For discussion
on 12 June 2018

LegCo Panel on Food Safety and Environmental Hygiene

The Use of Modern Technology in Keeping Hong Kong Clean

Purpose

This paper briefs Members on the use of modern technology to improve environmental hygiene by the Food and Environmental Hygiene Department ("FEHD").

Background

2. In her 2017 Policy Address, the Chief Executive highlighted the use of automation to enhance efficiency, and specifically "exploring the introduction of automated cleaning machines or technology for trial use at suitable venues or after large-scale events". In line with this spirit and as a continuous drive to improve the delivery of street cleansing and refuse collection services, FEHD plans to put to test/apply modern technology on various fronts. Details are given in the ensuing paragraphs.

Installation of 360 Degrees Cameras at Priority Sites of Marine Refuse

3. FEHD has put on trial the use of 360 degrees cameras to monitor the accumulation of marine refuse in three coastal sites since February 2018. Images of 360 degrees landscape are captured every 15 minutes in the day time and uploaded to a central server automatically via 4G data transmission for subsequent review. The system is powered by

rechargeable battery making use of solar energy through solar panels. FEHD staff can monitor the condition of the sites remotely for effective planning of clean-up operations. This can save the time and cost of monitoring, particularly for those coastal sites that are remote and not easily accessible.

4. In view of the success of the trial, FEHD intends to extend the installation of 360 degrees cameras to 15 priority sites where accumulation of marine refuse is relatively serious, subject to technical feasibility, so as to monitor the amount of refuse washed ashore and adjust the frequency of clean-up work.

Pressure Washer Surface Cleaners

5. To enhance the efficiency and effectiveness of street washing, a mini street washing vehicle equipped with high pressure hot water cleaner and pressure washer surface cleaner has been on trial in Sham Shui Po District, and the initial feedback is affirmative. Starting from Yau Tsim Mong from 1 May 2018, FEHD plans to introduce the use of pressure washer surface cleaners in some districts.

6. Pressure washer surface cleaners which can remove dirt much faster are suitable for use in cleaning pavements with paving blocks or concrete floors. The benefits are clearly the effectiveness in cleaning, shorter working time, water and energy savings as well as reduction in splashing and nuisance to pedestrians.

Mini-mechanical Sweepers

7. Manual sweeping of village roads and low-traffic roads is laborious and can be much improved through automation. Since April 2017, mini-mechanical sweepers have been used in cleaning the village areas of Tai Mei Tuk, Tai Po. This sweeper is compact and manoeuvrable; making it a good choice for narrow village roads, and is able to perform sweeping more efficiently and quickly.

8. The wider use of mini-mechanical sweepers requires a movement permit from the Transport Department, with which FEHD is exploring the use of these sweepers in more village areas and other roads with low traffic.

Leaf Blowers

9. Manual sweeping of fallen leaves and waste trapped among flowerbeds, bicycle parking spaces, etc. is often not very efficient especially when the leaves are wet. To tackle the increase in fallen leaves and to enhance the efficiency and effectiveness of cleansing in greening areas, FEHD is mandating the use of leaf blowers in its street cleansing contracts upon renewal.

10. Battery-powered leaf blowers are to be incorporated to street cleansing contracts as standard equipment. They have no emission problem and generate lower noise than petroleum-driven ones. A shoulder belt is equipped to minimize staff fatigue. Trapped refuse that cannot be removed readily by brooms is blown out from the recesses for collection. Scattered fallen leaves are gathered for bulk removal by scooping.

11. FEHD also wishes to minimize repetitive manual sweeping operations for the sake of occupational health and better protection to cleansing workmen.

Solar-powered Compacting Refuse Bins ("Compacting Bins")

12. Bin sites for collection of household waste in rural areas are unmanned. Refuse bins ("RBs") are placed at bin sites collect household waste from the nearby residents. The number of RBs that can be accommodated at the bin sites is limited due to site constraint. Overflowing of waste is not uncommon because of unscrupulous dumping of waste. To enhance the hygiene condition of bin sites, FEHD conducted trial use of Compacting Bins at 12 sites between mid-February and late March.

13. Each Compacting Bin is equipped with a solar panel on top to provide power to operate a compactor that triggers automatically based on fill-level. A five-time reduction of waste volume can be achieved by the compactor. With the infrared touchless sensor, the Compacting Bin allows the public to dispose of bagged refuse without having to touch the bin. It also keeps the compactor out of reach of children or small animals. As another safety measure, an infrared sensor is installed in the bin to stop compaction once a foreign object is detected on its way through the inlet. Preliminary feedback from the nearby residents is positive. Areas for improvement are noted and FEHD has conveyed options for improvement to the supplier for enhancement of functionalities e.g. addition of indicator showing the status of operation of the Compacting Bins.

