Pilot Green Transport Fund

Interim Report On
Trial of Hybrid Medium Goods Vehicles for Pharmaceutical Product Delivery (Pharmason Company Limited)

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Pilot Green Transport Fund
Trial of Hybrid Medium Goods Vehicles for Pharmaceutical Product Delivery
(Pharmason Company Limited)

Interim Report
(Trial Period: 1 March 2018 – 31 August 2018)

Executive Summary

1. Introduction

1.1 The Pilot Green Transport Fund (the Fund) is set up to encourage transport operators to try out green innovative transport technologies (the green innovative technology), contributing to better air quality and public health for Hong Kong. Pharmason Company Limited (Pharmason) was approved under the Fund for trial of two hybrid medium goods vehicles for pharmaceutical product delivery. Through the tendering procedures stipulated in the Subsidy Agreement, Pharmason procured two Hino 300 series hybrid medium goods vehicles (HVs) for trial.

1.2 Hong Kong Institute of Vocational Education (Tsing Yi) has been engaged by the Environmental Protection Department as an independent third party assessor to monitor the trial and evaluate the performance of the trial vehicles.

1.3 This Interim Report summarizes the performance of the HVs in the first six months of the trial as compared with their conventional counterparts, i.e. the DVs.

2. Trial Vehicles

2.1 Through the tendering procedures stipulated in the Subsidy Agreement, Pharmason procured two Hino 300 series hybrid medium goods vehicles (HVs) for trial. Two Isuzu diesel medium goods vehicles (DVs) providing the same type of services was assigned as the conventional vehicles for comparing with the HVs.

2.2 Key features of the HVs and the DVs are in Appendix 1 and photos of the vehicles are in Appendix 2. The vehicles were used for pharmaceutical product delivery in Hong Kong.

3. Trial Information

3.1 The trial commenced on 1 March 2018 and would last for 24 months. Pharmason was required to collect and provide trial information including the HVs odometer reading, the date of refueling, the refueled amount, cost and operation downtime associated with scheduled and unscheduled maintenance of the HVs. A similar set of data from the DVs was also required. In

addition to the cost information, reports on maintenance work, operational difficulties and opinions of the drivers and Pharmason were collected and provided to reflect any problems of the HVs.

3.2 Table 1 summarizes the statistical data of the HVs and the DVs. The fuel cost of HV-1 was HK$0.43/km (16.1%) higher than that of DV-1, and the fuel cost of HV-2 was HK$1.17/km (36.2%) higher than that of DV-2. The average fuel cost of the HVs was HK$0.8/km (27.1%) higher than that of the DVs. Since the HVs drivers feel that the HVs had less power compared to the DVs when climbing uphill, the Eco-mode were turned off by the HVs drivers. However, the eco-mode hasn't been turned back on afterwards when the HVs were providing delivery services. In this connection, the HVs had higher fuel cost than the DVs during the reporting period.

Table 1: Key operation statistics of each vehicle (March 2018 – August 2018)

		HVs		**DVs**	
		HV-1	**HV-2**	**DV-1**	**DV-2**
Total mileage	(km)	9,424	5,481	12,591	12,383
Average fuel economy	(km/litre)	4.35	3.05	5.02	4.16
Average fuel cost (HK$/km) [1]		3.10	4.40	2.67	3.23
Fleet average fuel cost (HK$/km)		3.75		2.95	
Average total operating cost/ [2] (HK$/km)		3.10	4.40	2.83	3.23
Fleet Average total operating cost (HK$/km)		3.75		3.03	
Downtime (working day) [3]		2	1	1	0

[1] Market rate was adopted for calculation.

[2] Maintenance due to incidents unrelated to the performance of the vehicle was not included for comparison.

[3] Downtime refers to the period the vehicle was not in operation, which counted from the first day it stopped operation till it was returned to the operator

3.3 During the first six months of the trial, there was two scheduled maintenance for HV-1 resulting downtime of 2 working days. One scheduled maintenance each for HV-2, DV-1 and DV-2 resulting downtime of 1 working day, 1 working day and 0 working day respectively.

