Hotels: The war on pipe insulation

Removable insulation with embedded wireless monitoring
About Us

We are providers of tailored, removable insulation jackets.

Our jackets stop waste while increasing safety & comfort.

- Headquartered in West Haven, CT
- Products designed & manufactured in USA
- 60 years of family insulation experience
Currently Saving Money with ThermaXX Jackets
Our Products
Pipe insulation is not the low hanging fruit.....It’s the fruit starting to *Rot* on the ground!
Why Removable Jackets??
Insulation Story:

- **Was Insulated & Removed**
  - Removed for Maintenance or inspection

- **Never Insulated**
  - Valve was never insulated during construction phase

- **Removable Insulation**
  - Removable insulation is installed
No Brainer.. You would think!

- Comfort & Appearance
- Safety
- Energy Efficiency

Show Me!
Stop Heating Adjacent Spaces

Example Pictured: **One Room** (Yale University)

- Reduced mechanical room temperature by 40 degrees
- Saves 5300 BTU’s per hour
- Saves $10,000 in energy per year ($16.00/MMBTU cost of generation)
- Return on Investment in **14** months
Why are hotels missing insulation?

- No Budget
- Might be Asbestos in the area?
- We will do it later
- Did not know how much was missing
Phase 1 Battle Plan

- All Mechanical Spaces & Areas that use Steam
  i.e. Laundry Rooms and Kitchens

- Perform a detailed insulation survey
  - Steam, Condensate and Hot Water Focus
- Incentive investigation- work with client and gas company
- Document and Notify- Environmental & Safety Concerns (asbestos, lighting, leaks)
- ROI Presentation and Sortable Reports
Sheraton Boston Project Highlights

Total Project Cost $31,782.57

various mechanical rooms steam/steam condensate

- Total Yearly Savings $16,722.95
- Incentive $15,891.29
- ROI\(^2\) 11.40 Months
- ROI2= Amount of Time for initial Project payback (Incentive + Payback)
- Payback in Months 22.81
- 5 Years of Savings $83,614.77
- Monthly Cost of waiting $1,393.58
- Pre Therms 15432
- Post Therms 1496
- Therms Saved 13936
### Heat-Loss & ROI

**REPORT SUMMARY:**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Location</th>
<th>Description</th>
<th>Bare BTU/hr/sf lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Steam Tunnel</td>
<td>6’ 250lb. Gate Valve Bonnet</td>
<td>603</td>
</tr>
</tbody>
</table>

**YEARY SAVINGS IF INSULATED:** $1,286.05

**Total Insulation Jacket Cost:** $1,079.00

**Average Payback in Months:** 10.07

**DOLLARS LOST EACH YEAR IF COMPONENTS REMAIN UN-INSULATED:** $1,417.48

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**Item #** | **Location** | **Description** | **Flange Class** | **Nominal Pipe Size** | **Operating Temp °F** | **SF/Component** | **Wind Speed** | **Hrs in service/yr.** | **Insulation Thickness** | **Bare BTU/hr/sf lost** | **Insulated BTU/hr/sf lost** | **Insulated Touch Temp °F** | **Dollars LOST per yr. if uninsulated** | **Insulation cover Cost Each** | **Payback in Months** | **QTY** |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Steam Tunnel</td>
<td>6’ 250lb. Gate Valve Bonnet</td>
<td>250</td>
<td>6.00</td>
<td>300</td>
<td>5.2</td>
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<td>8760</td>
<td>1”</td>
<td>603</td>
<td>56</td>
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<td>13.23</td>
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<td>10.00</td>
<td>300</td>
<td>8.25</td>
<td>0</td>
<td>8760</td>
<td>1”</td>
<td>603</td>
<td>56</td>
<td>107</td>
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<td>$543.00</td>
<td>1.22</td>
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<td>3</td>
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<td>4” 125lb. Spence Type E Main Va.</td>
<td>125</td>
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<td>300</td>
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<td>0</td>
<td>8760</td>
<td>1”</td>
<td>603</td>
<td>56</td>
<td>107</td>
<td>$432.02</td>
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<tr>
<td>4</td>
<td>Steam Tunnel</td>
<td>3/4” Sarco B3H Inverted Bucket Steam Trap</td>
<td>n/a</td>
<td>0.75</td>
<td>216</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$320.04</td>
<td>$343.00</td>
<td>33.54</td>
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<tr>
<td>5</td>
<td>Steam Tunnel</td>
<td>3/4” Armstrong 2011 Inverted Bucket Steam Trap</td>
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<td>0.75</td>
<td>230</td>
<td>1.42</td>
<td>0</td>
<td>8760</td>
<td>10mm</td>
<td>320</td>
<td>35</td>
<td>97</td>
<td>$490.24</td>
<td>$115.00</td>
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</tbody>
</table>
How we calculate savings:
3E Plus BTU Loss Calculations (ASTM C680) Developed by DOE & The National Insulation Association

