Based on Manual N Table 6E that states: Refrigerator 5 to 25 Cu. ft. per 10 Cu. ft. of space 1,670 Btuh

Find Btuh for a 24 Cu. ft. refrigerator.

(24 ÷ 10) × 1,670 = 4,008 Btuh

Based on Manual N Table 6E that states: Refrigerator 5 to 25 Cu. ft. per 10 Cu. ft. of space 1,670 Btuh

Find Btuh for an under counter 6 Cu. ft. refrigerator.

(6 ÷ 10) × 1,670 = 1,002 Btuh

Given Watts × 3.412 = Btuh: How many Btuh will be equivalent to six 300 watt incandescent light bulbs?

Watts = 6 × 300 = 1,800

Watts × 3.412 = Btuh

Btuh = 1,800 × 3.412 = 6,142 Btuh

Given for single-phase equipment: Watts = Amps × Power Factor × Voltage

Find the Watts for a 10 h.p. single phase motor operating at 230 Volts and 50 amps (use PF of 0.85)

Watts = Amps × Power Factor × Voltage

Watts = 50 × 0.85 × 230 = 9,775 Btuh

Given for three-phase equipment: Watts = Amps × Power Factor × Voltage × 1.732

Find the Watts for a 10 h.p. 3 phase motor operating at 460V and 14 amps (use PF of .85)

Watts = Amps × Power Factor × Voltage × 1.732

Watts = 14 × 0.85 × 460 × 1.732 = 9,480 Watts

Field Notes:

Unfortunately, most building owners do not consider the HVAC system when they remodel. It is not unusual to find thermostats/sensors in sections they do not control, or up in ceilings shoved out of site. The technician was called out because the employee kitchen was too hot year round. The building had a variable air volume system (VAV) with reheats for the perimeter areas. The kitchen was in an internal area so it was always supplied with air that was 65F (in the winter) or cooler (55F in the summer). The technician noted the kitchen was fairly new and that a controlling thermostat/sensor was not present in the room. Since the kitchen was added without considering the HVAC system: the recommendation was for a load calculation to be done based on the newly added kitchen equipment, and that the kitchen area be made into a separate zone on the VAV system, with its own control. This change would require moving a thermostat/sensor and a duct modification, along with an air balance for two VAVs.