

## **PORTABLE SYSTEM FOR MEASUREMENT OF VEHICULAR EMISSIONS IN CHILE**

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Nowadays, in Chile, there is a growing need to determine real-world emissions and be able to develop a certification process based on Portable Emissions Measurement Systems, considering that international regulations are adopting these procedures. Universidad Técnica Federico Santa María and Universidad Tecnológica Metropolitana are proposing a study to start the developing of a PEMS system that will integrate local technology with standard equipment.

The aim is to design a Dilutor device, capable of integrating PEMS equipment and particle monitors existing in the market. This would allow access to a lower cost and versatile on-road emissions recording system. In addition, the development and integration of an additional device for the registration of vehicular activity (VAM) is included within the products of the project. This device will allow to register the driving variables of the vehicles measured in route. Although the PEMS include a geo-positioning system, the VAM unit offers greater precision and, in addition, will consider the additional functionality to register energy consumption of electric or hybrid vehicles. In addition, this work has the support of the Center for Research in Environment and Technology of the University of California at Riverside (CE CERT) and the International Systems Research Center (ISSRC), which will have functions of advising, training and validation of the results obtained.

With the measurements made and the implementation of a mobile laboratory, it is expected to be able to develop national measurement protocols, in accordance with international standards, which require emission testing procedures under real driving conditions (RDE). The results obtained with the portable laboratory will complement the tests carried out in the 3CV<sup>1</sup> laboratory and define which types of driving cycles allow to correct the differences between both conditions.

On the other hand, through academia and scientific development, the research will seek to obtain local emission factors, incorporating traditional pollutants and others not considered in current regulations.

Several countries of Latin America are in a similar process of Chile, adopting Euro or EPA regulations in their new vehicle's requirements, in different stages of development. Chile and Mexico lead these processes, being the first to require more demanding regulations and the results of this study could be replicated in neighboring countries that require it.

This abstract is intended to show the proposed methodology and the highlights of the study, preliminary results and conclusions will be presented on the 2020 PEMS Conference.

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