

Technology Today

Alan Pierce

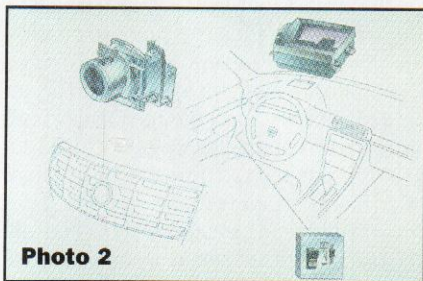
Auto Night Vision



WHILE driving on a dark country road all drivers are thankful for the headlights on their vehicle, yet daunted by the momentary blindness created by vehicles traveling in the opposite direction.

Until now, improving night vision in a motor vehicle meant improving headlight technology, which has been a slow process, to say the least, that started with acetylene lamps and hasn't seen any real improvement since the adoption of halogen bulbs.

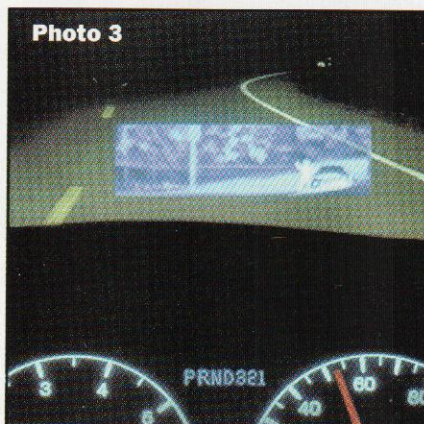
Cadillac has announced that it will be the first automobile manufacturer to introduce a thermal-enhanced, heads-up, night-vision display system. This display will be introduced on the Cadillac DeVille. Raytheon Systems Inc. originally developed night vision infrared technology for military use. The development of this automotive night vision system perfectly exemplifies a post-cold war technology transfer from military to consumer use.



Raytheon developed the detector that receives and processes the thermal images, and Delphi-Delco Electronics developed the vision system's heads-up display.

The Delphi-Delco Heads Up Display (HUD) will project images so they appear suspended in space as far forward as the front bumper of the car (see Photo 1). The black and white full-motion images resemble a film negative. They are created from the thermal signatures of the objects in front of the vehicle.

The vision system's Twilight Sentinel Photo Cell automatically turns on when the vehicle starts. At this point, an instrument panel switch that can be moved from off to Night Vision governs the system. The system components are shown in Photo 2. The control cluster operates only when the headlights are turned on. The control cluster allows the driver to change



Photos courtesy of Cadillac Division of GM.

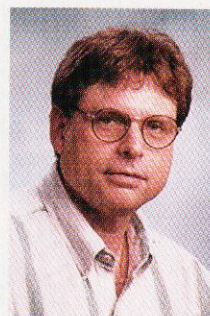
the image's intensity and vertical location.

Cadillac reports that "on a per-mile basis, driving at night is more than three times as likely to result in a fatality as driving during daylight." Since this night vision technology allows a driver to see three to five times further than normal headlights without producing glare, we can expect to see a reduction of night driving fatalities (see Photo 3) as this type of system becomes widely available and less expensive.

Recalling the facts

1. What powered the first automobile headlights?
2. Name 10 things with a thermal signature that might be on the road at night and show up on this night vision display.
3. How does the amount of heat emitted by an object affect the way it will appear on the HUD display? **TD**

Alan J. Pierce is a professor, Department of Technology, Elizabeth City State University, Elizabeth City, NC 27909.



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