

## Bringing 3D technology to the vehicle – no special glasses required

2019-05-06

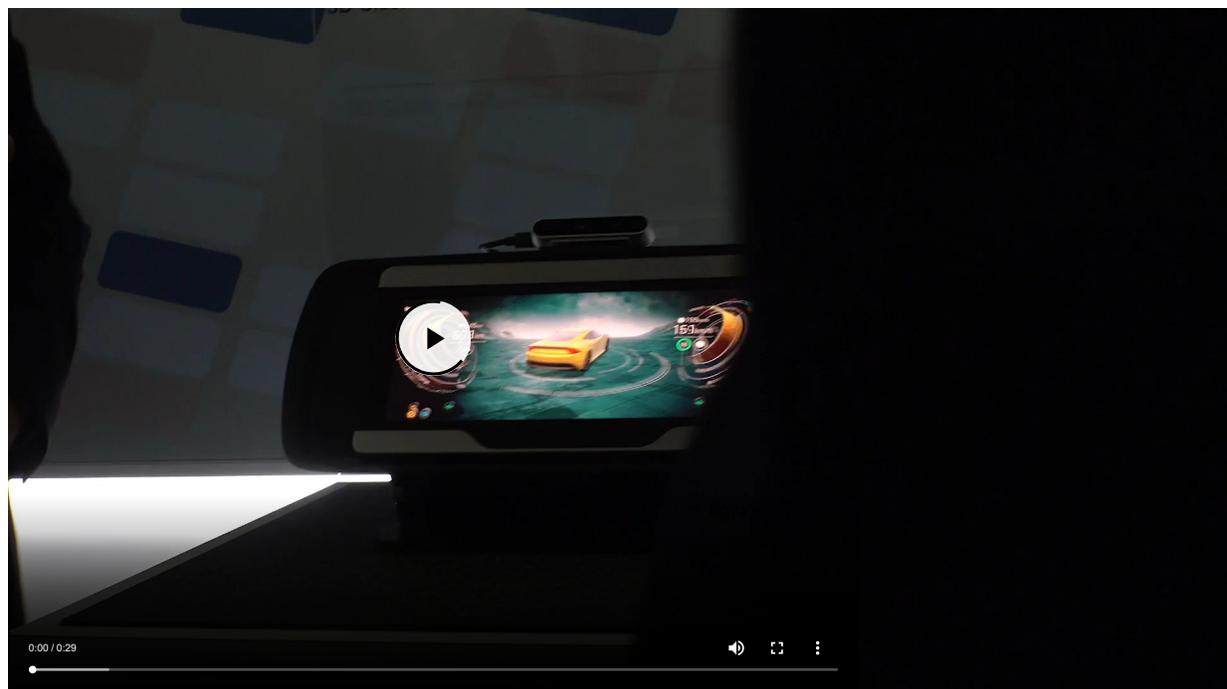
April 6, 2019

By: Qais Sharif, Visteon global vice president

The century-old automotive industry is currently going through a mobility revolution that will completely change the way we interact with our vehicles. Today's automakers are tapping into consumer technology trends, searching for ways to elevate the in-vehicle experience while enhancing safety.

To address this trend, Visteon's human-machine interaction (HMI) designers are creating next-generation advancements that push the boundaries of what's possible, while keeping safety the number one priority. One of those advancements is a 3D instrument cluster with a switchable lens.

The groundbreaking design did not come without challenges. It involved deep thinking and problem-solving from Visteon designers and engineers who had to think beyond traditional barriers to achieving a high range of depth in display images. While 3D effects can be achieved for your favorite sci-fi movie using special 3D glasses, this approach won't work in an automotive environment, so "auto-stereoscopic" techniques are required. Previously, other approaches included using multiple LCDs, which lacked the optical characteristics and transmittance to achieve acceptable backlight power levels required for automotive displays.



### WHAT'S BEHIND THIS INNOVATIVE 3D TECHNOLOGY?

Visteon's unique design incorporates 3D technologies with a thin-film transistor (TFT). Visteon has been working on next-generation of 3D solutions based on **lenticular array technology** – a combination of miniature lenses placed in front of the LCD and precisely aligned with the TFT pixels. The blending of these micro-lenses and certain sophisticated video processing procedures creates the 3D effect for the driver. Visteon's cluster precisely tracks the position of the driver's eyes. Video processing algorithms generate left-eye and right-eye views, while the micro-lens array directs each view toward the corresponding driver's eye.

You may be thinking, "Why do I need a 3D instrument cluster in my vehicle?" Besides looking amazingly cool, the answer is safety. The 3D cluster has the unique ability to bring critical information to the forefront of the display when needed – with the image increasingly coming into view and gaining prominence until the driver responds in some way. It is a creative and compelling use of the primary interface with the driver – the instrument cluster – that will gain importance as vehicles become more automated.

**Semi-autonomous vehicles** of the near future will already have integrated cameras to monitor the driver's attention and state. Therefore, eye position information will be readily available for the 3D viewing system – at no additional system cost.

Research shows that a small minority of people cannot detect 3D images, and the technology is not suitable for everyone. Visteon's engineers also developed this technology with a switchable lens – allowing the software to switch from 3D to the native 2D resolution under certain conditions.

Visteon is currently demonstrating a prototype 3D cluster with a switchable 3D lens to major automakers around the world. A variation of our 3D cluster was also recently launched in **Groupe PSA's new PEUGEOT 208** – representing the first real 3D cluster in automotive production.

---

LinkedIn

---

Twitter

---

Facebook

---

---

Email