

CHAPTER 2 - CONSERVATION AND EFFICIENCY: BUILDING SYSTEMS

500

502.20 AIR CONDITIONING OF INDUSTRIAL BUILDINGS



INTENT

To enhance energy efficiency in industrial buildings by utilising environment friendly evaporative cooling techniques.

REQUIREMENT

For all industrial buildings, where air conditioning is required for areas other than areas where special systems are used for manufacturing process, air conditioning shall be achieved by using indirect evaporative cooling system. This system shall be used, provided the design comfort temperature is no less than 28 °C.

SIGNIFICANCE

Due to high volume and high internal thermal load in industrial buildings, cooling energy requirements are high. More energy is consumed when using conventional vapor compression refrigeration-based AC systems. This necessitates the need of unconventional cooling system that consumes less energy and with less impact on the environment. One of the commercially viable sustainable alternatives to conventional cooling system is evaporation based cooling technique (evaporative cooling system), specifically the indirect type that cools the air without adding moisture into it.

The indirect evaporative cooling system helps to reduce the equipment operating cost by 60% to 75% (ASHRAE Handbook - HVAC Applications; Chapter 52 Evaporative Cooling) as compared with vapor compression refrigeration-based AC systems. It is environment friendly as it is a refrigerant-free system. This system also requires less installation costs and maintains good air quality when compared to conventional AC systems.

APPLICABILITY

This regulation is applicable to industrial buildings. Refer to Table 101.07(1) in Section One - Administration for detailed applicability levels.

IMPLEMENTATION

Indirect evaporative cooling (IEC) combines the benefits of the evaporative cooling effect for sensible cooling without the addition of moisture into the primary air stream (as detailed in *Regulation 502.18: Cooling of Corridors and Public Areas*). This regulation intends the project team to utilise an indirect evaporative cooling system in industrial building spaces, except for spaces that requires precise thermal control.