Item ID = 1,2,23,27,30-35,38,46-48
Item Description = 
System Application = Pipe - Horizontal 
Dimensional Standard = ASTM C585 Rigid
Calculation Type = Heat Flow Limitation Report
Process Temperature = 315
Ambient Temperature = 100
Wind Speed = 0.0
Heat Flow Limitation Thickness = 0
Nominal Pipe Size = 0.75
Bare Metal = Steel
Bare Surface Emittance = 0.8
Insulation Layer 1 = Pyrogel

Outer Jacket Material = All Service Jacket
Outer Surface Emittance = 0.9

<table>
<thead>
<tr>
<th>Variable Insulation Thickness</th>
<th>Surface Temp (°F)</th>
<th>Heat Loss (BTU/hr/ft^2)</th>
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<tbody>
<tr>
<td>Bare</td>
<td>314.8</td>
<td>686.90</td>
</tr>
<tr>
<td>Layer 1 (0.6)</td>
<td>118.6</td>
<td>34.63</td>
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</table>

Typical Project Payback < 18 months
Phase 2 Execution

- Abatement if required
- Install Pipe Insulation & Removable Jackets
  - Unique QR Codes for Scanning
  - Proper Labeling- Facility assistance
- Perform Post Incentive Inspection
Energy Efficiency...Verify
Live Readings

- Non-invasive installation
- Integrated insulation & sensors
- Cellular gateway
Moving Inputs

Accurate Data

- Time
- Ambient Temp
- Process Temp
SmartJacket Network
Watch it Happening

View and analyze data via the web
- Incoming & Outgoing temperatures
- Alerts (email/text messages)

System-wide monthly reports
- Energy and $ impact

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**Customer Name:** University of Georgia
**Address:** 1308 E. Broad Street
Athens, Georgia 30602
USA

**Cost / MMESU:** $11.00

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**Monthly Summary**

**July 1 - July 31, 2013**

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<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Location</th>
<th>Average In Temp (°F)</th>
<th>Average Out Temp (°F)</th>
<th>Jacket Savings (Since Installation)</th>
<th>Estimated 12 Month Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>072_001steam Trap</td>
<td></td>
<td>USA, PIT 72</td>
<td>321.35</td>
<td>282.99</td>
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<td>298.87</td>
<td>217.81</td>
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<td>072_005steam Trap</td>
<td></td>
<td>USA, PIT 72</td>
<td>204.36</td>
<td>164.83</td>
<td>$210.79</td>
<td>$0.00</td>
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<tr>
<td>072_006PVX Sin</td>
<td></td>
<td>USA, PIT 72</td>
<td>324.05</td>
<td>298.87</td>
<td>$481.38</td>
<td>$0.00</td>
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<tr>
<td>070_001steam Trap</td>
<td></td>
<td>USA, PIT 90</td>
<td>301.25</td>
<td>253.93</td>
<td>$234.97</td>
<td>$0.00</td>
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<tr>
<td>070_002steam Trap</td>
<td></td>
<td>USA, PIT 90</td>
<td>285.92</td>
<td>171.90</td>
<td>$380.82</td>
<td>$0.00</td>
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<td>091_003steam Trap</td>
<td></td>
<td>USA, PIT 91</td>
<td>284.71</td>
<td>187.86</td>
<td>$211.43</td>
<td>$0.00</td>
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<tr>
<td>092_005Steam Trap</td>
<td></td>
<td>USA, PIT 92</td>
<td>275.98</td>
<td>200.47</td>
<td>$315.99</td>
<td>$0.00</td>
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<td>092_007Steam Trap</td>
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<td>USA, PIT 92</td>
<td>153.72</td>
<td>134.46</td>
<td>$211.08</td>
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<tr>
<td>402_008Steam Valve</td>
<td></td>
<td>USA, PIT 92</td>
<td>61.59</td>
<td>110.14</td>
<td>$465.06</td>
<td>$0.00</td>
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</tbody>
</table>