14. Photos showing the above new cleansing equipment are at Annex for reference.

Conclusion

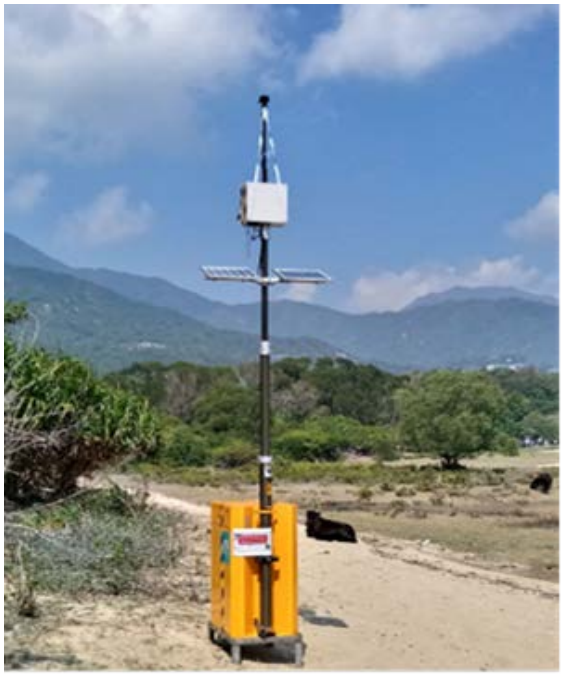
15. Through the adoption of automation and modern technologies on an ongoing basis, FEHD hopes to enhance the quality and efficiency in its provision of public cleansing and refuse collection services.

16. Members are invited to note the content of this paper.

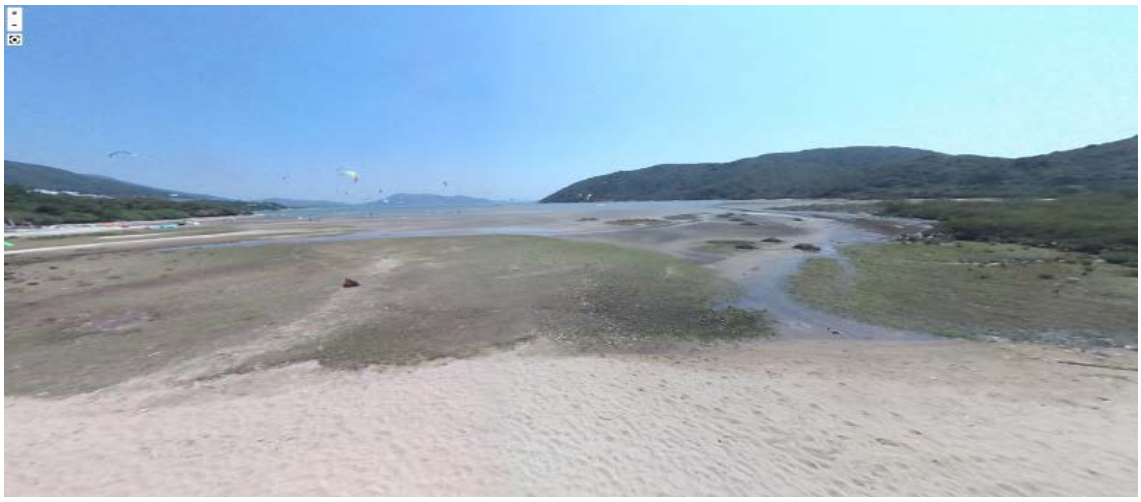
Food and Health Bureau
Food and Environmental Hygiene Department
June 2018

