立法會
Legislative Council

LC Paper No. CB(1) 1084/11-12
(These minutes have been seen by the Administration)

Ref : CB1/PS/3/08/1

Panel on Environmental Affairs

Subcommittee on Improving Air Quality

Minutes of meeting
held on Friday, 6 January 2012, at 8:30 am
in Conference Room 3 of the Legislative Council Complex

Members present	**:**	Hon Audrey EU Yuet-mee, SC, JP (Chairman) Hon Miriam LAU Kin-yee, GBS, JP Hon KAM Nai-wai, MH Hon CHAN Kin-por, JP Hon Tanya CHAN
Members attending	**:**	Hon Jeffrey LAM Kin-fung, GBS, JP Hon IP Wai-ming, MH
Members absent	**:**	Hon LEE Wing-tat Hon Cyd HO Sau-lan Hon CHAN Hak-kan
Public officers attending	**:**	**For item II** Dr Kitty POON Under Secretary for the Environment Mr Carlson K S CHAN Deputy Director of Environmental Protection (3) Environmental Protection Department Mr MOK Wai-chuen Assistant Director (Air Policy) Environmental Protection Department

Mr Edmond HO
Principal Environmental Protection Officer (Mobile Source Control)
Environmental Protection Department

Attendance by invitation : **For item II**

Hong Kong Productivity Council

Mr Clement CHEN
Chairman

Mr Joseph POON
Branch Director

Mr Kenny WONG
Principal Consultant

The Hong Kong Polytechnic University/Green Power Industrial Ltd

Professor Eric CHENG
Director of Power Electronics Research Centre

Mr Jacky LAU
Vice President

Mr Yukio FUJIWARA
Project Manager

Clerk in attendance : Miss Becky YU
Chief Council Secretary (1)1

Staff in attendance : Miss Jacqueline CHUNG
Council Secretary (1)1

I. Confirmation of minutes

(LC Paper No. CB(1) 638/11-12 — Minutes of the meeting held on 24 November 2011)

The minutes of the meeting held on 24 November 2011 were confirmed.

II. Retrofitting of separate air-conditioning system for vehicles while engines are switched off

Meeting with the Administration, the Hong Kong Productivity Council, and The Hong Kong Polytechnic University/Green Power Industrial Ltd

(LC Paper No. CB(1) 713/11-12(01) — Administration's paper on retrofit devices for providing air conditioning when the engine of a vehicle is switched off)

2. The Subcommittee deliberated (Index of proceedings attached in **Annex**).

3. The Administration was requested to -

(a) advise whether the Environmental Protection Department (EPD) would engage the transport trades to test out the performance of the two retrofit devices developed by the Hong Kong Productivity Council (HKPC) and Hong Kong Polytechnic University/Green Power Industrial Limited (PolyU/Green Power) for enabling the air-conditioning system to run after the engine of a vehicle is switched off. If so, the plan to carry out such test;

(b) enhance public confidence on the effectiveness of the retrofit devices, consideration should be given to allocating suitable vehicles from the Government fleet to test out the two devices. There was also a need for concerted efforts from relevant government departments to facilitate testing of the two devices, particularly the one developed by HKPC which would require the approval of the Transport Department for modification of vehicle (circuitry for engine starter and hybrid air conditioning system);

(c) advise the assistance, including financial subsidy, to be provided by the Administration to facilitate testing/use of the devices by the trades and the general public; and

(d) advise if there were other emerging alternative technologies, developed by both local and overseas organizations, which were comparable to the two retrofit devices in question.

4. The Hong Kong Productivity Council was requested to provide further information on the Automatic Engine Idle-stop and Supplementary Air Conditioning System, including the estimated cost for repair and maintenance of the System, whether installation of the System might render the warranty provided by vehicle dealers ineffective, the estimated reduction in cost if the System was installed in a large scale, and the threshold for economy of scale.

5. The Hong Kong Polytechnic University was requested to provide supplementary information on the Solar Powered Air-Conditioning System for Vehicles, including the feasibility of reducing the size of photovoltaic panel, the estimated cost for repair and maintenance of the System, the estimated reduction in cost if the System was installed in a large scale, and the threshold for economy of scale.

