

Infrared imaging technology in the automotive context: effects on driver behaviour

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Abstract

“DARWIN” is a project funded under the European Commission’s BRITE-EURAM III Programme, with the objective of designing, developing and testing a vision support system that can help the car driver in conditions of reduced visibility. The consortium has recently completed the installation of a prototype system - which uses an automotive far infrared camera to capture images of the road scene ahead that are projected, as a virtual image display, in a location near the base of the windscreen – in a Lancia K demonstrator car.

The human factors input to this project has consisted of a series of driving simulator-based trials using a mock-up of the DARWIN system’s head-up display, and these will be followed by similar human factors evaluations using the demonstrator car during 2000, the final year of the project. This paper describes the results of the simulator trials, which have provided early evidence that such a system might modify driving behaviour: in a car-following task with reduced visibility, volunteers showed a marked tendency to leave a larger gap to the car in front when using the DARWIN system.

Introduction

It is well known that reductions in visibility are a major contributing factor to road accident statistics, whether the cause of this reduction is night-time, fog or heavy rain and road spray. Thick fog, whilst being a comparatively rare occurrence, in both time and geographical location, is a particular problem, since it is not unknown for 100 or more vehicles to be involved in a single incident in such conditions. For example, on February the 13th 1996, between Brescia and Padova, Italy, an incident occurred in fog (visibility was reduced to less than 50 metres) which involved 300 vehicles. Eleven people were killed in this incident, with 300 other people seriously injured (*La Stampa*, 1996). Also that winter there were two other similar incidents in Europe: between Turin and Milan an incident involving some 150 vehicles killed four people and seriously injured about 100 others, whilst