Annex

1. 360-degree camera

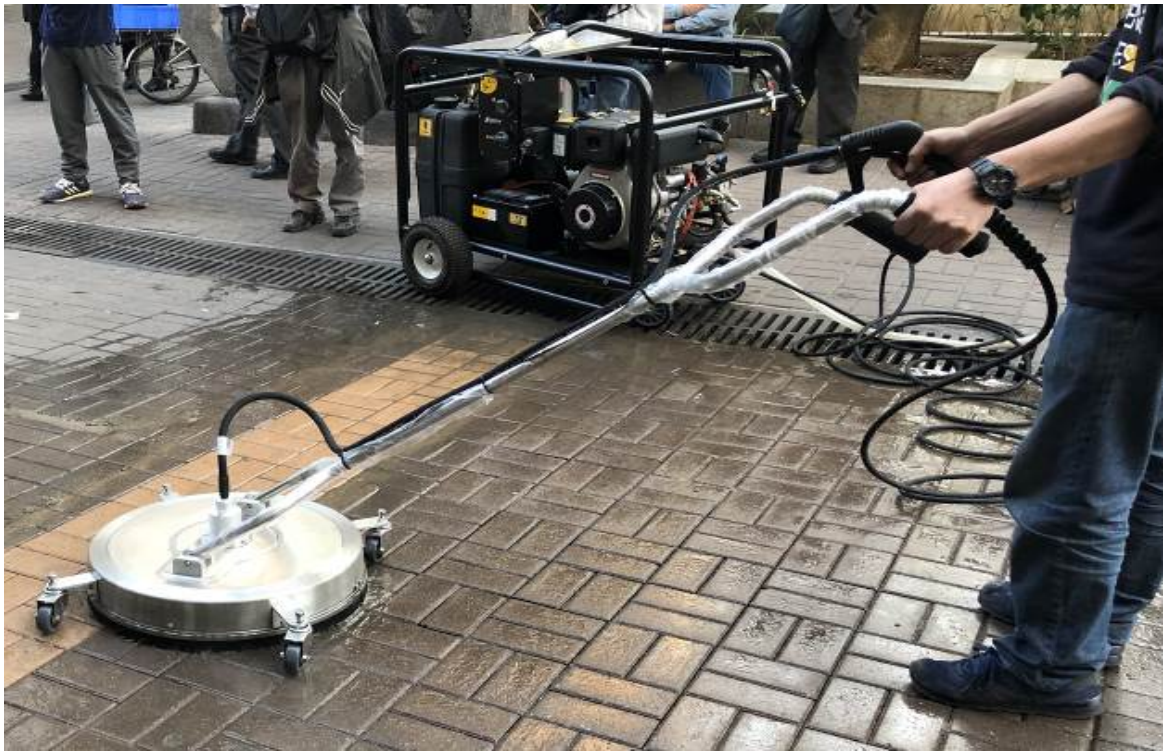


Outlook of 360-degree camera

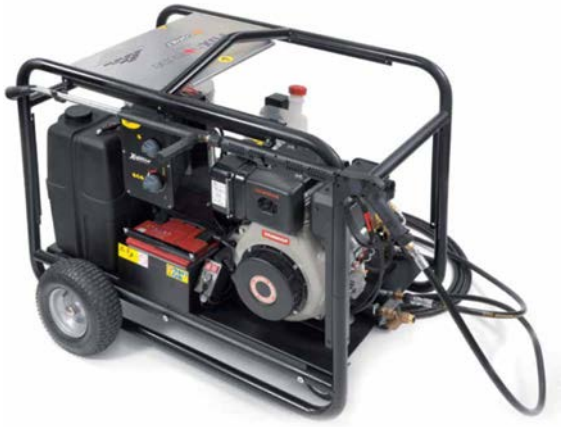


View of 360-degree camera

2. Pressure Washer Surface Cleaner

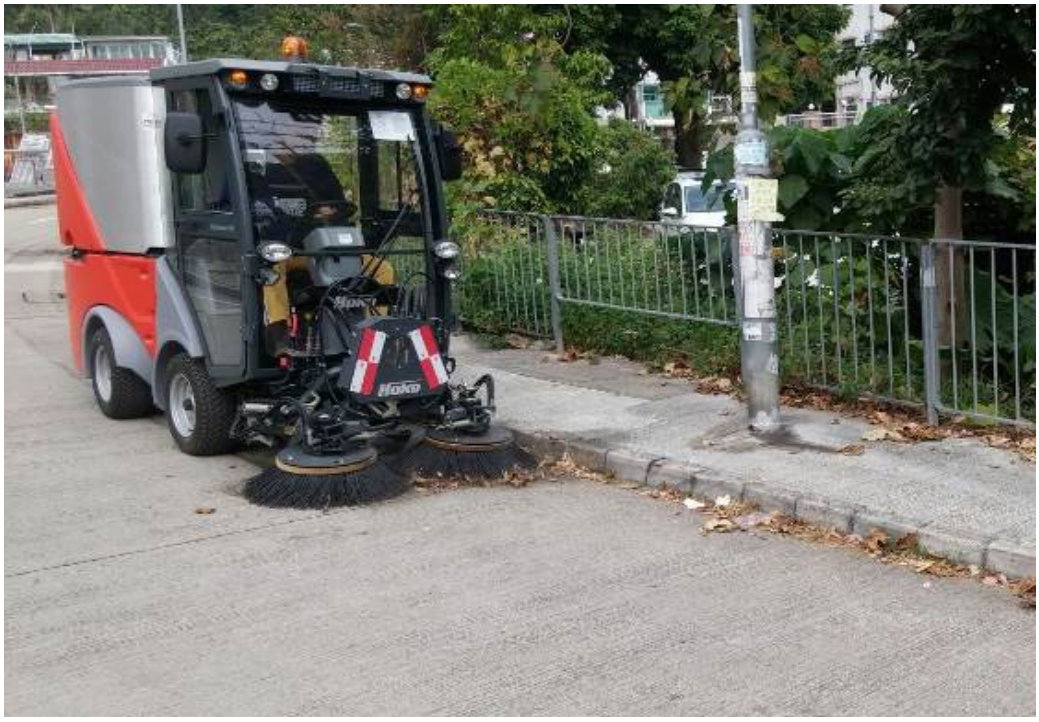


Pressure Washer Surface Cleaner

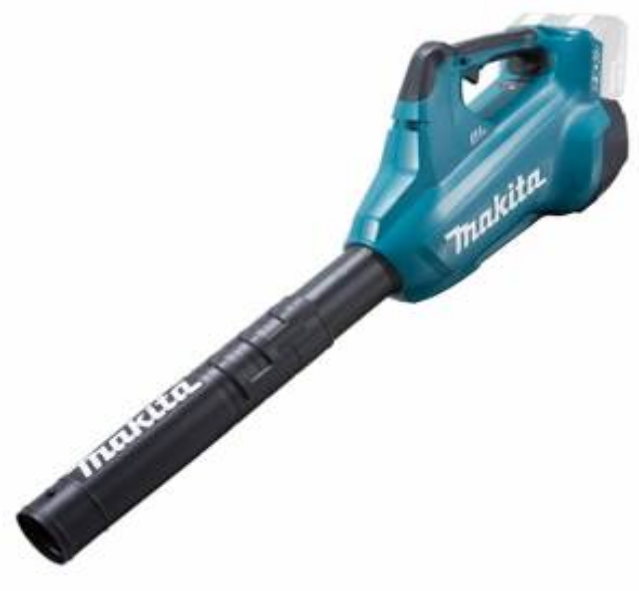


High Pressure Hot Water Cleaner

