REAL-E: THE FIRST ONBOARD AND CONNECTED ANALYZER THAT MEASURES VEHICLE EMISSIONS IN REAL CONDITIONS

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News

Innovation and Industry

Sustainable mobility   Connected Mobility

**IFP Energies nouvelles (IFPEN) and Capelec propose Real-e,
the first onboard and connected analyzer
that measures vehicle emissions in real conditions**

IFPEN - via its Transports Energie Carnot Institute - and Capelec have developed Real-e (Real emissions), an innovative connected tool that measures pollutant emissions in a vehicle's exhaust gases in real driving conditions. It is the first system to provide such a rapid, exhaustive and reliable evaluation of real emissions. Real-e is the result of the synergy between the numerical pollutant emission models developed by IFPEN and the gas analysis expertise of SME Capelec, the leading provider of automotive testing equipment.

In order to improve urban air quality, since 2018 European legislation has required real vehicle emissions (with cycles on the open road) to be taken into account, particularly via Euro 6d, a standard that sets pollutant limits based on vehicle type (diesel or gasoline).

In a market where systems that measure pollutants in real operating conditions are few, costly and complex to use, Real-e offers an innovative alternative solution.

Digital technology supporting sustainable mobility

Real-e is built around an innovative association of physical gas sample measurements and numerical models developed by IFPEN. It is used to measure real pollutant emissions depending on traffic conditions, driving style and the type of journey undertaken.

Located in the trunk of the vehicle, the Real-e connected kit consists of an exhaust gas analyzer (CO, CO_2, NOx, PN, NH_3), which samples pollutants continuously, and an OBD dongle that collects the vehicle's parameters. While driving, data are sent to a cloud where they are processed by pollutant emission calculation algorithms - developed by IFPEN for the Geco air eco-driving app -and compared with reference measurements.

The data obtained make it possible to better characterize journeys and obtain a more detailed analysis of vehicle emissions, for example by relating pollutant emissions to driver behavior or the profile of the road taken.

> "In order to develop this innovative system, we drew on our expertise in the field of connected mobility and our mathematical models. This research fits squarely with IFPEN's determination to use digital technologies to improve air quality", says Gilles Corde, Air Quality program manager at IFPEN.

A tool to meet fleet monitoring requirements

With Real-e, fleets can be monitored more easily, quickly and cheaply than with existing systems. The objective is to identify the most polluting vehicles to ensure compliance with existing regulations.

Designed to be easily transported from one vehicle to another with no need for fiddly connections, the tool provides a diagnosis based on operating conditions not subject to specific test constraints, thereby simplifying the characterization of a vehicle fleet's emissions.

It can now be used by States and manufacturers as a market monitoring tool, and may ultimately be used during vehicle inspection tests.

> As Georges Petelet, Business developer at Capelec explains: "The Real-e project represents a real turning point for Capelec: we are now active in the in-service control market defined in the RDE (Real driving emissions) regulations as well as the market monitoring market."

About Capelec
Driven by its Research and Development department and its solid foundation of regulatory expertise, Capelec anticipates and designs advanced solutions to support technologies of the future: lighting measurement, gas emission control, road contact and software. www.capelec.fr

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