

**INSULTECH Thermal Blanket - "Sample" Energy Survey Proposal**

Represented By: Regional Representative  
 Project Name: **SAMPLE-Steam System**  
 Project Location: Anywhere, USA

Insulation Thickness: 1.50  
 Fuel Cost(\$/mmBTU): **\$13.63**  
 Operating Hours per Year: 8760

Design: **LT450TT (Thermal )**  
 Amb. Temp: 80  
 Wind Speed: 0 MPH

Qty.	Description	Area (Ea.) (Sq.ft.)	Surface Temp.	Bare Heat Loss (BTU/Hr/SF)	Insulated Heat Loss (BTU/Hr/SF)	Bare Heat Loss (BTU/Hr)	Bare Heat Loss (\$/Year)	Insulated Heat Loss (BTU/Hr)	Insulated Oper. Cost (\$/Year)	Insultech Unit Cost	Insultech Total Cost
<b>Main Boiler Room</b>											
2	10" 250# Stop Check Valve	18.2	350	864.00	60.28	31,449.60	<b>\$3,754.27</b>	2,194.16	<b>\$261.93</b>	\$731.00	<b>\$1,462.00</b>
2	10" 150# Gate Valve	15.9	350	864.00	60.28	27,475.20	<b>\$3,279.83</b>	1,916.87	<b>\$228.83</b>	\$592.00	<b>\$1,184.00</b>
4	17 x 20 - Steam Drum	6.4	350	864.00	60.28	22,118.40	<b>\$2,640.37</b>	1,543.14	<b>\$184.21</b>	\$274.00	<b>\$1,096.00</b>
2	17 x 20 - Mud Drum	6.4	350	864.00	60.28	11,059.20	<b>\$1,320.18</b>	771.57	<b>\$92.11</b>	\$274.00	<b>\$548.00</b>
<b>Steam Header</b>											
6	8" 150# Gate Valve	11.8	350	864.00	60.28	61,171.20	<b>\$7,302.27</b>	4,267.76	<b>\$509.46</b>	\$500.00	<b>\$3,000.00</b>
4	6" 150# Gate Valve	8.8	350	864.00	60.28	30,412.80	<b>\$3,630.51</b>	2,121.82	<b>\$253.29</b>	\$411.00	<b>\$1,644.00</b>
2	12" 150# Flange Cap	5.9	350	864.00	60.28	10,195.20	<b>\$1,217.04</b>	711.29	<b>\$84.91</b>	\$266.00	<b>\$532.00</b>
<b>Steam Tunnel</b>											
6	6" 150# Slip Expansion Joint	13.4	350	864.00	60.28	69,465.60	<b>\$8,292.41</b>	4,846.44	<b>\$578.54</b>	\$609.00	<b>\$3,654.00</b>
4	6" 150# Gate Valve	8.8	350	864.00	60.28	30,412.80	<b>\$3,630.51</b>	2,121.82	<b>\$253.29</b>	\$411.00	<b>\$1,644.00</b>
3	6" 150# Flange Cap	2.8	350	864.00	60.28	7,257.60	<b>\$866.37</b>	506.34	<b>\$60.44</b>	\$141.00	<b>\$423.00</b>
<b>PRV Station tp Deaerator ( 120 psi to 30 psi )</b>											
1	6" 150# Flanged Strainer	8.8	350	864.00	60.28	7,603.20	<b>\$907.63</b>	530.46	<b>\$63.32</b>	\$411.00	<b>\$411.00</b>
1	4" 150# Control Valve	6.1	275	624.00	43.53	3,806.40	<b>\$454.39</b>	265.56	<b>\$31.70</b>	\$357.00	<b>\$357.00</b>
1	6" 150# Gate Valve	8.8	350	864.00	60.28	7,603.20	<b>\$907.63</b>	530.46	<b>\$63.32</b>	\$411.00	<b>\$411.00</b>
1	4" 150# Globe Valve	6.1	350	864.00	60.28	5,270.40	<b>\$629.15</b>	367.70	<b>\$43.89</b>	\$299.00	<b>\$299.00</b>
1	6" 150# Gate Valve	8.8	275	624.00	43.53	5,491.20	<b>\$655.51</b>	383.11	<b>\$45.73</b>	\$411.00	<b>\$411.00</b>
<b>PRV Station to HW Tank (30 psi to 15 psi )</b>											
1	4" 150# Flanged Strainer	6.1	275	624.00	43.53	3,806.40	<b>\$454.39</b>	265.56	<b>\$31.70</b>	\$299.00	<b>\$299.00</b>
1	2.5" 150# Control Valve	4.1	250	544.00	37.95	2,230.40	<b>\$266.25</b>	155.61	<b>\$18.58</b>	\$278.00	<b>\$278.00</b>
1	4" 150# Gate Valve	4.1	275	624.00	43.53	2,558.40	<b>\$305.41</b>	178.49	<b>\$21.31</b>	\$299.00	<b>\$299.00</b>
1	2.5" 150# Globe Valve	4.1	275	624.00	43.53	2,558.40	<b>\$305.41</b>	178.49	<b>\$21.31</b>	\$239.00	<b>\$239.00</b>
1	4" 150# Gate Valve	6.1	250	544.00	37.95	3,318.40	<b>\$396.13</b>	231.52	<b>\$27.64</b>	\$299.00	<b>\$299.00</b>