3.4 There was one unscheduled maintenance for DV-1. However, it was not operational related, so would not be included in the comparison. No unscheduled maintenance was recorded for the HVs and the DV-2.

3.5 The utilization rates of HV-1, HV-2, DV-1 and DV-2 were 98.7%, 99.3%, 99.3% and 100% respectively.

4. Summary

4.1 In the first six months of the trial, the average daily mileages of t of HV-1, HV-2, DV-1 and DV-2 were 64 km, 37 km, 85 km and 83 km respectively. Overall, the HVs incurred higher fuel cost per km, i.e. HK$0.8/km (27.1%), than the DVs. The fleet average operating cost of the HVs was HK$0.72/km (23.8%) higher than that of the DVs. The average utilization rates of all the HVs and DVs were 99% and 99.7% respectively.

4.2 Pharmason has assigned a designated driver for each HV. Two HV drivers had no problem in operating the HVs and the HVs were quieter than those of the DVs. In general, Pharmason and the drivers were satisfied with the performance of HVs regardless the comparatively less power for climbing uphill and also at start up, even though the higher fuel cost of the HV is of their concern. Pharmason and the HV drivers are encouraged to use the HVs more and adjust the driving habit, and are reminded to use the eco-mode of the HVs, where practicable, for fuel saving.

4.3 The findings only reflect the performance of the HVs in the first six months of the trial. More time is needed to test the performance and reliability of the HVs.

Appendix 1: Key Features of Vehicles

1. Trial HVs

(a) HV-1

Registration Mark	**VE895**
Make:	Hino
Model:	300 Series Hybrid XKU720R – HKUTS3
Class:	Medium Goods Vehicle
Gross vehicle weight:	8,500 kg
Seating capacity:	3 passengers (including driver)
Engine capacity:	4,009 c.c.
Maximum Output(ps/rpm):	150/2,500
Battery Type:	Nickel-Metal Hydride Battery
Year of manufacture:	2017

(b) HV-2

Registration Mark	**VE4825**
Make:	Hino
Model:	300 Series Hybrid XKU720R – HKUTS3
Class:	Medium Goods Vehicle
Gross vehicle weight:	8,500 kg
Seating capacity:	3 passengers (including driver)
Engine capacity:	4,009 c.c.
Maximum Output(ps/rpm):	150/2,500
Battery Type:	Nickel-Metal Hydride Battery
Year of manufacture:	2017

2. DVs for comparison

(a) DV-1

Registration Mark	**TS4428**
Make:	Isuzu
Model:	NQR75K-V
Class:	Medium Goods Vehicle
Gross vehicle weight:	9,000 kg
Seating capacity:	3 passengers (including driver)
Engine capacity:	5,193 c.c.
Year of manufacture:	2015

(b) DV-2

Registration Mark	**TS3189**
Make:	Isuzu
Model:	NQR75K-V
Class:	Medium Goods Vehicle
Gross vehicle weight:	9,000 kg
Seating capacity:	3 passengers (including driver)
Engine capacity:	5,193 c.c.
Year of manufacture:	2015

Appendix 2: Photos of Vehicles

1. Trial HVs

(a) HV-1

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<tr><td>Front view of HV-1</td><td>Rear view of HV-1</td></tr>
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<tr><td>Left Side view of HV-1</td><td>Right Side view of HV-1</td></tr>
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(b) HV-2

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<tr><td>Front view of HV-2</td><td>Rear view of HV-2</td></tr>
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<tr><td>Left Side view of HV-2</td><td>Right Side view of HV-2</td></tr>
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2. DVs for comparison

(a) DV-1

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<tr><td>Front view of DV-1</td><td>Rear view of DV-1</td></tr>
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<tr><td>Left Side view of DV-1</td><td>Right Side view of DV-1</td></tr>
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(b) DV-2

	
Front view of DV-2	Rear view of DV-2
	
Left Side view of DV-2	Right Side view of DV-2