6. Members agreed to include the subject of "Retrofitting of separate air-conditioning system for vehicles while engines are switched off" under the item on "Any other business" in the agenda for the next meeting on 17 January 2012.

III. Any other business

7. There being no other business, the meeting ended at 10:05 am.

Council Business Division 1
Legislative Council Secretariat
16 February 2012

Annex

Panel on Environmental Affairs

Subcommittee on Improving Air Quality

Proceedings of the meeting
on Friday, 6 January 2012, at 8:30 am
in Conference Room 3 of the Legislative Council Complex

Time marker	Speaker	Subject(s)	Action required
Agenda Item I - Confirmation of minutes			
000300 - 000441	Chairman	Opening remarks.	
000442 - 000504	Chairman	The minutes of the meeting held on 24 November 2011 (LC Paper No. CB(1) 638/11-12) were confirmed.	
Agenda Item II - Retrofitting of separate air-conditioning system for vehicles while engines are switched off			
000505 - 000604	Chairman Administration	Administration's brief introduction on the progress of development of retrofit device for enabling the air-conditioning (A/C) system to run after the engine of a vehicle was switched off by local research and development institutes.	
000605 - 001606	Mr Clement CHEN, Mr Joseph POON, Kong Productivity Council (HKPC)	HKPC's presentation on the automatic engine idle-stop and supplementary air-conditioning system (ISAC) (LC Paper No. CB(1) 796/11-12(01)) - (a) approval from the Transport Department (TD) would be required for the retrofit device which involved modification of vehicle; (b) it would be desirable if the Administration could arrange some 100 vehicles from the Government fleet to try out the retrofit device with a view to building up public confidence on the device; and (c) the price of the device, including the costs of modification and installation of parts, was about $20,000 to $30,000 per vehicle in the event of small-batch production.	

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001607 - 002208	Chairman Mr Jacky LAU, Green Power Industrial Ltd (GPIL)	GPIL's presentation on the solar powered air-conditioning system for vehicles (SAV) (LC Paper No. CB(1) 796/11-12(02)). Depending on the vehicle type, the price of SAV was about $40,000 to $120,000 for taxi and minibus respectively, inclusive of certification and installation fees.	
002209 - 003155	Chairman Ms Miriam LAU Administration Mr Clement CHEN, HKPC	Ms Miriam LAU's concerns/ enquiries - (a) if there were other emerging alternative technologies, developed by both local and overseas organizations, which were comparable to the two retrofit devices in question; <u>ISAC/HKPC</u> (b) since ISAC would automatically stop the engine when a vehicle became stationary and restart the engine when the vehicle moved again, it might accelerate the wear and tear of the starter due to frequent switching on/off of motor engine; (c) as an additional lithium battery had to be installed in the trunk for powering the A/C system when the engine stopped, it would take up the space originally reserved for the spare tyre; (d) apart from the additional battery, whether the A/C system could be powered by other means; (e) estimated savings on fuel cost after a vehicle was retrofitted with the device; (f) type of vehicle used for the dynamometer test which showed that the engine was left idling during 34% of the 40-minute drive; and	The Administration to advise if there were other emerging alternative technologies, developed by both local and overseas organizations, which were comparable to the two retrofit devices in question.

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		(g) a trade representative had claimed that he was involved in the development of the concept on a separate A/C system for a vehicle when the engine was switched off. Administration's response - (a) it adopted an open approach on any technologies that might help reduce vehicular emissions. However, there was limited information, even from the Internet, on technologies similar to the two retrofit devices in question. Effort would be made to gather more information in this respect; (b) the transport trades were encouraged to apply for funding from existing schemes, including the Pilot Green Transport Fund (PGTF), to try out green transport technologies; and (c) the ISAC project of HKPC was funded by the Environment and Conservation Fund (ECF). HKPC's response - (a) a private car had been used to conduct trial tests of ISAC for one year, the findings which revealed that no adverse effect on the mechanical condition of the vehicle due to frequent switching on/off of the engine. The system might increase the wear and tear of some components of the starter but the replacement cost was relatively low, which was estimated to be around $1,000; (b) many new car models were no longer provided with spare tyres nowadays. Besides, the lithium battery could be installed at locations other than the space for the spare tyre in the trunk of a taxi given its compact size;	

