officer, said: "This new training centre will provide our firefighters and incident commanders with the facilities, conditions and challenges that they need to ensure they are equipped to respond to and manage an ever-expanding range of incidents.

"The centre will also be available to organisations and businesses keen to use the facilities for their own training and courses."

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