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800 HP FIRETUBE BOILER

Maximum BTU/hr Input (ie: Rated Input @ High Fire / 100% Input Rating)	800 x 42,000 = 33,600,000 BTU
Cubic Feet of Natural Gas Required	$33,600,000 \div 1,000 = 33,600$ Cu Ft
Cubic Feet of Vaporized Propane Required	$33,600,000 \div 2,500 = 13,440$ Cu Ft
Gallons of Liquid Propane Required	$33,600,000 \div 91,600 = 366.8$ Gallons
Gallons of #2 Diesel Oil Required	$33,600,000 \div 140,000 = 240$ Gallons
Minimum BTU/hr Input at a 4:1 Turndown Ratio (Low Fire)	$33,600,000 \div 4 = 8,400,000$ BTU
Cubic Feet of Natural Gas Required	$8,400,000 \div 1,000 = 8,400$ Cu Ft
Cubic Feet of Vaporized Propane Required	$8,400,000 \div 2,500 = 3,360$ Cu Ft
Gallons of Liquid Propane Required	$8,400,000 \div 91,600 = 91.7$ Gallons
Gallons of #2 Diesel Oil Required	$8,400,000 \div 140,000 = 60$ Gallons
Maximum Steam Production in lbs/hr (High Fire)	$800 \times 34.5 = 27,600$ lbs/hr
Maximum Water Evaporation Rate	$800 \times .069 = 55.2$ GPM
Minimum Feedwater Pump Flow (on / off pump strategy)	$55.2 \times 2 = 110.4$ GPM
Minimum Feedwater Pump Flow (modulating pump strategy)	$55.2 \times 1.5 = 82.2$ GPM
Minimum Feedwater Tank Storage Requirement	552.2 Gallons
Steam Temperature at <u>250 psi</u> Saturated	406 °F
BTU/hr Output, Based on 80% Efficiency at High Fire	$33,600,000 \times .80 = 26,880,000$ BTU
BTU/hr Output, Based on 80% Efficiency at Low Fire	$8,400,000 \times .80 = 6,720,000$ BTU
Square Feet Heating Surface (sq. ft. HS) at 5 sq. ft. per HP	$800 \times 5 = 4,000$ Sq Ft
Minimum Steam Safety Relief Valve Capacity at Boiler Design	$27,600 \times 1.10 = 30,360$ lbs/hr
Minimum Water Softener Flow Capacity at High Fire (always based upon 100% input)	$55.2 \times 2 = 110.4$ GPM

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