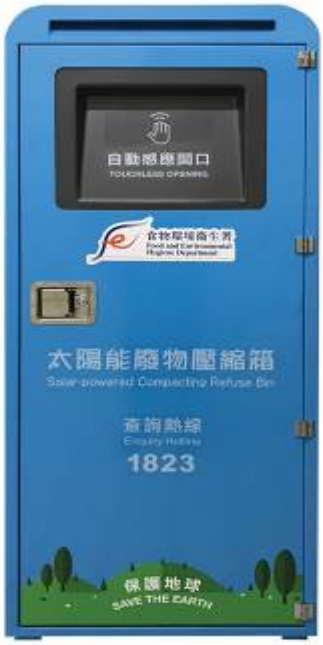
3. Mini-mechanical Sweeper



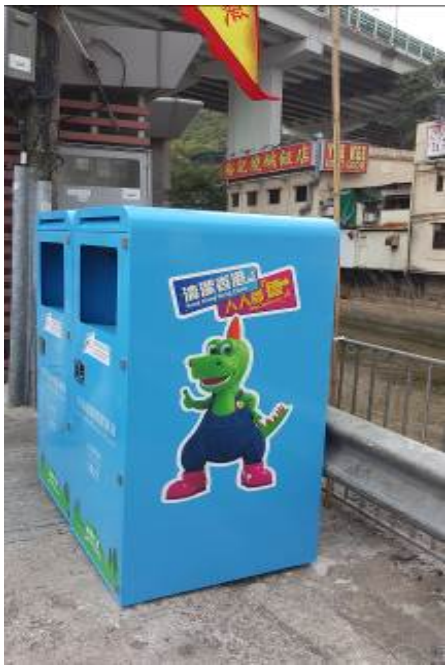
4. Leaf blower



5. Solar-powered Compacting Refuse Bin



Front view



Side view

Photos showing front panel opened

Inner-bin installed

Inner-bin removed showing compactor fully retracted

Compactor fully extended