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900 HP FIRETUBE BOILER

Maximum BTU/hr Input (ie: Rated Input @ High Fire / 100% Input Rating)	900 x 42,000 = 37,800,000 BTU
Cubic Feet of Natural Gas Required	$37,800,000 \div 1,000 = 37,800$ Cu Ft
Cubic Feet of Vaporized Propane Required	$37,800,000 \div 2,500 = 15,120$ Cu Ft
Gallons of Liquid Propane Required	$37,800,000 \div 91,600 = 412.66$ Gallons
Gallons of #2 Diesel Oil Required	$37,800,000 \div 140,000 = 270$ Gallons
Minimum BTU/hr Input at a 4:1 Turndown Ratio (Low Fire)	$37,800,000 \div 4 = 9,450,000$ BTU
Cubic Feet of Natural Gas Required	$9,450,000 \div 1,000 = 9,450$ Cu Ft
Cubic Feet of Vaporized Propane Required	$9,450,000 \div 2,500 = 3,780$ Cu Ft
Gallons of Liquid Propane Required	$9,450,000 \div 91,600 = 103$ Gallons
Gallons of #2 Diesel Oil Required	$9,450,000 \div 140,000 = 67.5$ Gallons
Maximum Steam Production in lbs/hr (High Fire)	$900 \times 34.5 = 31,050$ lbs/hr
Maximum Water Evaporation Rate	$900 \times .069 = 62.1$ GPM
Minimum Feedwater Pump Flow (on / off pump strategy)	$62.1 \times 2 = 124.2$ GPM
Minimum Feedwater Pump Flow (modulating pump strategy)	$62.1 \times 1.5 = 93.15$ GPM
Minimum Feedwater Tank Storage Requirement	621.25 Gallons
Steam Temperature at <u>40 psi</u> Saturated	287 °F
BTU/hr Output, Based on 80% Efficiency at High Fire	$37,800,000 \times .80 = 30,240,000$ BTU
BTU/hr Output, Based on 80% Efficiency at Low Fire	$9,450,000 \times .80 = 7,560,000$ BTU
Square Feet Heating Surface (sq. ft. HS) at 5 sq. ft. per HP	$900 \times 5 = 4,500$ Sq Ft
Minimum Steam Safety Relief Valve Capacity at Boiler Design	$31,050 \times 1.10 = 34,155$ lbs/hr
Minimum Water Softener Flow Capacity at High Fire (always based upon 100% input)	$62.1 \times 2 = 124.2$ GPM

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