

**Business Facilitation Advisory Committee
Food Business and Related Services Task Force**

Proper Use of Water Supply for Fresh Water Cooling Towers

Purpose

This paper briefs members on the requirements for proper installation and operation of fresh water cooling towers (FWCTs) in order to comply with the relevant legislation and to protect public health.

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. The latter generally adopts the use of FWCTs for heat dissipation purpose. Water used in FWCTs is generally supplied from the waterworks of the Water Supplies Department (WSD).

Requirements of Fresh Water Cooling Towers

3. The design and installation of FWCTs and the associated water supply connection are required to fully 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 spreading of the Legionnaires’ disease and to fulfill the provisions of the “Waterworks Ordinance”.

¹ The “Code of Practice for Water-Cooled Air Conditioning Systems” can be accessed at <http://www.emsd.gov.hk/emsd/eng/pee/psfwct.shtml>.

4. Prior to installation of FWCTs, the owners should apply for participation in the “Fresh Water Cooling Towers Scheme for Air Conditioning Systems”² (the Scheme) operated by EMSD. If the design of the FWCT meets the prescribed requirements, EMSD will accept it into the Scheme and notify WSD accordingly for processing the application for supply of water to it.

5. Owners of FWCTs should also ensure compliance of their FWCTs with all other relevant legislation requirements, including but not limited to -

- Buildings Ordinance (Cap. 123)
- Public Health and Municipal Services Ordinance (Cap. 132)
- Air Pollution Control Ordinance (Cap. 311)
- Water Pollution Control Ordinance (Cap. 358)
- Noise Pollution Control Ordinance (Cap. 400)
- Sewage Services Ordinance (Cap. 463)
- Occupational Safety and Health Ordinance (Cap. 509)

Proper Use of Water Supply

6. The water-cooled air conditioning systems are generally more energy efficient than the air-cooled air conditioning systems. However, due to the crowded environment in Hong Kong, not all the premises can fully comply with the five minimum requirements of EMSD for installation of FWCTs. In this circumstance, EMSD will not accept the FWCT installed at such premises into the Scheme and the Water Authority will not permit the use of mains water for supply to it.

7. Any person who constructs an inside service for supply of mains water to FWCT without permission of the Water Authority is in contravention of Section 14(1) of the “Waterworks Ordinance”. Also, any person who uses mains water for supply to the FWCT without permission of the Water Authority 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 unauthorized water supply to the FWCT.

² Details of the Scheme are provided in the brochure which can be accessed at http://www.emsd.gov.hk/emsd/e_download/pee/Scheme_Brochure_eng_11-2010.pdf.

The disconnection of water supply will affect the daily operation of the business owner and the resulting loss could well exceed the saving in electricity expense as attained from the use of FWCT which fails to comply with the aforementioned requirements.

Support from Trades

8. Owners and/or operators of the food business and related services are often required to choose air conditioning systems for their new business premises or for replacing old air conditioning systems in existing business premises. They are thus reminded not to connect mains water for supply to FWCTs which cannot fully comply with the relevant requirements. They should, instead, adopt the use of other suitable types of air conditioning systems to avoid contravening the governing legislation.

Way Forward

9. With the support of the trades as well as other relevant stakeholders, we should be able to effectively reduce the number of unauthorized FWCTs in Hong Kong and mitigate their potential health impact.

10. Members are invited to note and comment on the content of this paper.

Electrical and Mechanical Services Department
Water Supplies Department
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ANNEX

A. Design and Installation of Fresh Water Cooling Towers shall comply with the following five minimum requirements of the Electrical and Mechanical Services Department. 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.