**Energy Savings Summary:**

Total Heatloss - Bare (BTU/HR):	345,264.00
Total Heatloss - 1.5" Insulation (BTU/HR):	24,088.19
Heatloss Savings-W/Insultech (BTU/HR):	321,175.81 BTU/Hr
<b>Total Annual Operating Cost - Bare:</b>	<b>\$41,215.64 Per Year</b>
Total Annual Operating Cost - 1.5" Insulation:	\$2,875.51 Per Year
<b>Annual Savings - W/Insultech (BTU/HR):</b>	<b>\$38,340.13 Per Year</b>
Blanket Cost (INSULTECH Blanket System):	\$18,490.00
Installation ( All of the Above):	\$ 2,160.00
<b>Total Cost ( Material &amp; Installation Cost ):</b>	<b>\$ 20,650.00</b>
<b>Payback (Months):</b>	<b>6.85 Months</b>

**\*Initial Investment:** \$ 20,650.00  
**\*Lifetime Savings (15 Year Life):** \$575,101.93

45 Fittings

**Heatloss Calculation**

**Q = K (Delta T) / L+(K/Ht)**  
 Q = Heatloss (BTU/Hr. / Sq. Ft.)  
 K = Bare Thermal Conductivity(STL and C.I. = 26.9)  
 K = Insulated Thermal Conductivity(T.M.=.36)  
 L = Insultion Thickness  
 Delta T = Surface Temp - Ambient Temp.  
 Ht = Combined Coefficients (300 Deg F. = 3.2)  
 (Radiation, Convection, & Conduction)

**Boiler Load Reduction:** 470.8 lb/Hour  
**Horse Power Reduction:** 16.0 Horse Power

**(GHG) Greenhouse Gas - Emissions Reductions:**

INSULTECH Thermal Blanket Insulation will have a direct impact on emissions reduction. By reducing annual BTU loss, less energy is expelled, thereby reducing usage. The above "Energy Survey", shows a calculated Heatloss Savings (BTU/Hr): **321,175.81** BTU/Hr  
 The Annual Savings ( mm BTU ) : **2,813.50** mm BTU  
 The values in the below presentation are derived from Abraxas Energy Consulting. Emission factors were calculated in 1998 in a federal study done by the Leonardo Academy. Emission values here are calculated for your information only.

<b>Emissions Savings #1</b>	
<b>Natural Gas (mm BTU)</b>	<b>2,813.50</b>
CO2 (Tons)	164.74
NOx (lbs)	422.14
N2O (lbs)	6.10
SO2 (lbs)	1.58
PM10 (lbs)	5.20
VOC (lbs)	15.14
CO (lbs)	67.57

<b>Emissions Savings #2</b>	
<b># 6 Fuel Oil (mm BTU)</b>	<b>2,813.50</b>
CO2 (Tons)	251.29
NOx (lbs)	1,105.74
N2O (lbs)	*
SO2 (lbs)	3,153.83
PM10 (lbs)	200.90
VOC (lbs)	32.32
CO (lbs)	100.56

( Amount is less than 0.05 lbs )

<b>Emissions Savings #3</b>	
<b>Electricity (kWh)</b>	<b>815,915.04</b>
CO2 (Tons)	451.52
VOC (lbs)	7.23
NOx (lbs)	2,121.31
CO (lbs)	81.58
Mercury Compounds (tons)	4.97
Cadmium Compounds (lbs)	368.58
Lead Compounds (tons)	7.01

( mm BTU = 290 kWh )

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