

**Pilot Green Transport Fund**

**Final Report**  
**On**  
**Trial of Hybrid Medium Goods Vehicle for Moving**  
**Services**  
**(Canaan Moving Co. Ltd)**

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PREPARED BY:  
Ir Dr. Edward Lo

The Monitoring and Evaluation Team's views expressed in this report do not necessarily reflect the views of the Environmental Protection Department, HKSAR.

## **List of Monitoring and Evaluation Team Members**

**Dr. C.S. Cheung (Team Leader)**

Professor

PolyU Technology and Consultancy Company Limited

The Hong Kong Polytechnic University

**Ir Dr. Edward W.C. Lo (Deputy Team Leader)**

Associate Professor

PolyU Technology and Consultancy Company Limited

The Hong Kong Polytechnic University

**Ir Dr. Curtis Ng**

Department of Mechanical Engineering

The Hong Kong Polytechnic University

**Dr. W.T. Hung**

PolyU Technology and Consultancy Company Limited

The Hong Kong Polytechnic University

**Dr. David Yuen**

PolyU Technology and Consultancy Company Limited

The Hong Kong Polytechnic University

**Pilot Green Transport Fund**  
**Trial of Hybrid Medium Goods Vehicle for Moving Services**  
**(Canaan Moving Co. Ltd)**

**Final Report**  
**(Trial Period: 1 November 2018 – 31 October 2020)**

**Executive Summary**

**1. Introduction**

The Pilot Green Transport Fund (the Fund) is set up to encourage transport operators to try out green innovative transport technologies, contributing to better air quality and public health for Hong Kong. Canaan Moving Co. Limited (Canaan) was approved under the Fund for trial of one diesel-electric hybrid medium goods vehicle to provide moving services of households and offices for clients in the areas of New Territories, Kowloon and Hong Kong Island. Through a tendering procedure stipulated in the Subsidy Agreement, Canaan procured one Hino 300 series 8.5-tonne diesel-electric hybrid medium goods vehicle (HV) for trial.

1.2 PolyU Technology and Consultancy Company Limited has been engaged by the Environmental Protection Department (EPD) as an independent third-party assessor (the Assessor) to monitor the trial and evaluate the performance of the trial vehicle. Canaan assigned one Mitsubishi Fuso 9-tonne diesel medium goods vehicle (DV) providing similar services as the conventional counterpart for comparing with the HV.

1.3 This Final Report summarizes the performance of the HV in the 24 months of the trial as compared with the DV.

**2. Trial and Conventional Vehicles**

2.1 Key features and photos of the HV and the DV are provided in Appendix 1 and Appendix 2, respectively. As the nature of household moving services, there were no fixed daily routes for the two monitored vehicles. The daily mileage by each vehicle varies from day to day, with routes covering the whole area of Hong Kong. In the 24 months of the trial, the average daily mileage by the HV was 119 km/day.

### 3. Trial Information

3.1 The trial commenced on 1 November 2018 and lasted for 24 months. Canaan was required to collect and provide trial information including the HV mileage reading before refilling, amount of fuel refilled in each refilling, cost and downtime associated with scheduled and unscheduled maintenances of the HV. Similar data from the DV were also required. In addition to the cost information, reports on maintenance work, operational difficulties and opinions of the driver and Canaan were collected and provided to reflect any problems of the HV.

### 4. Findings of Trial

4.1 The following table summarizes the statistical data of the HV and DV.

Table 1: Key operation statistics of the vehicles (November 2018 - October 2020)

Items	HV	DV
Total mileage (km)	86,759	52,796
Average fuel cost (HK\$/km) <sup>[1]</sup>	2.42	3.01
Average fuel economy (km/L)	5.85	4.70
Average total operating cost (HK\$/km) <sup>[2]</sup>	2.44	3.01
Downtime (working day) <sup>[3]</sup>	1	0

[1] The market fuel price was used for calculation.

[2] Maintenance due to incident not related to the performance of the vehicle was not included for comparing the performance.

[3] Downtime refers to the equivalent number of working days in which the vehicle is not in operation due to maintenance, counting from the first day it stops operation till the day it is returned to the operator.

4.2 In the 24-month trial period, the average fuel cost of the HV was lower than that of the DV by HK\$0.59/km (20%). Including the maintenance cost, the average total operating cost of the HV was HK\$0.57/km (19%) lower than that of the DV.

4.3 There were 731 working days in the 24 months of the trial. The utilization rates of the HV and the DV were 99.9% and 100%, respectively.

4.4 To remove the effect of seasonal fluctuations, 12-month moving averages were used to evaluate the trend of the HV's economy. There is a no trend of dropping in fuel economy of the HV over the trial period.

4.5 Based on the total mileage of the HV in the 24 months of the trial, the carbon dioxide equivalent (CO<sub>2</sub>e) emission from the HV was 39,146 kg while that from the DV was 48,736. Hence, the total reduction of CO<sub>2</sub>e emission for the HV was 9,591 kg (20%) in the trial.

## 5. Summary

5.1 During the 24 months of the trial, the average fuel cost of the HV was lower than that of the DV by HK\$0.59/km (20%), while the average total operating cost of the HV were lower than that of DV by HK\$0.57/km (19%). Compared with the DV, the CO<sub>2</sub>e emission reduction by the HV was 20%.

5.2 There were 731 working days in the 24 months of the trial. The utilization rate of the HV was 99.9%, while that of the DV was 100%.

5.3 The fuel economy of the HV had no deterioration during the trial period.

5.4 The driver had no problem in operating the HV, but he did not like the automatic transmission design of the HV, which caused inconvenience in operation. Canaan was satisfied with the HV, but worried about the battery design and whether the small saving in fuel cost could cover the higher initial cost and those battery replacement costs later. Hence, at the moment, Canaan does not consider purchasing another HV.

## **Appendix 1: Key Features of the Vehicles Involved in the Trial**

### **1. Trial HV**

<b>Registration mark</b>	<b>VS3328</b>
Make:	Hino
Model:	300 Series Hybrid XKU730R-HKUTS3
Class:	Medium goods vehicle
Gross vehicle weight:	8,500 kg
Seating capacity:	driver + 5 passengers
Cylinder capacity:	4,009 cc
Year of manufacture:	2018
Maximum Output (ps/rpm)	150/2,500
Battery Type	Nickel-Metal Hydride Battery

### **2. DV for Comparison**

<b>Registration mark</b>	<b>PZ4408</b>
Make:	Mitsubishi Fuso
Model:	FE85DGZSRDAA
Class:	Medium goods vehicle
Gross vehicle weight:	9,000 kg
Seating capacity:	driver + 5 passengers
Cylinder capacity:	4,899 cc
Year of manufacture:	2011

## Appendix 2: Photos of Vehicles

### 1. Trial HV



Front view



Rear view



Right side view



Left side view

2. DV for comparison



Front view



Rear view



Right side view



Left side view