How to Calculate Enclosure Component(s) Internal Heat Loads

Motor Drive Example:

Power Conversions

1 Watt = 3.413 BTUh
1 HP = 745.7 Watts
1 HP = 2,546 BTUh

Calculating the Internal Enclosure's Heat Load from a Drive

EXAMPLE 1:

Known drive efficiency or Watts lost to heat can be estimated if it is not supplied by the manufacturer. Typically 90% to 95% efficient.

60 HP drive = 60 x 745.7= 44,742 Watts potential power consumption.

If 95% efficient, and operating at full capacity, 44,742 x (1- 0.95) =
2,237 Watts lost to heat or 7,635 BTUh cooling is required

Example 2:

30 HP drive = 30 x 745.7= 22,371 Watts potential power consumption.
If 95% efficient, and operating at full capacity, 22,371 x (1- 0.95) =
1,119 Watts lost to heat or 3,818 BTUh cooling is required

Example 3:

10 HP drive = 10 x 745.7= 7,457 Watts potential power consumption.
If 95% efficient, and operating at full capacity, 7,457 x (1- 0.95) =
373 Watts lost to heat or 1,273 BTUh cooling is required