

BOILER RATINGS

Ratings may be expressed in the following units:

BHP = Boiler Horsepower. One BHP is the evaporation of 34.5 lbs of 212°F water per hour into dry saturated steam at the same temperature.

$$\text{BHP} = \frac{\text{BTUh}}{33,475 \text{ BTUh/BHP}}$$

BTU = British Thermal Units: that quantity of heat required to raise one (1) lb. of water one (1) degree on the Fahrenheit scale. BTUh = BTU/hr.

MBH = 1000 BTUh

PPH = Pounds of steam per hour

$$\text{PPH} = \frac{\text{MBH}}{0.9703 \text{ MBH/PPH}}$$

Gross Rating – The full output of a boiler actually available to the heating or process system at the outlet nozzle. The Commercial Steel Boiler Industry catalogs gross output as 80% of input.

Net Ratings – The net connected design load that can be supplied with heat by a boiler of given output, allowing for normal system piping losses and pickup from a cold start. Since steam system piping losses may be expected to be larger than for water systems, and steam boilers require greater heat input from a cold start than water boilers before heat flows to the system, steam net ratings for automatic fired boilers are slightly lower in relation to gross output than water net ratings. Hand fired net water and steam ratings are equal and are lower in relation to gross output in order to provide ample allowance for rapid pickup from a banked fire.

MBH net water = Gross MBH x 0.87

MBH net steam = Gross MBH x 0.776

Square Foot Ratings – Net ratings based on a heat emission rate of 240 BTUh per square foot of radiation for steam, and 150 BTUh per square foot for water.

$$\text{Square Feet Net Steam} = \frac{\text{Steam Net MBH}}{0.24 \text{ MBH / sq. ft.}}$$

$$\text{Square Feet Net Water} = \frac{\text{Water net MBH}}{0.15 \text{ MBH / sq. ft.}}$$