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		(c) apart from the lithium battery, the A/C system could also be provided by phase change materials (PCMs) which would be recharged during the normal operation of the engine; (d) fuel consumption and emissions could be reduced as a result of lesser engine-running time at idling condition. The test results showed a 5% to 10% fuel savings in city driving mode depending on the types of vehicles and weather; (e) a passenger vehicle and a light goods vehicle were used to conduct the dynamometer tests for obtaining the fuel saving results; and (f) efforts were being made to enhance the performance of ISAC, including extension of the duration of supply of A/C, to address the concern of the taxi trade. The device would be installed in a taxi arranged by a taxi association for testing and demonstration purpose.	
003156 - 003816	Miss Tanya CHAN Administration Mr Jacky LAU, GPIL	Miss Tanya CHAN's view/enquiry - (a) there should be better co-ordination among relevant Government departments to streamline the procedures, including approval for necessary modifications for the retrofit of the two devices and testing of the devices on Government fleet; and <u>SAV/The Hong Kong Polytechnic University (PolyU) and GPIL</u> (b) whether there was room for enhancement of the battery capacity of SAV, reduction in its gross weight and price. Administration's response - (a) Environment Bureau (ENB) would	

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		provide assistance as far as practicable. Since April 2011, TD had approved applications for the retrofit of SAV on medium goods vehicles and a minibus; (b) ENB would liaise with the Government Logistics Department (GLD) and Electrical and Mechanical Services Department (EMSD) to look into the feasibility of using government vehicles for the trial tests. However, it was worth noting that the modus operandi of the Government fleet were different from the transport sector; and (c) to enhance confidence among the transport trades on the devices, PGTF would be a possible source of funding to facilitate large-scale trial test on trades' vehicles. GPIL's response - (a) expansion of battery capacity of SAV was viable; (b) SAV for taxi and goods vehicle/minibus weighed about 30-40 kilograms (kg) and 80 kg respectively. SAV was able to keep the A/C system of a private car/taxi for more than one hour, goods vehicle for more than three hours, and minibus for about 1.5 to two hours; and (c) the price of SAV included the costs of installation, testing and certification. There was room for price reduction in the event of mass production.	
003817 - 004450	Mr IP Wai-ming Mr Kenny WONG, HKPC Chairman Mr Jacky LAU, GPIL Administration	Mr IP Wai-ming's enquiries - (a) whether the test on ISAC was conducted on vehicle under normal operating conditions;	The Administration to advise the assistance, including financial subsidy, to be provided by the Administration to

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		(b) The estimated reduction in cost if the two retrofit devices were installed on a large scale, and the threshold for economy of scale; and (c) the assistance, including financial subsidy, to be provided by the Administration to facilitate testing/use of the devices by the transport trades and the general public. HKPC's response - (a) Apart from the dynamometer test, there were on-road tests of ISAC on a passenger car and a light goods vehicle under normal operating conditions. Results showed that the performance of the automatic engine idle-stop device as well as supplementary A/C device by using lithium battery or PCMs was satisfactory; (b) When the lithium battery was fully charged, it could keep the A/C system running for one hour in summer time when the engine of the vehicle was switched off; and (c) the ISAC project was initiated by HKPC which had not engaged any third party in the course of discussion. GPIL's response that the price of SAV could be reduced on mass production of about 200 to 300 units. Administration's response that the savings of fuel cost was indeed an economic incentive for wider use of the devices, which in turn could encourage mass production to bring down the prices. To enhance market confidence on the devices, the transport trades could apply funding from PGTF for testing of the two devices on a larger scale.	facilitate testing/use of the devices by the trades and the general public. HKPC and PolyU to advise the estimated reduction in cost if the two retrofit devices were installed on a large scale, and the threshold for economy of scale.

