

# **2022-2023 CPD Course for MEP Design Concept and Application (12 selective course series)**

## **SYLLABUS**

### **Part A: Plumbing and Drainage**

#### **Topic 1: Design of plumbing drainage systems with modern practices in water supply**

The plumb drain system has much changed in recent years. Notable changes are 1) Having twin roof & sump tanks so that no need to stop water supply for residents whilst cleansing water tanks, 2) Air-conditioning cooling tower bleed-off water is used for flushing in toilets to save flushing water; 3) Rain water is reused for irrigation to reduce fresh water used for irrigation; 4) Using pressure reducing valves to replace break tanks in fresh and flush water supply risers to avoid water contamination in tanks etc. This talk will give illustrations on these aspects and much more in the modern plumb drain system.

This talk will talk about the modern design in potable & flush water, rain water, cleansing & irrigation water design with regard to pipe & pump sizing, added by environmental consideration to use air conditioning cooling tower bleed-off water for flushing, and rain water for irrigation. Water storage tank capacity sizing will also be illustrated.

#### **Topic 2: Drainage system with regard to Covid-19 plague**

With Covid and Omicron plague in Hong Kong, infection can be vertical or horizontal. U-trap is important to prevent vertical infection. This talk will illustrate the functioning of the U-trap, their design, & proper maintenance to prevent the spread of Covid. This talk will also illustrate the various types of manholes, sewage foul water, grey waste water and rainwater water drainage. Videos, drawings and specs will be provided.

#### **Topic 3: Water Supplies Department (WSD)'s streamline approach to apply for water meter in Village Houses**

In the past few years, there have been many village houses applying for water meter. There is simplified online application using emails, standard drawings on schematics and water meter boards. This talk will enable users to use this simple online procedure to apply to Water Supplies Department for water meter & plumbing installations in Village Houses.

### **Part B: MVAC**

#### **Topic 1: MVAC design in Data Centre**

Data Centre is housing a lot of racks /cabinets of servers which are used for storage of data, manipulation & calculations, data transmission and communication. These generate a lot of heat and require special fan coils called CRAC (Computer Room Air Conditioning) or CRAH (Computer Room Air Handling) equipment's which are capable to operate 7/24 hours, 365

days' whole year. To make sure this continuing cooling without breakdown of cooling, thermal tanks (filled with chilled water), N+1 chillers and 2N chillers pipes are required for backup. Also, cold aisles arrangement is used for cooling the racks and hot aisles provided for heated exhaust air to return to the CRAC/CRAH for re-cooling. This talk will go to in-depth description of the MVAC special requirements in data centre.

### **Topic 2: MVAC Ventilation as per requirements in Building Ordinance Cap 123J & Public Health & Hygiene Ordinance Cap132CE**

Building Ordinance Cap 123J and Public Health & Hygiene Ordinance Cap132CE have special requirements regulating ventilation in all private buildings and all trades. FEHD govern the ventilation in the six categories of trades: restaurants, canteens, theatres, cinemas, funeral parlour, dancing entertainment. Other Government Departments such as HAD, Police, LCSD etc. are in charge of ventilation when issuing trade licenses for hotels, bakeries, hair salons, swimming pools, gymnasiums etc. BD & FSD supervise ventilation in all private buildings requirements on the owners/users/occupiers to issue annual inspection certificates on ventilation. FSD, in addition, is responsible to issue Letter of Compliance to business applicants in order they can get trade licenses from the licensing authorities of Government. This talk will illustrate all the ventilation requirements imposed by all the statutory government bodies.

