4 ENERGY USE

4.3 ENERGY EFFICIENT EQUIPMENT

4.3.1 AIR-CONDITIONING UNITS

EXCLUSIONS
Buildings not using window and/or split-type air-conditioners.

OBJECTIVES
Ensure the installation of air-conditioning units provides for near optimum performance.

CREDITS ATTAINABLE
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PRE-REQUISITES
Proper disposal system for the drainage of the condensation shall be provided in accordance with Buildings Department requirements [1].

CREDIT REQUIREMENT

a) Positioning of units

1 credit for complying with the recommended installation positions for air-conditioning units with regard to internal spaces.

1 credit for complying with the minimum width of any external recess with regard to heat rejection.

b) Additional installation requirements

1 credit for complying with the items listed in the assessment check-list.

ASSESSMENT

a) Positioning of units

i) Window type air-conditioning units

The Client shall provide relevant drawings and specifications demonstrating that the air-conditioning units installed comply with the installation requirements given in Tables 8.10 and 8.11 in Section 8.6.

ii) Split-type air-conditioning units

The Client shall provide relevant drawings and specifications demonstrating that the air-conditioning units installed comply with the relevant dimensions given in Table 8.10 in respect of internal unit, and with the relevant dimensions given in Table 8.11 in respect of the external unit.

Compliance with the requirements shall be demonstrated for each type of domestic unit in a block, or each type of space or room in other types of premises, unless the Client can demonstrate either that circumstances mitigate against compliance in not more than 10% of installations, or that non-compliance will not affect the performance of air-conditioning units in respect of room cooling, or heat rejection.

b) Additional installation requirements

The Client shall confirm that the installation conforms with any four of the following items that are relevant to the type of air-conditioning units used:

- to reduce penetration of noise units shall be located on walls which do not face major noise sources (road traffic, major pedestrian walkways, playgrounds, etc);
- to reduce intake of polluted air units shall be located in walls such that air is not drawn in from pollution sources such as roads, commercial activities, etc;
- for improved acoustics properties and better circulation, the internal discharge shall be close to the centre of the wall in which it is located;

• for the purpose of reducing noise from rain, and to reduce the potential for water dripping on to lower units, slabs shall be provided to as support and as cover;
• to encourage proper maintenance, the installation of units shall be such to allow for safe and convenient removal;
• where air-conditioning units are provided by the developer, the units selected shall be labelled as Grade 1 or 2 under the Government’s energy efficiency labelling scheme for room coolers [2].

**BACKGROUND**

Due to the hot and humid weather, the majority of residential units in Hong Kong are equipped with window-type air-conditioners. However, the provisions made in the building envelope design for their installation are often inadequate, particularly in the clearances for intake and disposal of outdoor air for condenser cooling. Consequently, the air-conditioners would consume an unnecessarily high amount of electricity and at the same time output less cooling [3].

Proper location of air-conditioning units will improve internal operating efficiency and comfort, and the efficiency of external heat rejection. Good design of openings can improve the quality of air intake, reduce intrusion of external noise, reduce nuisance to neighbours and provide for better operation and maintenance.

For air-conditioning for residential buildings, wall boxes or platforms in reinforced concrete or other suitable material may be constructed as a permanent feature, even over streets, and as such may be excluded from site coverage considerations [4].

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