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004451 - 005646	Mr CHAN Kin-por Chairman Mr Clement CHEN and Mr Kenny WONG, HKPC Administration	Mr CHAN Kin-por's views/enquiries - (a) need to quantify the savings so as to promote wider use of the retrofit devices; (b) estimated costs of the devices if these were retrofitted in say some 20 000 vehicles; (c) impact of ISAC on the starter of a vehicle and the cost of replacement of the relevant parts; and (d) whether testing/use of the retrofit devices by the trades and the general public would be funded by PGTF. HKPC's response - (a) given the high mileage of taxis, it was estimated that ISAC would help save around $7,000 to $8,000 of fuel cost per annum; (b) the one-year trial test of ISAC had revealed no adverse impact on the starter a vehicle which was relatively durable. Besides, the replacement cost of some components of the starter was relatively low at about $1,000; (c) with the support of a taxi trade association, trial test of ISAC would be conducted on a taxi once approval from TD for vehicle modification was obtained; and (d) the primary role of HKPC was to develop the technology for ISAC rather than engaging in the mass production of the system. Technology commercialization would be conducted for any licensee(s) to further develop the ISAC for large-scale production. The estimated cost range of $20,000 to $30,000 for the supply of ISAC in small batch production	

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		(i.e. about 200 to 300 sets per order) was based on the price of same commercially available parts and some of the self-developed components. As for large-scale production, the estimated cost would depend on the cost structure of technology commercialization by the specific licensee(s). Administration's response - (a) fuel saving devices were one of the green transport technologies to be supported by PGTF, under which a subsidy of 75% of the cost of the device would be provided; and (b) while there were limits on the number of applications from a transport trade for testing a type of green transport technology under PGTF, an eligible applicant could apply funding for installation of a device in a maximum of six vehicles, among which up to three could be from the same supplier. In addition, a maximum of 15 fleet operators from the taxi trade could each apply for six taxis for testing the devices. Hence, a total of 90 taxis could participate in the trial under PGTF. As the same arrangement was applicable to other transport trades, this would enable a large scale trial to build up users' confidence in the devices.	
005647 - 005712	Chairman Administration	Chairman's views that there was a need for concerted efforts from relevant government departments to facilitate testing of the two devices, particularly the one developed by HKPC which would require the approval of TD for modification of vehicle (circuitry for engine starter and hybrid A/C system).	The Administration to advise on the concerted efforts from relevant government departments to facilitate testing of the two devices, particularly the one developed by HKPC which would require the approval of TD for modification of

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			vehicle (circuitry for engine starter and hybrid A/C system).
005713 - 010618	Mr Jeffrey LAM Mr Clement CHEN and Mr Kenny WONG, HKPC	Mr Jeffrey LAM's views/enquiries - (a) instead of transfer the technology for ISAC to service providers in the market through licensing, HKPC should grab the business opportunity or identify business partners for commercialization of the system in view of the great potential of the system in both the local and overseas markets. The mass production would also help lower the cost of ISAC; (b) as the durability and capacity of the lithium battery was an integral part of ISAC, HKPC should collaborate with motor and battery manufacturers to improve the performance of the system; (c) if technology commercialization were to be conducted by licensee(s), HKPC should provide the service provider(s) with the necessary training on repair and maintenance of ISAC; and (d) The estimated reduction in cost if ISAC was installed in a large scale. HKPC's response - (a) The primary role of HKPC was on technological development. Technology commercialization would be conducted to appoint licensee(s), who would be subject to stringent selection criteria, to further develop the technologies for large-scale production to enhance cost- effectiveness. Training would be provided to the licensee(s); (b) the ISAC project was funded by ECF and hence procurement of	

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		components for executing the project was subject to specific funding conditions. The cost range between $20,000 and $30,000 for ISAC was based on the price of some commercially available parts and some of HKPC's self-developed components. HKPC would be open for exploring collaboration opportunities with motor and battery suppliers at the commercialization stage after the completion of the ECF project; and (c) The service life span of a lithium battery was estimated at around seven years.	
010619 - 011335	Mr KAM Nai-wai Chairman Administration	Mr KAM Nai-wai's view/enquiry - (a) whether the two devices were the only products which were mature enough for wider application in the market; and (b) consideration should be given to allocating suitable vehicles from the Government fleet to test out the two devices to enhance public confidence on the effectiveness of the retrofit devices. Administration's response - (a) other local institutes which were interested in developing green transport technologies could seek funding from ECF. Funding from PGTF was also available for testing of overseas green transport technologies in Hong Kong; and (b) ENB would liaise with GLD and EMSD to look into the feasibility of trial tests on government vehicles. However, the success of the pilot scheme might not necessarily imply that the devices were suitable for commercial use given the different modus operandi of Government vehicles.	The Administration to consider allocating suitable vehicles from the Government fleet to test out the two devices so as to enhance public confidence on the effectiveness of the retrofit device.

