

Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2018-56
Project Title:	Evaluation of eco-driving technology for reducing fuel consumption and Emissions
Applicant:	Mr Ng Cheuk Yin, The Jockey Club Heavy Vehicle Emissions Testing and Research Centre, Vocational Training Council
Total Approved Grant:	\$496,173
Duration:	1/9/2019 to 28/02/2021
Project Status/Remarks:	Completed
Project Scope:	<p>Road transport has always been a major source of air pollution and greenhouse gases in Hong Kong and receives considerable attention from policy makers and environmental groups. A variety of efforts have been taken to reduce the emissions and fuel consumption of on-road vehicles, including more stringent emission standards, new emission control technologies and proper vehicle maintenance and repair. However, an important factor which is often overlooked and may improve the vehicle performance significantly is eco-driving technology.</p> <p>This project proposes to investigate the relationship between driver behaviour and vehicle emissions and fuel consumption using a back-to-back comparison method. Experienced and new drivers will be recruited from the transport trade. They will be asked to drive the same vehicles along the same route. Test vehicles will be equipped with portable emission measurement systems, as well as GPS and weather and speed measurement equipment. Then, the real-world vehicle running data will be used to evaluate the influence of different driving styles on emissions and fuel consumption, which will provide new methodologies for the promotion of eco-driving in Hong Kong.</p>
Summary of the Findings/Outcomes:	<p>Road transport is an important source of air pollution and greenhouse gases in Hong Kong, receiving considerable attention from policy makers and environmental groups. Significant efforts have been taken to reduce the emissions and fuel consumption of on-road vehicles, including more stringent emission standards, new emission control technologies and proper vehicle maintenance and repair. An important factor which is often overlooked and may improve the vehicle performance significantly is eco-driving technology whose effectiveness has not yet been evaluated on Hong Kong roads. Therefore, this project was carried out to investigate the effect of driver behavior on vehicle emissions and fuel consumption under real world conditions. The driving performance of 30 drivers, including 15 experienced and 15 novice drivers, was measured. The project team found that there are significant differences in the fuel consumption and emissions performance among different drivers, up to 71% for PM emissions and 33% for NOx. Generally, new drivers had higher fuel consumption than experienced driver by 2%. This study implies that driver training and on-road eco-driving assistant devices could be used to improve the driver's fuel consumption and emissions performance, which is a simply change in the driver behavior but can have great potential in protecting the air quality in Hong Kong.</p>