



**Shannon**  
GLOBAL ENERGY SOLUTIONS

# Removable Reusable Blanket Insulation



THERMAL



ACOUSTIC



SAFETY

*Engineering Reusable Solutions for a Sustainable Planet*

SHANNONGLOBALENERGY.COM



## Standards & Specs



Shannon treats thermal, acoustic and safety applications for healthcare, pharmaceutical, chemical plants, food & beverage, plastics extrusion providers, oil & gas refineries, power generation, K-12/higher education and more.

One of the most reliable ways for energy managers and plant operators to reduce energy consumption is by installing insulation that meets quality standards and specifications. When carrying out routine maintenance, workers often remove this insulation. According to the U.S. Department of Energy, the key to long-term energy savings is developing a strategy employing **reusable** insulation. Done right, it's a way to save millions of BTUs within less than a year, increase safety and profitability and even go green.



## Thermal Blanket Insulation



Capture bare-surface radiant heat loss on complex steam fittings and surfaces, process and power-gen applications and more.

- Gate or stop-check valves, up-stream threaded fittings, expansion joints, heat exchangers, pumps, manifolds, silencers, piping, gas turbines.
- A complete line of thermal and thermal-acoustic blankets for: OEM programs, hot oil, hydrocarbon, chemical, most acidic and basic environments, applications requiring nonporous, non-wicking systems and more.
- Chemical-resistant jacketing materials and a double sewn construction ensure a self-contained blanket that protects equipment from harsh conditions.
- Complies with both custom and prescriptive utility rebates where available.
- Standard offering includes: steam fittings and equipment, process fittings and equipment, engine and gas turbine exhaust and a wide array of complex components with unique geometry.

For the specifications that meet your application, visit: [shannonglobalenergy.com/thermal](http://shannonglobalenergy.com/thermal)



## Heat Shield Insulation



A thin-wall insulation solution for steam traps & specialties addressing radiant heat loss for energy savings and safety

- Instrumentation, threaded fitting assemblies, manifolds, drip legs, tracing, boiler doors and more.
- Our library of steam trap designs include; Armstrong®, Spirax Sarco®, Spence Nicholson®, Watson McDaniel®, TLV®, Bell and Gossett® and more.
- Shannon Heat Shield will retain up to 75% of the heat source.
- Shannon's team can take a steam trap survey and develop a Heat Shield energy survey.

For the specifications that meet your application, visit: [shannonglobalenergy.com/heatshield](http://shannonglobalenergy.com/heatshield)





## Acoustic Blanket Insulation



### Address radiant sound on complex surfaces.

- Compressors, motors, pumps, fan housings, blowers, ducting, mechanical equipment, liquid chillers, process piping, valves, ejectors and more.
- Treats sound problems at the source; sample performance for liquid chillers: 4 to 8 dBA, pumps: 6 to 8 dBA.
- Up to 15 decibels of reduction, depending on the application and sound profile of the source noise.
- Includes high-density filler and mass loaded vinyl for sound absorption and reflection.

For the specifications that meet your application, visit: [shannonglobalenergy.com/acoustic](http://shannonglobalenergy.com/acoustic)



## Acoustic Shield Insulation



### A cost effective OEM alternative for treating noise.

- Shannon Acoustic Shield is an economical alternative to Acoustic Blanket Insulation.
- Reduces noise from 4 dBA to 8 dBA for applications including scroll compressors, piping, mufflers and more.
- Ideal for OEM programs where total cost of ownership and price are a top priority.

For the specifications that meet your application, visit: [shannonglobalenergy.com/acousticshield](http://shannonglobalenergy.com/acousticshield)



## Fire Protection Blanket



### Protect equipment and instrumentation from rapid-temperature-rise fires.

- Tested against UL1709 (i.e., specimen withstands 2000°F fire for 30 min.)
- Blocks the flame path and retards extreme heat flow.
- Designed for MOV, motor operated valve, actuators & valve bodies.
- Protect equipment and instrumentation from heat and smoke.

For the specifications that meet your application, visit: [shannonglobalenergy.com/fire](http://shannonglobalenergy.com/fire)





## Rain Shield Enclosures



### Protects sensitive equipment exposed to outdoor and wash down sanitary conditions.

- Applications include: terminal boxes, control panels, sub panels, electronic scales, VFDs, motors, switches, instrumentation, critical components and much more.
- Eliminates taping and wrapping of loose plastic, no more disposal and waste.
- Enhances a zero-waste initiative.
- Lower operator cost and shorten down time.
- Protect a wide array of applications, up to 600°F.
- Reduces labor costs.

For the specifications that meet your application, visit: [shannonglobalenergy.com/rain](http://shannonglobalenergy.com/rain)



## Safety Shield Protection



### Reusable fabric-jacketing protective enclosure for liquid piping systems designed for environmental protection so leaks or spills are directed to a containment bed, preventing spray exposure into streams and property.

- Self-contained, double-sewn, multi-layer engineered design with integral fasteners to accommodate extreme-flow, high-pressure and harsh process environments.
- Nonporous, weather, chemical, pressure and temperature resistant; ideal for outdoor use.
- Switches, brackets, glass panel, in-line flanges, valves, nozzle connections, pig access doors, equipment heads.
- Made to ASTM testing standards D-3786/F1138 Mullen burst test.

