

WHAT'S NEXT

In a Road That's All Eyes, the Driver Finds an Ally

By IAN AUSTEN

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ABOUT 12 years ago, Martin Dicks was trapped in dense fog during a harrowing four-hour commute to his job as a firefighter in central London.

"Virtually all I could see on the road was a cat's-eye reflector every now and then," Mr. Dicks said, recalling his trip down one of Britain's major highways. "I figured that if I could make the cat's-eyes more visible, I could probably save more lives than I could in the fire service."

A back injury forced Mr. Dicks out of the fire department shortly afterward, giving him the time to pursue that goal. His training as an electrical engineer provided the necessary skills.

Now, after perfecting illuminated markers that are embedded in the road surface to guide motorists through bad weather or warn of dangerous conditions, Mr. Dicks's company, Astucia Traffic Management Systems, is going a step further. Its latest creation is an embedded stud equipped with a camera that catches speeders, monitors traffic for criminals or stolen cars and even checks for bald tires on the fly.

"Nobody knows it's a camera or a speed trap," Mr. Dicks said of his latest creation.

Mr. Dicks's original idea was quite simple in concept. He wanted to create an illuminated road marker containing its own power source, a solar cell. At night or in bad weather, light from approaching vehicles would generate enough power to light up the marker, which consisted of light-emitting diodes. An illuminated marker would be more visible than a plain reflector, and the idea was that a car passing over the markers would cause them to stay illuminated long



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enough so that they would provide a warning trail of lights for any vehicles close behind.

The trouble, at first, was the technology available in the early 1990's. Photovoltaic cells were not as efficient as they are today. And at the time, Mr. Dicks recalled, "the concept of a white L.E.D. was nowhere."

Working mostly with family members at first, Mr. Dicks produced a prototype marker within two years. He dodged the white L.E.D. problem by combining the glow from red, green and blue arrays. The group not only overcame the limitations of solar cells, but also managed to engineer markers that turned red to warn when the gap between two cars was dangerously small.

Mr. Dicks said the technology both impressed and alarmed British government highway officials.

"They were frightened about everyone using the product on roads from one end of the country to the other," he said. "They thought it would make their budgets disappear."

The first markers cost roughly twice the price of conventional embedded road studs. As a result, their use was restricted at first to especially fog-prone or dangerous sections of roads as well as crosswalks, including some in the United States.

Mr. Dicks was not the only person with a desire to illuminate to road markers. After a friend struck and killed a pedestrian in 1991 at a crosswalk in Santa Rosa, Calif., Michael Harrison developed a system that uses flashing L.E.D.'s in the road surface to make crosswalks more visible. The company he founded in 1994, LightGuard Systems, now has about 700 installations in the United States.

A study of 100 illuminated crosswalks by Katz, Okitsu & Associates, a traffic engineering firm based in Southern California, estimates that adding the blinking L.E.D.'s to crosswalks can reduce pedestrian accidents by 80 percent.

The original Astucia markers were glued onto the road surface. That left them vulnerable to snowplow blades and to constant pounding from car and truck tires.

Mr. Dicks wanted to put the markers into holes drilled into the road surface. The key, he said, was finding self-healing resins for the top lenses that would be flush with the surface and subjected to much wear and tear.

"It's like running your fingernail on a rubber sheet," he said of the plastics' behavior. "The mark it leaves goes away."

Advances in solar-panel technology also allowed Astucia to develop markers that could store electricity all day and then constantly illuminate particularly dangerous sections of roads at night.

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