

Invitation for advice on Setting a Minimum Testing Period to Observe the Water Dripping from Air-conditioner

Regarding the issues of water dripping from window type air-conditioners (“air-conditioners”), we are of the view that most of these cases are caused by following reasons:

1. The condensate downpipe of the associated building is blocked due to external obstacles or internal scaling of the galvanised iron (G.I.) pipe.
2. The condensate collection pan (“the pan”) is undersized, so minimal blockage of the condensate downpipe will cause condensate water overflowing from the pan.
3. The condensate water is not collected properly in the pan due to poor workmanship, which causes the pan’s level lower than the condensate downpipe connection/collection point.
4. The interconnecting pipework between the pan and the air-conditioner is not done properly leading to water leakage at the connection point.

Therefore, it is difficult to determine whether the air-conditioning unit has caused the concerned problem simply by observing the water dripping of the unit within a set period.

For a more scientific determination of the minimum operating time required for water dripping, it is considered that Monte Carlo method may be adopted through randomly selecting variables (e.g. in/out air temperatures, supply air flow rate, unit capacity, room size, etc) to create a minimum of 10,000 cases for EnergyPlus simulations. EnergyPlus is a whole building energy simulation program that can predict the condensate generation rate for each case so that the range of condensate generation rate can be determined. Based on the range of condensate generation rate as well as the pan capacities, the range of operating time required for water dripping for different confidence levels can be determined.

The Clause 7.5 of the “Standard for Packaged Terminal Air-conditioners and Heat Pumps” issued by the Air-Conditioning, Heating, and Refrigeration Institute (http://www.ahrinet.org/App_Content/ahri/files/STANDARDS/AHRI/AHRI_Standard_310_380-2014_CSA_C744-14.pdf) can also be referred to for the testing procedures for an acceptable condensate disposal rate of air-conditioner.