Install Removable Insulation on Uninsulated Valves and Fittings

During maintenance, insulation over pipes, valves, and fittings is often damaged or removed and not replaced. Uninsulated pipes, valves, and fittings can be safety hazards and sources of heat loss. Removable and reusable insulating pads are available to cover almost any surface. The pads are made of a non-combustible inside cover, insulation material, and a non-combustible outside cover that is tear- and abrasion-resistant. Materials used in the pads are oil- and water-resistant and can be designed for temperatures up to 1600°F. The pads are held in place by wire laced through grommets or by using straps and buckles.

Applications

Reusable insulating pads are commonly used in industrial facilities for flanges, valves, expansion joints, heat exchangers, pumps, turbines, tanks, and other irregular surfaces. The pads are flexible and vibration resistant and can be used with equipment that is horizontally or vertically mounted or difficult to access. Any high-temperature piping or equipment should be insulated to reduce heat loss, reduce emissions, and improve safety. As a rule of thumb, any surface over 120°F should be insulated for protection of personnel. Insulating pads can be easily removed for periodic inspection or maintenance and replaced as needed. Insulating pads can also contain built-in acoustical barriers for noise control.

Energy Savings

The table below summarizes energy savings due to the use of insulating valve covers for a range of valve sizes and operating temperatures.

<table>
<thead>
<tr>
<th>Operating Temperature, °F</th>
<th>Valve Size, inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>200</td>
<td>1,690</td>
</tr>
<tr>
<td>300</td>
<td>3,630</td>
</tr>
<tr>
<td>400</td>
<td>6,260</td>
</tr>
<tr>
<td>500</td>
<td>9,700</td>
</tr>
<tr>
<td>600</td>
<td>14,150</td>
</tr>
</tbody>
</table>

Energy Savings (Btu/hr) from Using Removable Insulated Valve Covers

- Based on 2-inches of insulation on 150 pound class flanged valves with an ambient temperature of 65°F.
- From a personal communication and with permission from E.J. Bartells Co.

Example

Using the table above, calculate the annual fuel and dollar savings from a 2-inch thick insulating pad installed on an uninsulated 6-inch gate valve in a 250 psig saturated steam line (406°F). Assume continuous operation with natural gas at a boiler efficiency of 80% and a fuel price of $3.00 per million Btu.

Annual Fuel Savings = 11,210 Btu/hr x 8760 hours x 1/0.80 = 122.75 MMBtu

Annual Dollar Savings = 122.75 MMBtu x $3.00/MMBtu = $368 per 6-inch gate valve

Suggested Actions

- Conduct a survey of your steam distribution system to identify locations where removable and reusable insulation covers can be used.
- Use removable insulation on components requiring periodic inspections or repair.
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