



New Police Headquarter Phase III



The new Police Headquarter consists of two composite buildings -- a 42-storey high block comprising offices, conference rooms, library, restaurant, canteen, 4-level basement car parks and various function areas; and a 14-storey low block comprising shooting range, multi-purpose hall, lecture theater and offices. Total gross area exceeds 100,000 m² while 70,000 m² are air-conditioned. Key features are illustrated in this article.

Indoor Air Quality

Inclined Laminar Flow Outlet Devices Inclined laminar flow outlet direct the air to enter the room in evenly distributed layers through a laminarizer, air is then blown out at an angle into the shooting range above the head of the rifleman. This prevents the build up of any turbulence in front of the rifleman. The shooting area is also maintained at a negative pressure, which eliminates fugitive fumes or hazardous airborne substances.



Ultraviolet Steriliser Lamps and Bio-oxygen Air Purifier These reduce surfaces molds, bacteria and associated thus the level of contamination on coils and drains pans. These significantly improved IAQ in the building.

CO & CO₂ Sensor Zone carbon dioxide sensors control the amount of primary air. This maintains the CO₂ level below 800PPM. Likewise the car park is equipped with variable flow ventilation that keeps the CO level below 1000PPM.

Energy Recovery and Efficiency

Heat Pump and Heat Recovery Chiller Waste heat from heat recovery chillers together with heat generated by heat pumps provides necessary space heating and re-heating in humidity control. Waste "coolness" from the heat pump pre-cools the chilled water.

Total Energy Wheel Introduction of fresh air into the space has been a two-edged sword - while fresh air purging improves IAQ, the energy required to treat the fresh air is prohibitive. Total energy wheel, which pre-cools and dehumidifies the incoming fresh air by recovering energy from the exhaust air, is **the solution** to this dilemma.

Motion Sensor Signals from space motion sensors are incorporated into the lighting control system and central control monitoring

system to switch off lighting and air conditioning once the space is unoccupied.

Environmental Protection

Bag-in/Bag-out Filter Housing Filtration System The exhaust air from the shooting range is first filtered through the Bag-in/ Bag-out HEPA filters before discharged to the atmosphere. The filter housings are designed so that a contaminated filter can be removed in a sealed plastic bag and clean replacement filter can be installed without breaking the seal between the housing and the surrounding environment. The filter chambers are designed to allow in situ decontamination before filters are disposed of. This eliminates occupational hazard that would be otherwise imposed on the filter replacement workers.



Off-site pre-fabricated pipework and ductwork Most of the chilled water pipework and ductwork for the HVAC system were prefabricated and pre-insulated off-site. Mechanical couplings were used for joining chilled water pipes, which minimizes air pollution generated by traditional electric arc welding. Scrap material produced is thus kept to minimum.

Other features of the HVAC system includes variable flow rate secondary chilled water circuits, variable speed AHU's, standby air-cooled water chillers, dual-purpose ventilation/smoke extraction system for the basement car parks.

Project Summary

Project Site	: Arsenal Street, Wan Chai
Client	: Hong Kong Police
Architect & Engineer	: ASD
HVAC Contractor	: Southa Technical Limited
Total Cooling Capacity	5000 T.R.
Contract Sum	: Over HK\$200M
Completion Date	: End of April 2004

Prepared by: Southa Technical Ltd.