For the specifications that meet your application, visit: [shannonglobalenergy.com/safety](http://shannonglobalenergy.com/safety)



## Blanket Design Features



1. D ring strap fastener with Velcro® tab
2. Stainless steel wiretwist fastener
3. Side release buckle with nylon strap fastener



1. Stainless steel wiretwist fastener
2. Side release buckle with nylon strap fastener
3. D ring strap fastener with Velcro® tab



1. Wind flap with draw cord
2. Two-piece construction (separate body and bonnet)
3. Riveted and embossed ID tag
4. Double sewn lock stitch construction
5. Teflon® PTFE fiberglass cloth

# Reuse once and our insulation pays for itself



## Shannon Solutions:

- CAD-CNC designed & manufactured
- OSHA compliant & ASTM tested
- Reusable, not just removable
- Typically removed and re-installed in minutes
- Reduce surface temp by 85%
- Reduce ambient temperature up to 35°F
- I.D. tagged for asset management
- Designed to last 15 years
- Payback in 6 to 24 months
- Warrantied up to 10 years
- Self-contained, meaning no direct exposure to insulation

Since 1988, Shannon has used state-of-the-art designs and production methods to install more than 650,000 reusable insulation blankets and shields at manufacturing plants, power generation facilities, universities, hospitals and government buildings around the globe, making Shannon's specifications\* the worldwide standard. With its QP3 approach (Quality People, Processes and Products), Shannon ensures every blanket will match the application condition.

## Support Services

### Energy Survey Services

- ECM (Energy Conservation Measure) proposals define a scope of work and measure performance on steam and process systems.
- Define radiant heat loss.
- Surveys are typically free.

### Installation Services

- For all products.
- For both merit and non-merit labor.
- Fully insured and follow the ISNetworld® and PIC/S guidelines.

### Reporting

- Measurement and verification reporting using picture-on-picture thermography.
- Define savings within 5% error rate.

### Sound Testing

- Mechanical equipment, both pre and post installation.
- Measurements using a Class A digital meter.
- Follows AHRI (formerly ARI) 575 test methods for liquid chillers.
- Capture both dBA and octave band measurements.



\* Shannon's specifications follow the Construction Specifications Institute (CSI) standards.



## Energy Survey Sample

**Presented By:** Shannon Global Energy Solutions  
**Phone/Email:** (716) 693-7954  
**Project Name:** Sample Steam System  
**Project Contact:**  
**Phone/Email:**  
**Shannon Project #:** 2535

**Survey Date:** 7/18/2019  
**Proposal Date:**  
**Fuel Cost (\$/mmBTU):** \$9.60  
**Steam Cost:** \$12.80  
**Product Specification:** (M) LT450TT  
**Insulation Thickness:** 1.5 Inches  
**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/Hr)	Insulated Oper. Cost (\$/Year)
<b>Main Boiler Room</b>								
3	Valve, Gate, 150#	90	360	8760	23,916.06	\$2,681.66	2,104.95	\$236.02
3	6" 300# Stop Check Valve	90	360	8760	39,463.20	\$4,424.93	3,473.31	\$389.46
6	44" Dia. Steam Drum (6"-10" Deep)	90	345	8760	108,201.60	\$12,132.43	10,667.76	\$1,196.15
6	44" Dia. Mud Drum (6"-10" Deep)	90	330	8760	101,836.80	\$11,418.76	10,040.25	\$1,125.79
<b>Steam Header</b>								
6	Valve, Gate, 150#	90	350	8760	23,362.56	\$2,619.60	2,303.35	\$258.27
4	Valve, Globe, 150#	90	350	8760	15,575.04	\$1,746.40	1,535.57	\$172.18
2	Flange, 150#	90	345	8760	10,874.53	\$1,219.34	1,072.14	\$120.22
<b>Steam Tunnel</b>								
6	Exp. Joint, Single	90	342	5834	22,837.25	\$1,705.38	2,251.56	\$168.14
4	Valve, Gate, 150#	90	342	5834	18,321.41	\$1,368.15	1,806.34	\$134.89
3	Blind Flange Cap, 300#	90	348	5834	7,928.06	\$592.03	781.64	\$58.37
<b>PRV Station to Deaerator</b>								
1	Strainer, 150#	110	325	8760	3,219.84	\$361.03	317.45	\$35.59
1	Pressure Reducing Valve, 150#	110	325	8760	6,123.20	\$686.58	603.70	\$67.69
1	Valve, Globe, 150#	110	315	8760	3,070.08	\$344.24	302.68	\$33.94
1	Flange, 150#	110	315	8760	2,784.90	\$312.27	274.57	\$30.79
1	Valve, Gate, 150#	110	315	8760	3,070.08	\$344.24	302.68	\$33.94

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## Energy Survey Summary

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

Emissions Savings #1 Natural Gas (mm BTU):	2960.59	Emissions Savings #2 #6 Fuel Oil (mm BTU):	2960.59
CO2 (tons)	444.21	CO2 (tons)	264.43
NOx (lbs)	444.21	NOx (lbs)	1163.55
N2O (lbs)	6.42	N2O (lbs)	< 0.05 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

### Heat Loss Calculation $Q = K (\Delta T) / L + (K / Ht)$

Q	=	Heat loss (BTU / Hr / SF)
K	=	Bare Surface Thermal Conductivity (K = 26.9)
$\Delta T$	=	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)



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