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This month's Jacket Savings: $293.83

Total Jacket Savings: $1880.22

Jacket Savings Since Installation: $3051.23
Data: Steam Trap Temps...LIVE

### Devices

<table>
<thead>
<tr>
<th>Name</th>
<th>Active</th>
<th>Active Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGS Demo 2</td>
<td>On</td>
<td></td>
</tr>
<tr>
<td>HGS Demo 1</td>
<td>On</td>
<td></td>
</tr>
</tbody>
</table>

### Data Sources

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Units</th>
<th>Last Reported Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Temp (shared)</td>
<td>61</td>
<td>F</td>
<td>07:06:48 Mar 19, 2012</td>
</tr>
<tr>
<td>Incoming Temp (shared)</td>
<td>331</td>
<td>F</td>
<td>07:06:48 Mar 19, 2012</td>
</tr>
</tbody>
</table>

Contact Suzanne Rowe Suzanne@ThermaXXjackets.com 203-623-3179
Steam Trap Station..Smart
Life of a ThermaXX Project

- Component Survey (1 week)
  - Internal RFQ - Site Walk thru
  - Temperature and hour verification
  - Proposal - Project Summary
  - Incentive Verification Investigation
- Award
  - Field Measuring (1-2 week)
  - Jacket Production (2-3 weeks)
  - Install (Client, ThermaXX or Partner)

- ThermaXX Contacts: Meghan Reilly 203-361-4636
  mreilly@thermaxxjackets.com
Condensate Pump After
Photo Album
Expansion Joint Before and After
Steam Vault Before and After
Steam Vault Before and After
Before and After Steam Trap Station
Strainer and Spool Before and After
Photo Album
Photo Album
Incentives

CenterPoint Energy

nationalgrid

Southern Connecticut Gas

YankeeGas

The Northeast Utilities System

Columbia Gas of Virginia

SourceGas

Washington Gas

conEdison

ThermaX

aog
# Incentive Program Info

<table>
<thead>
<tr>
<th>GAS COMPANY</th>
<th>STATE</th>
<th>CUSTOM GAS INCENTIVE</th>
<th>MULTIPLE OF FIRST YEAR SAVINGS</th>
<th>% OF JOB AMOUNT</th>
<th>Special Benefit Charge Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOUTHERN CT GAS</td>
<td>CT</td>
<td>YES</td>
<td>$ 3.50 PER CCF</td>
<td>40%</td>
<td>YES</td>
</tr>
<tr>
<td>YANKEE GAS</td>
<td>CT</td>
<td>YES</td>
<td>$ 3.50 PER CCF</td>
<td>40%</td>
<td>YES</td>
</tr>
<tr>
<td>CONED</td>
<td>NYC</td>
<td>YES</td>
<td>$ 2.00 PER THERM</td>
<td>70%</td>
<td>YES</td>
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<tr>
<td>NATIONAL GRID</td>
<td>NY,MA,RI</td>
<td>YES</td>
<td>$1.50- 2.50 PER THERM</td>
<td>50%</td>
<td>YES</td>
</tr>
<tr>
<td>CLEAR RESULTS</td>
<td>AR</td>
<td>YES</td>
<td>$ .80 PER THERM</td>
<td>100%</td>
<td>NO</td>
</tr>
<tr>
<td>WASHINGTON GAS</td>
<td>DC</td>
<td>YES</td>
<td>$ 10 PER MCF</td>
<td>100%</td>
<td>NO</td>
</tr>
</tbody>
</table>
Thermaxx Smart Jacket™
Removable Insulation
+Built-in sensors
+Web access
+Email & Text Alerts
=Smart!

Thank You