



Shannon proudly manufactures the INSULTECH® family brand of insulation products.

**ENERGY
SURVEY
SERVICES**

SHANNON Thermal Blanket Insulation

Introduction: SHANNON has introduced an insulation program designed to improve insulation performance on existing steam systems, whereby the existing insulation has been removed and never replaced. INSULTECH® Blankets are proposed for these problem insulation areas for the purpose of immediate energy savings, with the many benefits of quick installation, quick removal and quick reinstallation. These problem insulation areas can now be addressed with a highly functional insulation system.

A Unique Insulation System: INSULTECH® Thermal Blanket Systems are now offered for the purpose of "Energy Savings" on steam valves and fittings. INSULTECH® Thermal Blanket is a high quality insulation, custom fit to match Gate Valves, Pressure Reducing Valves, Flanges, Strainers, Steam Traps, Heat Exchanger Heads, Boiler Heads, PRV Stations, Condensate Pumps and similar equipment. This blanket system is CAD designed to match each and every fitting. We guarantee the fit and the blanket will carry an 18 month warranty.

Payback on Investment is about 1 Year: A typical Energy Survey will show a payback period on investment of roughly 1 year. The enclosed Energy Survey Proposal shows an initial investment of \$31,031.01. A Payback Period of 10 Months. An Annual Savings of \$37,895.60 per Year and a Lifetime Savings of \$537,402.96. See 'Energy Survey Sample' on back cover.

Added Benefits: The INSULTECH® Blanket System will improve your steam system efficiency. Also, consider the lowering of ambient temperature in mechanical rooms, tunnels, manholes and the general work environment. INSULTECH® Blanket Systems will reduce the possibility of employee burns from steam fittings.



UNIV. CAMPUS – MECHANICAL ROOM

Steam Reducing Stations
Design: LT450TT - 1.5" thickness
Fastener: "D" Ring Straps



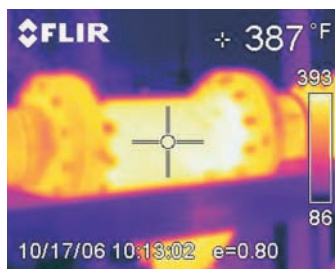
BUILDING MECHANICAL ROOM

Steam Condensate Tank
Design: LT450TT - 1.5" thickness
Fastener: Stainless Steel Wiretwists



BOILER HEAD STEAM DRUM

Design: Steam Drum Retrofitted with Blanket
Fastener: Stainless Steel Wiretwists



(Before) Bare Y Strainer



(After) Blanketed Y Strainer
"Thermal Imaging Photography"

Energy Conservation Safety Noise Reduction



HP-HW REHEAT BOILER Exchanger Head, Valves & Fittings
 Design: LT450SS - 1.5" thickness
 Fastener: Stainless Steel Wiretwists



STEAM CONDENSATE PUMP & RECEIVER
 Design: LT450TT - 1" thickness
 Fastener: Stainless Steel Wiretwists and Velcro® Flaps



MAIN MECHANICAL ROOM – HP STEAM SUPPLY PRV STATION
 Design: LT450TT – “Yellow” PTFE Fabric
 Fastener: Stainless Steel Wiretwists and Velcro® Flaps

SHANNON Thermal Blanket Insulation

Re-install the blanket just one time and it has paid for itself: *INSULTECH®* Blanket Systems are a practical solution to problem insulation areas. If the blanket once installed is removed just one time, the blanket cost is justified by the cost associated with reinstallation of other insulation materials. The blanket can be removed and reused numerous times. The blanket will also minimize down time associated with reinsulation and removal. Blankets can be removed and reinstalled in minutes vs hours, for other insulation materials.

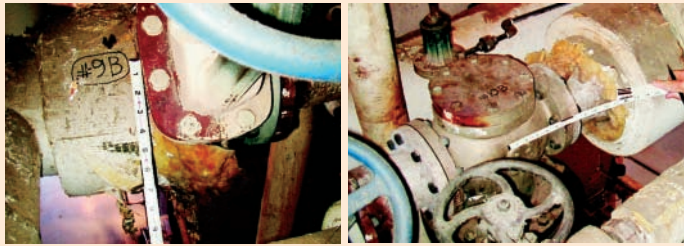
How do we initiate an Energy Survey? Your Project Representative will contact Shannon Enterprises to arrange a site visit. A Shannon Sales Engineer will meet with the customer and the Project Representative at the site to “Walk Through” the steam system. The Shannon Sales Engineer will tally a descriptive list of likely candidates for insulation. In essence, a “Shopping List” of fittings, valves, flanges and equipment. The survey may be 140 fittings or many many more depending on the extent of work required and the size of the system. Also, the survey may require added site visits to make sure that the proposal is inclusive of all the opportunities. We search for surface temperatures greater than 250°F.



BOILER ROOM – FEED WATER PUMP, PIPING & VALVES
 Design: LT450SS - 1.5" thickness
 Fastener: Stainless Steel Wiretwists and Velcro® Flaps

ENERGY SURVEY SERVICES

Installation: The Energy Survey Proposal will include installation. This assures the customer a quality fit and a blanket system installed in a timely fashion. The blanket system may be installed by an outside field service mechanic or by Shannon Enterprises. Either way, the blanket system will be retrofit to match to the existing insulation system with good thermal performance.



Valves & Fittings are Marked or Tagged & Measured for Design

What do we cover? The Energy Survey Proposal will include every opportunity on the steam system which represents a realistic payback, usually within an 18 month period. Our sole interest is "Return on Investment." The *INSULTECH*® Blanket System allows insulation considerations on piping, valves and equipment where otherwise bare surface conditions would be the norm. Our approach to Energy Savings is tangible, with a minimum 15 year service life and virtually no maintenance associated with the investment. The blanket is designed, manufactured and installed. All this can be completed as a "Turn-Key" Project. The *INSULTECH*® Blanket can be removed and reused for an estimated 15 year service life.