## **Part C: Fire Services**

### **Topic 1: Fire Services Design, and full illustration on FSD compliance inspections**

Illustration of various types of fire protection installations design in AFA, FH, HR, Sprinklers, pedestal hydrants, improvised schemes for Cap 502, 572. Design on pipe sizing, pump & water sizing calculations will be provided. Also, FSD compliance inspections will be fully discussed to enable engineers to be aware of FSD is looking for in such visits and make good preparation

### **Topic 2: Similarities and differences of Fire Services water supply vs potable/flushing water Supply**

WSD has requirements in its technical guide & water supply application documents. Notable the submission of WSD forms 542, 1149, 046 which requires LP, AP, and User to deal with WSD on 046 Part 1, 2, 3, 4, 5a, 5b submissions at various stages of piping design & construction before WSD provide water meters & supply. FSD has specific requirements for the installation of pedestrian fire hydrants to comply with the water pressure of 1.7bar and flow rate 2000L per min requirements. Refer FSD COP. This talk will explain the details of different requirements of WSD and FSD in the procedure and requirements by the two departments.

### **Topic 3: New FSD directive in FS501, FS501a in smoke extraction & staircase pressurizations stems**

With the new FSD circular in Year 2020, all smoke extraction and staircase pressurizations systems will need to be certified by RPE fire on FS501. This seminar will illustrate the procedure and the design of these systems. Sample examples will be provided to ease explanation.

### **Topic 4: Fire Services protection in Data Centre**

In view of the electrical servers and racks in data centre, water sprinklers are not used in active fire protection in data centre. For small data centre or computer room, FM200 is used. For big data centre, NOVEC1230 is used. This seminar will talk about the system and design of using NOVEC1230 in fire services protection system in Data Centre with design calculation on the amount of NOVEC1230. Photos, schematics, specification will be provided to illustrate the system completely. VESDA early fire detection system will also be required in Data Centre and will be explained in details.

## **Part D: Electrical**

### **Topic 1: Interior Lighting design requirement in BEEO Cap 610 & Building Energy Code**

Electrical lighting design in compliance with BEC Code with regard to manual lighting control, automatic lighting control (ALC) such as daylight sensors, occupancy sensors, timers. Also, fenestration and sky window size for calculating the number of daylight sensors will also be covered. Schematic, photo, EE-LG forms in BEEO Cap610 submission will also be illustrated.

### **Topic 2: Extra Low Voltage ELV installations & thermal image body temperature detection**

#### **超低電壓裝置和紅外熱成像快速體溫篩查**

Extra Low Voltage ELV installations include security (CCTV, cameras, sensors of occupancy, infra-red, ultrasound, microwave, laser sensor types...) installation, Door Access Control (include door phone station, door magnetic contact, detex lock, emergency release...), Emergency audio & video alarm & intercom stations (include refuge space installation), CABD (MATV)( include digital & satellite TV, lift car TV), Carpark Entrance Control (include Electric Vehicle EV charging), Automatic Gas Meter Reading (AMR), Public Address system and others.

The seminar will also include thermal image body temperature detection installation which is very useful for detecting & giving alert of the traveller having temperature from the mass travellers at arrival to HK

### **Topic 3: Emergency diesel generator design and its fuel oil storage to comply with FSD (Dangerous Goods, GD) requirements**

#### **About the Speaker – Professor Ir Dr Samuel Lip**

Professor Ir Dr Samuel Lip is currently Associate Professor (Building Services) in Chu Hai College for Higher Education. He is FCIBSE, FIMechE, FIE.Aust, FCIPHE, MASHRAE, RPE, MHKIE (BS, Fire, Electrical, Energy) and has 35 years of working experience in the design, installation, T&C, O&M on BS, Fire, Energy & ventilation. He is at present Principal E&M Engineer in global Consultancy Arcadis. He is also Founder and Managing Director of his own Lordray Engineering Co., Ltd. & SMA, [www.stmedia-asia.com](http://www.stmedia-asia.com).

He is also a RCx Pro, Qualified Person (QP) of Water Supplies Department. He is selected Data Centre Trainer of Government Department, OGCIO (Office of Government Chief

Information Officer). He was Lecturer (full/part time) in University of Hong Kong, City University of Hong Kong, HK Polytechnic University & VTC IVE teaching students from Certificate to Master Degree Level. He regularly gives CPD technical talks and seminars in various training organizations and corporation every week to peers & colleagues in industries & training bodies e.g. EMHK, SPT, SRDI, YYWongSafety, SMA, HKIE, etc.

### **Language**

Cantonese with English Terminology