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011336 - 011837	Chairman Ms Miriam LAU Mr CHAN Kin-por Mr IP Wai-ming	Chairman's request for the Administration to provide a written response to members' enquiries before the next meeting on 17 January 2012, at which the Subcommittee would discuss on the need for an additional meeting to follow up the subject. The suggestion was supported by Ms Miriam LAU and Mr CHAN Kin-por. Mr IP Wai-ming's view that a meeting should be held as early as possible to resolve the outstanding issues. It was agreed that the subject of "Retrofitting of separate air-conditioning system for vehicles while engines are switched off" should be included in the agenda for the next meeting.	
011838 - 012628	Ms Miriam LAU Chairman Administration Professor Eric CHENG, The Hong Kong Polytechnic University Mr Kenny WONG, HKPC	Ms Miriam LAU's enquiries - (a) whether the Environmental Protection Department would engage the transport trades to test out the performance of the two retrofit devices. If so, the plan to carry out such test; (b) whether the Administration would consider providing subsidy to the trades and the general public for the use of the retrofit devices; <u>ISAC/HKPC</u> (c) whether installation of ISAC which required modification of vehicle would render the warranty provided by vehicle dealers ineffective; (d) a trade representative's dissatisfaction with commercialization of the device by HKPC;	The Administration to advise whether the Environmental Protection Department would engage the transport trades to test out the performance of the two retrofit devices. If so, the plan to carry out such test. HKPC to advise on whether installation of the system might render the warranty provided by vehicle dealers ineffective. PolyU to advise on the feasibility of reducing the size of photovoltaic panel.

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		SAV/PolyU (e) the feasibility of reducing the size of photovoltaic panel of SAV on minibus and taxi to improve aesthetic look; and (f) the feasibility of removing any of the two retrofit devices from one vehicle for installation in another vehicle. Administration's response that the trades were encouraged to apply for funding under PGTF to try out the wider application of the two retrofit devices. The need for Government subsidy would be looked into if the devices were proven effective in reducing emissions. HKPC and PolyU/GPIL's affirmation that the retrofit devices could be dismantled and re-installed in another vehicle. PolyU's advice that the number of photovoltaic panels could be adjusted depending on the power required to keep the A/C system running for a certain period. SAV could be powered by solar energy from the photovoltaic panels or by the motor engine. The price of SAV without photovoltaic panels would be reduced to around $20,000 for taxi. HKPC's response - (a) ISAC was developed by HKPC on its own and patent had been obtained for the design and developed technology; (b) interested parties were welcome to apply for licensing of ISAC for commercialization; and (c) with the support of a taxi association, trial tests would be conducted at a taxi in due course.	

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012629 - 013037	Mr IP Wai-ming Chairman Mr Clement CHEN, HKPC	Mr IP Wai-ming's request - (a) HKPC and PolyU to provide information on the estimated cost for repair and maintenance of ISAC and SAV, the estimated reduction in cost if the retrofit devices were installed in a large scale, and the threshold for economy of scale; and (b) Assistance to be provided by the Administration to encourage wider use of the devices by the transport trades. HKPC's response - (a) despite the different modus operandi between Government fleet and commercial vehicles, the test of ISAC on Government vehicles would serve as an exemplary demonstration to the public, and also help verify previous test results; and (b) the estimated cost for large-scale production of ISAC would depend on the cost structure of technology commercialization by the specific licensee(s).	HKPC and PolyU to provide information on the estimated cost for repair and maintenance of the System, the estimated reduction in cost if the system was installed in a large scale, and the threshold for economy of scale.
013038 - 013511	Chairman Ms Miriam LAU Mr Jacky LAU,GPIL	Chairman's remarks - (a) the retrofit devices had substantial business potential in both the local and overseas markets, the mass production of which would help lower the prices of these devices; and (b) allocation of vehicles from the Government fleet to test out the devices could enhance public confidence on the effectiveness of the retrofit devices. Ms Miriam LAU's reiteration of the need to engage the transport trades in trying out the devices on a larger scale.	

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		GPIL's response that trial tests were being carried out by taxis, minibus and goods vehicles with the support of the transport trades.	

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