Remote traffic pollution detection system created

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A group of research centers and companies in which the Universidad Carlos III de Madrid participates has created the first infrared and remote system able to detect pollutants from cars on highways up to three lanes. Their goal is to be able to conduct a global test of automobile emissions.

The prototype developed, ready to be marketed, can make an intelligent measure of highway traffic by collecting real-time data on traffic density, emissions and consumption associated with each vehicle, and weather conditions. With this information, the impact of traffic on the environment can be analyzed and road safety can be improved. It is similar to a radar in the way it works, although in this case it detects excess pollutants from each vehicle, affirm its creators, who work within the framework of the INNPACTO project, led by the company Technet and employing researchers from CIEMAT, the company Tevaseñal and the UC3M.

Approximately five percent of vehicles are responsible for more than 90% of toxic emissions. With this system, it can be determined which vehicles are "big emitters" (pollute more) and policies that facilitate their identification can be created. And with this, point out the scientists, traffic emissions (CO_2, CO, NOx, HC, PM) would be reduced and energy efficiency would increase, given that a decrease of emissions always implies less consumption. In addition, measures for optimizing consumption and emissions could be adopted, like varying speed limits on high capacity roads that enter and exit big cities.

According to its creators, the device is the only prototype on the market capable of measuring the emissions of each vehicle circulating on a high capacity road, that is, one that has more than two lanes. To test the effectiveness of the system, the researchers recently carried out a final demonstration on the A6 highway near Madrid, installing equipment that measured the concentrations of pollutants coming from all the vehicles on the road.

The prototype developed in the Infrared Lab of the UC3M is based on the modification of an infrared multispectral image camera with interferential filters. Its creators start from the premise that all toxic gases have an emissions signature in the infrared which enables them to

be detected by remote technology. "These filters are located in a wheel that turns at a high speed in front of the detector and they provide consecutive images of the same scene on different bands, which allows for remote detection of some unburned gases (CO_2, CO and HCs)," explained Fernando López, head of the UC3M's Infrared Lab, where he has also overseen the creation of a specific software for measuring concentrations of gases.

There are many applications for this technology. It can improve the analyses of emissions from automobiles in a city or region, which would lead to solving current problems of [pollution](). It would also give the government a powerful tool for making environmental policy. As the scientists remark, one example would be to withdraw from circulation those vehicles which pollute the most according to real emissions data. At the same time, the product is a comprehensive solution for the transportation sector, especially for companies with big logistic operations. In fact, there are already several companies which have expressed interest in the project.

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