

# General Motors powerwall



▲ Clockwise from top: GM's powerwall is an integral tool used to visualize design concepts; the CAVE virtual environment gives GM engineers the ability to "life-test" various design features; the upgrades at GM have reduced research and developmental costs.

## Christie Mirage projectors add horsepower to General Motor's visualization and VR capabilities

In 2013, executives from leading car maker General Motors (GM) visited Christie's North American research, engineering and manufacturing facility for an exclusive demonstration of a prototype projection system. What they saw that day was a preview of what would be launched commercially as the Christie® Mirage 4K, the world's only 3D projector capable of displaying native 4K resolution at true 120Hz.

The demonstration of the Mirage 4K was timely as GM was looking to modernize its 240 sq. ft. HD glass powerwall at the company's Vehicle Engineering Center (VEC), located in Wilson, MI. The powerwall is an important tool used by GM engineers, allowing them to model and visualize design concepts such as styling, gaps, fits, finishes and overall layout.

In addition to two Mirage 4K25 3DLP® projectors, the upgrade of GM's powerwall

includes a pair of Christie Spyder X20 video processors with matrix switching capabilities, providing 20 megapixels of bandwidth for mixing, blending and windowing source formats.

**"We now have the capability to make very important design decisions that impact safety, features and comfort early in the process, in fact years ahead of prototype, which saves us time and money."**

**Joe Guzman,**  
Engineering Group Manager, Vehicle Assembly  
Structure, and Virtual Reality Center

The system also features several HP computers, 16 NVidia Quadro K6000 graphic cards and Dassault Systèmes 3DEXCITE DELTAGEN software, enabling real-time 3D visualization. The Mirage 4K projectors are running Christie Twist™ for full image warping and blending and Christie AutoCal™ for automated display alignment

Customer:  
General Motors

Location:  
Warren, MI

### Industry/Market:

- Automotive
- Manufacturing
- 3D visualization
- Virtual reality

Partners:  
3DEXCITE

### Requirements:

- 3D functionality
- High-resolution and brightness
- Reliability and ease-of-use
- Low-maintenance

### Summary:

Following an exclusive demonstration of Christie's Mirage 4K prototype projector, executives at GM choose to upgrade some suites at its Vehicle Engineering Center with Christie projection and processing solutions.

### Products:

Powerwall

- Christie Mirage 4K25 (2)
  - Christie Twist
  - Christie AutoCal
  - Christie Spyder X20 (2)
- CAVE
- Christie Mirage HD6K-M (6)
  - Christie Mirage WU14K-M

### Results:

The upgrades to GM's Vehicle Engineering Center continue to give company engineers the capability to make very important design decisions that impact safety, features and comfort early in the process, saving time and money.



▲ A pair of Christie Mirage 4K25 3DLP projectors work in tandem to illuminate GM's powerwall.

and calibration. To ensure optimal performance of the powerwall, Christie has onsite tech support that supplies GM with daily systems monitoring, log system management and staff training.

Christie's two xenon-illuminated Mirage 4K25 projectors replace nine outdated, non-Christie projectors that produced a resolution of 8.4 megapixels. The upgraded system, based on Christie TruLife™ electronics, now achieves 12.4 megapixels at 4K resolution, up to 25,000 center lumens and a high frame rate of 120Hz for increased brightness, smoother video and vibrant color. These high fidelity images enable GM to improve processes, enhancing the final product. "The powerwall is an incredibly useful business tool which helps us unleash our imagination and develop the highest quality products and solutions for our customers," remarks Joe Guzman, GM's Engineering Group Manager, Vehicle Assembly Structure, and Virtual Reality Center.

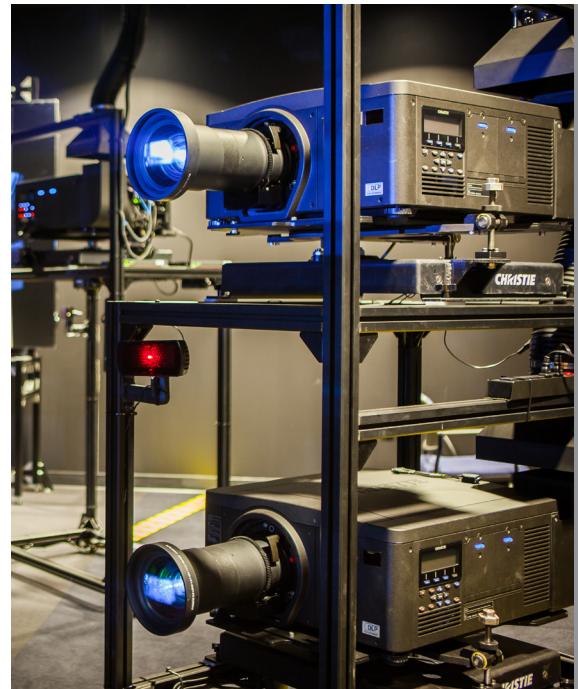
The upgrades at VEC also include new projectors for GM's Cave Automatic

Virtual Environment (CAVE), a four-sided, room-sized visualization area that allows engineers to become completely immersed in a virtual environment. Six Christie Mirage HD6K-M 3DLP projectors, each with 6,000 ANSI lumens, and one Christie Mirage WU14K-M with 12,500 ANSI lumens were installed in the CAVE, increasing the total resolution from 6.7 megapixels to 12.5 megapixels. Wearing 3D stereographic glasses which interact with the Advanced Real Time virtual reality motion tracking system, users can perform tasks using real world movements and actions. The CAVE gives GM engineers the ability to conduct view and obscuration studies, evaluating different parameters such as accessibility, placement of controls and mirrors.

Motivated to design, build and deliver the highest quality vehicles, the upgrades at VEC have benefited GM several ways.

#### Contact Christie

Contact us today to find out how your organization can benefit from Christie solutions.



▲ Christie Mirage HD6K-M projectors provide a powerful platform for GM's CAVE.

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