MECHANICAL ROOM – INSTANTANEOUS STEAM TO HOT WATER HEATER & CONTROL VALVE

Design: LT450TT - 1.5" thickness
Fastener: Stainless Steel Wiretwists and Velcro® Flaps



HIGH PRESSURE STEAM EXPANSION JOINT & PIPING

Design: LT450STF20 (Wet Manhole Design)
Fastener: Side Release Buckle Straps



BOILER ROOM – MAIN HP STEAM HEADER GATE VALVES & VALVE BONNETS

Design: LT450TT - 1.5" thickness
Fastener: Stainless Steel Wiretwists and Velcro® Flaps



BOILER TOP – MAIN HP STEAM SUPPLY

8" 300# Stop Check & Gate Valve
Design: LT450TT - 1.5" thickness
Fastener: Stainless Steel Wiretwists and Velcro® Flaps



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**ENERGY
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Energy Survey Sample

Presented By: Shannon Enterprises				Survey Date: 9/22/2015			
Contact:				Proposal Date:			
Phone / Email: (716)693-7954				Fuel Cost (\$/mmBTU): \$9.60			
Project Name: Sample Steam System				Steam Cost: \$12.80			
Project Contact:				Product Specification: (M) LT450TT			
Phone / Email:				Insulation Thickness: 1.5 Inches			
Shannon Proj. #: 2535				Fastener Type: (M) Velcro Flaps / Wiretwists			

QTY	Description / Location	Amb. Temp	Meas. Surface Temp	Operating Hours	Bare Heat Loss (BTU/Hr)	Bare Oper. Cost (\$/Year)	Insulated Heat Loss (BTU/Yr)	Insulated Oper. Cost (\$/Year)
Main Boiler Room								
3	Valve, Gate, 150#	90	360	8760	23,916.06	\$2,681.66	18,439,324	\$236.02
3	6" 300# Stop Check Valve	90	360	8760	39,463.20	\$4,424.93	30,426,196	\$389.46
6	44" Dia. Steam Drum (6"-10"	90	345	8760	108,201.60	\$12,132.43	93,449,607	\$1,196.15
6	44" Dia. Mud Drum (6"-10" Deep)	90	330	8760	101,836.80	\$11,418.76	87,952,571	\$1,125.79
Steam Header								
6	Valve, Gate, 150#	90	350	8760	23,362.56	\$2,619.60	20,177,355	\$258.27
4	Valve, Globe, 150#	90	350	8760	15,575.04	\$1,746.40	13,451,570	\$172.18
2	Flange, 150#	90	345	8760	10,874.53	\$1,219.34	9,391,920	\$120.22
Steam Tunnel								
6	Exp. Joint, Single,	90	342	5834	22,837.25	\$1,705.38	13,135,599	\$168.14
4	Valve, Gate, 150#	90	342	5834	18,321.41	\$1,368.15	10,538,164	\$134.89
3	Blind Flange Cap, 300#	90	338	5834	7,928.06	\$592.03	4,560,088	\$58.37
PRV Station to DeAerator								
1	Strainer, 150#	110	325	8760	3,219.84	\$361.03	2,780,853	\$35.59
1	Pressure Reducing Valve, 150#	110	325	8760	6,123.20	\$686.58	5,288,375	\$67.69
1	Valve, Globe, 150#	110	315	8760	3,070.08	\$344.24	2,651,511	\$33.94
1	Flange, 150#	110	315	8760	2,784.90	\$312.27	2,405,213	\$30.79
1	Valve, Gate, 150#	110	315	8760	3,070.08	\$344.24	2,651,511	\$33.94

Heatloss Calculation	
$Q = K (\Delta T) / L + (K / Ht)$	
Q = Heatloss (BTU / Hr. / SF)	
K = Bare Surface Thermal Conductivity (K = 26.9)	
ΔT = Surface Temp - Ambient Temp	
L = Insulation Thickness	
K = Insulated Surface Thermal Conductivity (K = 0.525 @ 300 F)	
Ht = Combined Coefficients (Ht = 3.2 @ 300 F) (Radiation, Convection & Conduction)	

Emissions Savings #1	2960.59	Emissions Savings #2	2960.59
Natural Gas (mm BTU):		#6 Fuel Oil (mm BTU):	
CO2 (Tons)	444.21	CO2 (Tons)	264.43
NOx (lbs)	444.21	NOx (lbs)	1163.55
N2O (lbs)	6.42	N2O (lbs)	*
SO2 (lbs)	1.66	SO2 (lbs)	3318.72
PM10 (lbs)	5.47	PM10 (lbs)	211.40
VOC (lbs)	15.93	VOC (lbs)	34.01
CO (lbs)	71.10	CO (lbs)	105.82

* (Amount is less than 0.05 Lbs)

Energy Survey Summary	
Total Heatloss - Bare (BTU/Year):	3,277,893,469.42
Total Heatloss - w/ Insulation (BTU/Year):	317,299,858.47
Heatloss Savings - w/ INSULTECH® (BTU/Year):	2,960,593,610.95
Total Annual Operating (Steam Cost) - Bare:	\$41,957.04
Total Annual Operating (Steam Cost) - w/ Insulation:	\$4,061.44
Annual (Steam Cost) Savings - w/ INSULTECH®:	\$37,895.60
* Lifetime (Steam Cost) Savings (15 Yrs):	\$537,402.96
Total Cost (INSULTECH® Blanket System):	\$26,231.01
Installation (By Shannon):	\$4,800.00
Total Cost:	\$31,031.01
Payback (Months):	10
Number of Fittings:	48

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