

## Chavant News

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Detroit in 3-D: Car Design Gets New Dimension  
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Car companies are trying to figure out how to use "ghosts" to design cars and trucks.

We're talking holograms - full-color, three-dimensional, projected images, which automotive engineers call "ghosts." To demonstrate the potential, James Fischbach, the head of a holographic research firm that is consulting in a Chrysler Corp. development lab in Auburn Hills, Mich., holds up an 8-by-10-inch picture frame containing a seemingly black sheet.

When white light hits the frame, a miniature red Dodge Viper sports car appears to leap a foot off the frame, almost close enough to touch. "This is the future," declares Mr. Fischbach, whose American Propylaea Corp. is working with Chrysler on the technology. "Even with this tiny model," he says, "it's like you are standing in front of a real car. But there is nothing there. When we can extend that image in midair, it's going to revolutionize the way car companies do design."

Indeed, automakers hope such technology will help them get away from building costly, time-consuming full-size clay models of every new design. They want to use laser and computer technology to turn drawings and data into full-color, three-dimensional, lifelike images.

Holography involves splitting a laser beam into two beams and recording on a photographic plate the minute interference patterns made by one beam going from the laser to the plate and the other beam going from the laser to the object to the plate: The virtual image can be reconstructed by shining light through the developed film. By making changes with only the click of a button, automakers could save millions of dollars in clay-model costs and months of valuable development time.

There is only one big problem: The technology is years away from accomplishing what automakers have in mind. If Detroit had its way, an engineer would be able to type a set of data into a computer and watch a 22-by-12-foot interactive hologram spring to life. An executive could view the design as it came out of the computer. If he didn't like the vehicle's front end or preferred a brighter color, the hologram could be modified instantly. A model could be built once the design had received final approval, but some companies are even planning to do away with that step altogether.

Right now, getting a car from concept to reality is a slow and costly process. It takes most car companies about three years just to get a new design ready for a dealer show-room, and that's down from the five years it used to take, before computer-aided design and leaner design-management techniques.

One of the big remaining bottlenecks is that it's difficult to perfect a design from a computer. Computers can be used to give a preliminary idea of a new creation. But the auto executives who must sign off on new designs demand something you can see and walk around. They rarely approve a design without looking at a series of full-size clay models. These mockups take at least four weeks to produce. Then there is the cost, which ranges from \$300,000 to \$500,000 each - about 10 times the cost of a fully equipped luxury car.

Holographic imaging does have a few hurdles of its own. For one thing, holographic images can't yet be quickly altered. And today they are generated from an actual model or prototype - not from a data set. Three color lasers take pictures of the model, recording the image onto a glass holographic film plate. The hologram remains hidden, until light hits the plate. Another, bigger problem is generating images as large as an actual car. Giant, high-definition mirrors could solve that problem, but they're expensive and difficult to make.

For all that, automakers say they have seen enough of the technology's potential to remain optimistic. Mr. Fischbach's company is in the final stages of developing an Interactive holographic design system. Called LifeVisions, the system will shuttle two-dimensional drawings and data through a holographic lens and

reproduce the result as a 50-inch Image that will appear suspended in midair. Like every other aspect of the auto Industry, the rush to holographic design has become competitive. Chrysler appears to be in a tight race with Ford Motor Co. to become the first company to switch to holograms from clay models. "We think interactive holograms can take our development process down to 24 months, which would make Chrysler the fastest auto maker in the world," says Mike Holmes, 'the Chrysler manager in charge of computer-aided design.

Engineers at Ford are more secretive about how and when they plan to use the technology, but the No. 2 auto maker has shown reporters glimpses of what it has in mind. Senior executives say that at least one future vehicle design has already been approved based on computer-generated images, although they weren't holographic.

Meanwhile, General Motors Corp. claims to be ahead of both Ford and Chrysler with a different technology. Working with the University of Illinois at Chicago, GM has developed a computer system that creates three-dimensional virtual models of designs. It will allow designers and engineers to view their creations in a special virtual-display room where computer-generated images would be projected surrounding the viewer. A special pair of lightweight stereo eye- glasses gives the viewer the impression of sitting inside an actual car.

What does all this mean for car buyers? Chrysler's Mr. Holmes maintains that the ability to show holograms to potential customers and to manipulate the designs for them would make for more-effective market research. "Ultimately, what we're trying to do is create designs that get as close as possible to what people want to be driving," Mr. Holmes says. "Holograms are going to help us get those answers with the click of a button."

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