Business Facilitation Advisory Committee
Food Business and Related Services Task Force

Regulatory regime and current policy on fresh water cooling towers

Purpose

This paper briefs members on the regulatory regime and current policy on fresh water-cooling towers (FWCTs).

Background

2. The two most common air conditioning systems in Hong Kong are the air-cooled air conditioning system and the water-cooled air conditioning system. FWCT is one of installations in the water-cooled air conditioning system which is used for heat dissipation purpose. Fresh water used in FWCTs is generally supplied from the waterworks of the Water Supplies Department (WSD). FWCTs without proper repair and maintenance has been confirmed as the source of infection of Legionnaires disease overseas.

Regulatory Regime

3. The design and installation of FWCTs and the associated water supply connection are required to comply with the "Code of Practice for Water-Cooled Air Conditioning Systems"[1] of the Electrical and Mechanical Services Department (EMSD) and the requirements of WSD respectively. The relevant minimum requirements are highlighted at **Annex**. The purposes of such minimum compliance requirement are to mitigate the risk of

[1] The "Code of Practice for Water-Cooled Air Conditioning Systems" can be accessed at https://www.emsd.gov.hk/en/energy_efficiency/fwct_scheme/index.html

spreading of legionella and to fulfill the provisions of the Waterworks Ordinance (WWO).

4. Prior to installation of new FWCTs, the owners should apply for registration in the "Fresh Water Cooling Towers Scheme"[2] (the Scheme) operated by EMSD. If the design of the FWCT meets the prescribed requirements, EMSD will register it into the Scheme and notify WSD accordingly for processing the application for supply of water to it.

5. Owners of the existing FWCTs can apply for registration in the Scheme if their FWCTs are in compliance with the requirements of EMSD and WSD. The Water Authority (WA) will then grant written permission to the applicants to allow them to use water from the waterworks for cooling purpose.

6. Any person who connects an inside service to the FWCT without permission of the WA is in contravention of Section 14(1) of the WWO. Also, any person who uses water from the waterworks for the use of the FWCT without permission of the WA has committed an offence under Regulation 13(a) of the Waterworks Regulations. WSD will consider taking prosecution action against the offender and even disconnect the water supply to the FWCT.

7. EMSD also conducts regular inspections and water tests on all FWCTs in Hong Kong. If the bacteria level of the cooling tower water sample is found exceeding the upper threshold, EMSD will issue a nuisance notice under the Public Health and Municipal Services Ordinance (Cap 132) to the person who causes the nuisance requiring him/her to carry out emergency decontamination.

Current Policy

8. According to survey, there are currently about 7 500 FWCTs in Hong Kong. About 2 500 FWCTs were registered in the Scheme and about

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[2] Details of the Scheme are provided in the brochure which can be accessed at https://www.emsd.gov.hk/filemanager/en/content_296/FWCT_Scheme_Brochure_2016.pdf

5,000 were considered as UFWCTs (FWCTs which use water from the waterworks without WA's permission). In average, about 50 UFWCTs are newly identified annually. To curb the growth of UFWCTs in number in order to protect public health, the Government will prioritize enforcement actions as mentioned in Section 6 against newly erected UFWCTs. Newly erected UFWCTs refer to –

(a) Newly erected UFWCTs commissioned on or after 1 August 2018; and

(b) Existing UFWCTs which are wholly replaced by new units.

9. On the other hand, to ensure that the owners of the existing FWCTs will carry out proper repair and maintenance, the Government will continue to conduct the regular inspections and water tests. If it is found that no proper repair and maintenance is carried out for the existing UFWCTs and hence the bacteria level of the cooling tower water sample is found consecutively exceeding the upper threshold, the Government will prioritize enforcement against these UFWCTs.

Advice to Trades

10. Owners of the existing UFWCTs should join the Scheme as soon as possible if not already done so, or should plan ahead for replacement of the UFWCTs by other suitable air-conditioning systems such as air-cooled air-conditioning system. They should carry out proper repair and maintenance for their existing UFWCTs. Trade stakeholders should not erect new UFWCTs or replace existing UFWCTs, otherwise they will be prosecuted.

Way Forward

11. Members are invited to note the content of the paper and offer comments, if any.

Water Supplies Department
Electrical and Mechanical Services Department
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Annex

Design and Installation Requirements in Fresh Water Cooling Towers Scheme

A. Design and Installation of Fresh Water Cooling Towers shall comply with the following five minimum requirements of the EMSD. For details of other requirements, please refer to "Code of Practice for Water-Cooled Air Conditioning Systems".

(1) Cooling towers shall be distant from:

(i) the surrounding air intakes and exhausts and operable windows, other than those stated in (ii) below, with minimum 7.5 m horizontal separation;

(ii) for the cooling tower within 7.5 m from its own building façade boundary, air intakes and exhausts and operable windows on its vertical building façade by minimum 7.5 m below or 20 m above;

(iii) pedestrian thoroughfare and area of public access by minimum 7.5m.

(2) Cooling towers shall be provided with effective drift eliminators (with drift emission not more than 0.005% of maximum design water circulation rate) that minimize the formation and release of drift;

(3) Cooling towers shall be provided with effective water treatment equipment and bleed-off device to control bacterial growth. Bleed-off water from cooling towers shall be discharged to a flushing tank (via a break tank if applicable) and reused for flushing purpose as far as practicable.

(4) Dead legs shall be minimized to avoid stagnant water as far as practicable in the cooling water circulation pipeworks for the cooling tower, and, where unavoidable, purge valves should be provided to the dead legs for regular draining.

(5) Cooling towers shall be provided with adequate and safe access to allow for the maintenance, inspection and water sampling required under the Scheme.

B. The connection of mains water from the waterworks to the fresh water cooling tower shall comply with the following requirements of the Water Supplies Department. For details of other requirements, please refer to the "Waterworks Ordinance", "Waterworks Regulations" and other relevant provisions.

(1) Separate metering is required for connecting the mains water supply from the waterworks through the inside service to the fresh water cooling tower.

(2) There is no wastage or highly probable wastage of fresh water supply occurring in the fresh water cooling tower and the associated inside service.

(3) Break tank shall be provided to separate the fresh water cooling tower from the inside service to avoid pollution of the waterworks supply.