

Civil Service Outstanding Service Award Scheme 2019
Drainage Services Department
Promoting the Development and Application of Renewable Energy
(5-minute Version)

Screen Content:	Aerial shots of the beautiful Victoria Harbour. Citizens participate in the Hong Kong Cross Harbour Race.
Voice Over:	Today, the harbour in Hong Kong is so beautiful that citizens can dive in to experience the excellent water quality. This is the result of Drainage Services Department's (DSD) years of hard work.
Screen Content:	Rainwater flows into the drains on the side of the roads. Scenes of DSD's sewage treatment works. Colleagues at the sewage treatment works work on their computers to monitor the operations. Scenes of photovoltaic panels installed at the sewage treatment works and other facilities related to renewable energy.
Voice Over:	In addition to sewage treatment and flood prevention, DSD has been actively developing and promoting the application of renewable energy in recent years, contributing to the sustainable development in Hong Kong.
Key-on Caption:	Drainage Services Department Promoting the Development and Application of Renewable Energy
Screen Content:	Scenes of commercial buildings at different districts of Hong Kong. Scenes of heavy traffic. Scenes of sewage generated from domestic life, such as toilet water and tap water.
Key-on Caption:	2.8 million m ³
Screen Content:	Scenes of standard size swimming pools.
Key-on Caption:	1,120 standard size swimming pools
Screen Content:	Scenes of different sewage treatment works.
Voice Over:	Rapid population growth coupled with the dramatic increase in economic activities have inevitably generated a large amount of sewage. DSD collects up to 2.8 million m ³ of sewage every day, enough to fill up 1,120 standard size swimming pools. The

	collected sewage is then conveyed to sewage treatment works for treatment. The conveyance and treatment processes consume substantial amount of energy.
Screen Content:	Scenes showing the Methane tank, the No. 1 Hydrogen Sulfide tank and the Combined Heat and Power Generation System.
Key-on Caption:	Utilises biogas as fuel 400-450 °c
Voice Over:	The four major secondary sewage treatment works in DSD have been employing the latest technology to utilise the biogas produced during the sludge treatment process to generate electricity and heat for use within the sewage treatment works.
Screen Content:	Photos of DSD colleagues participating in overseas duty visits.
Voice Over:	To maximise the use of renewable energy, DSD sent staff on study visits to the United States, Germany, and other regions to learn from their experience and to explore effective ways of developing renewable energy in Hong Kong.
Screen Content:	Scenes of different DSD's sewage treatment works and biogas generating facilities.
Name Card:	Li Chung-leung, Ricky Senior Project Manager Drainage Services Department
Li Chung-leung, Ricky:	Apart from getting our job done, we are constantly exploring ways to bring greater benefits to the environment. Take the Tai Po Sewage Treatment Works as an example, we need to pay over a million dollars for electricity every month. Could it be self-sustainable in energy?
Voice Over:	Riding on the production of biogas during the sludge treatment process, DSD, in the spirit of "Daring to Try, Practising with Care", actively explores ways to increase the production of biogas. Finally, in 2016, DSD and the Environmental Protection Department (EPD) jointly developed the "Food Waste and Sewage Sludge Anaerobic Co-digestion" Trial Scheme. As the Scheme was new to Hong Kong, the departments encountered many challenges during implementation.
Key-on Caption:	"Food Waste & Sewage Sludge Anaerobic Co-digestion" Trial Scheme
Screen Content:	Researchers at university laboratory use different sophisticated equipment to conduct DNA test for micro-organisms.

