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350 HP FIRETUBE BOILER

Maximum BTU/hr Input (ie: Rated Input @ High Fire / 100% Input Rating)	$350 \times 42,000 = 14,700,000$ BTU
Cubic Feet of Natural Gas Required	$14,700,000 \div 1,000 = 14,700$ Cu Ft
Cubic Feet of Vaporized Propane Required	$14,700,000 \div 2,500 = 5,880$ Cu Ft
Gallons of Liquid Propane Required	$14,700,000 \div 91,600 = 160.5$ Gallons
Gallons of #2 Diesel Oil Required	$14,700,000 \div 140,000 = 105$ Gallons
Minimum BTU/hr Input at a 4:1 Turndown Ratio (Low Fire)	$14,700,000 \div 4 = 3,675,000$ BTU
Cubic Feet of Natural Gas Required	$3,675,000 \div 1,000 = 3,675$ Cu Ft
Cubic Feet of Vaporized Propane Required	$3,675,000 \div 2,500 = 1,470$ Cu Ft
Gallons of Liquid Propane Required	$3,675,000 \div 91,600 = 40.12$ Gallons
Gallons of #2 Diesel Oil Required	$3,675,000 \div 140,000 = 26.25$ Gallons
Maximum Steam Production in lbs/hr (High Fire)	$350 \times 34.5 = 12,075$ lbs/hr
Maximum Water Evaporation Rate	$350 \times .069 = 24.15$ GPM
Minimum Feedwater Pump Flow (on / off pump strategy)	$24.15 \times 2 = 48.3$ GPM
Minimum Feedwater Pump Flow (modulating pump strategy)	$24.15 \times 1.5 = 36.22$ GPM
Minimum Feedwater Tank Storage Requirement	241.59 Gallons
Steam Temperature at <u>175 psi</u> Saturated	370 °F
BTU/hr Output, Based on 80% Efficiency at High Fire	$14,700,000 \times .80 = 11,760,000$ BTU
BTU/hr Output, Based on 80% Efficiency at Low Fire	$3,675,000 \times .80 = 2,940,000$ BTU
Square Feet Heating Surface (sq. ft. HS) at 5 sq. ft. per HP	$350 \times 5 = 1,750$ Sq Ft
Minimum Steam Safety Relief Valve Capacity at Boiler Design	$12,075 \times 1.10 = 13,282.5$ lbs/hr
Minimum Water Softener Flow Capacity at High Fire (always based upon 100% input)	$24.15 \times 2 = 48.3$ GPM

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