	Computer screen shows different test results. DSD colleagues work in front of their computers.
Name Card:	Cheung Kin-kuen Electrical & Mechanical Engineer Drainage Services Department
Cheung Kin-kuen:	Westerners' diets are mostly meat-based, therefore, protein is the main component of their food waste, whereas in Hong Kong, the composition of food waste is mainly carbohydrates. To ensure the viability of this technology in Hong Kong, we commissioned a local university to conduct DNA test for micro-organisms to confirm that the technology is feasible to be applied in Hong Kong.
Screen Content:	Scenes of the Tai Po Sewage Treatment Works. Scenes of the facilities related to the "Food Waste & Sewage Sludge Anaerobic Co-digestion" Trial Scheme.
Key-on Caption:	Tai Po Sewage Treatment Works
Key-on Caption:	A maximum of 50 tonnes food waste Sludge
Key-on Caption:	Utilises DSD's existing facilities Generates 30% more biogas Reduces 30% digestate
Key-on Caption:	Supplies 1 million kWh of electricity Saves around \$1 million electricity cost
Voice Over:	It is estimated that EPD will provide the Tai Po Sewage Treatment Works of DSD with a maximum of 50 tonnes food waste per day. The pre-treated food waste will undergo anaerobic co-digestion with the sewage sludge in the sewage treatment works. The Scheme utilises existing facilities of DSD, to harness the synergy effect in generating 30% more biogas and at the same time reducing the amount of digestate by 30%. The Scheme not only helps alleviate the burden on landfills, but also supplies a million kilowatt-hours of electricity to the sewage treatment works annually, which helps save around a million dollars in electricity cost annually.
Screen Content:	Aerial shots of photovoltaic panels at the Siu Ho Wan Sewage Treatment Works.
Key-on Caption:	Siu Ho Wan Sewage Treatment Works 4,200 photovoltaic panels

	Generation capacity of 1.1 megawatt
Voice Over:	In addition, DSD capitalises on its own advantages by installing photovoltaic panels at different sewage treatment works and pumping stations. Siu Ho Wan Sewage Treatment Works is equipped with 4,200 photovoltaic panels with an installed generation capacity of 1.1 megawatt. When it came into operation in late 2016, it was the largest of its kind in Hong Kong. DSD also set up a Renewable Energy Information Centre there. Guided tours are provided with the aim of enhancing public awareness of the government's effort in the development and application of renewable energy.
Screen Content:	Primary school students participate in guided tours at the Renewable Energy Information Centre.
Key-on Caption:	Renewable Energy Information Centre Guided Tours
Screen Content:	Aerial shots of the Stonecutters Island Sewage Treatment Works. Scenes of numerous sedimentation tank covers.
Key-on Caption:	Stonecutters Island Sewage Treatment Works
Voice Over:	To promote wider use of solar energy, DSD is exploring the feasibility of installing photovoltaic panels on the covers of the sedimentation tanks at the Stonecutters Island Sewage Treatment Works, which is the largest of its type in Hong Kong. However, the curvy surface of the sedimentation tank covers makes it difficult to install traditional photovoltaic panels.
Screen Content:	Scenes of the thin film photovoltaic panels used at the Stonecutters Island Sewage Treatment Works. Scenes of the area where thin film photovoltaic panels have not yet been installed.
Name Card:	Wong Ying-ying, Regina Senior Electrical & Mechanical Engineer Drainage Services Department
Wong Ying-ying, Regina:	There are thin film photovoltaic panels available in the market. We installed them on the sedimentation tank Number 9 as a trial. Although we encountered different technical problems in the process, we are confident that by enhancing the design, more photovoltaic panels could be installed on the covers of sedimentation tanks.

Key-on Caption:	Thin film photovoltaic panels
Screen Content:	Aerial shots of the facilities at the different sewage treatment works.
Name Card:	Mak Ka-wai, JP Deputy Director of Drainage Services Drainage Services Department
Key-on Caption:	Produce around 27 million kWh of electricity a year
Key-on Caption:	2030 “Zero emission” facility
Mak Ka-wai, JP	The mission of DSD is to provide the public with world-class sewage treatment and drainage services. With a “Do it from the Heart” attitude, we strive to develop renewable energy. On average, we produce around 27 million kilowatt-hours of electricity a year, which is equivalent to 9% of our overall electricity consumption. According to statistics, Hong Kong’s potential in developing renewable energy is about 3 to 4% of the total electricity consumed. Although we have already far exceeded this figure, DSD will keep the momentum going. We hope that by around 2030, we could successfully turn the Tai Po Sewage Treatment Works into a “zero emission” facility, achieving the goal of “waste-to-energy”. I believe that with the concerted efforts of our staff, we will be able to achieve it.
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