

# INSULATION SYSTEMS



# The Energy Problem

As energy is the third largest expense in a facility (behind materials and labor), manufacturers are taking great strides to lower energy costs. Insulation is a significant energy-saving solution that doesn't change any part of a manufacturer's process. To take advantage of this fact, manufacturers commonly insulate process pipe as a way to conserve energy. But ancillary equipment like valves and flanges often remain exposed.

On a steam or water boiler system that is insulated, exposed valves, flanges, and other ancillary equipment are still a major source of heat loss. According to Insulation Outlook (2011), uninsulated equipment wastes energy, emits carbon dioxide, creates a hot working environment, and poses potential safety problems (all surfaces over 120°F should be insulated to protect personnel).

To avoid these issues and ensure a more efficient system, the Department of Energy (DOE) recommends that manufacturers insulate valves and flanges. In fact, the DOE reports significant energy and cost savings for the following conditions:

For a 6" gate valve operating at 305°F, your annual fuel savings by insulating that valve is 65.6 MMBtu. If you are paying \$8 per MMBtu, that equals **\$525 a year in energy savings**. Every single year.



*Easy to install, remove, and reinstall insulation jackets provide ongoing energy savings.*

# About

UniTherm International, located in Lewisville, Texas, is a manufacturer of innovative solutions for industrial applications.

UniTherm is known for its industrial insulation products. We design, develop, and manufacture removable insulation blankets for all applications, specializing in the plastics and the oil and gas industries. Our goal is to create insulation systems that are energy efficient, safe for personnel, and easy to use, long lasting insulation solutions.

Since its doors opened over 30 years ago, UniTherm has transformed from being solely a manufacturer of insulation solutions to being an innovative partner in solving industrial, commercial, and consumer problems.

We are constantly working to create new systems and products that address major issues such as corrosion, chemical erosion, heat control, and other problems that plague major industries and infrastructures around the world.

Our dedication to providing the very best in innovative solutions has led us to create several unique, patented products to serve various industries around the world.

Our number one objective is serving our customers and partners in the very best way possible. We hold the highest standards for the quality, delivery, cost, and ease of use of our products — and consistently build on that standard of excellence through continuous product improvement and user interaction.

# Contact

## **UniTherm Insulation Systems**

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# Insulation Solutions for Pipe Components

UniTherm insulation jackets are the most effective and convenient way to prevent heat loss from valves, flanges, and other pipe components.

Large facilities such as hospitals, universities, government and corporate buildings, and manufacturing facilities that use steam and hot water systems can save thousands of dollars every year by simply insulating the fittings and valves in their mechanical and boiler rooms.

## Less wasted energy means lower utility bills

Every uninsulated valve, flange, and fitting is costing you money every single day. Insulating a single 6" gate valve adds \$525 back to your bottom line every single year.

How many components are operating without insulation in your facility today?



## Thoughtful design means jackets stay on the equipment where they continue to save money

UniTherm designs insulation jackets with draw cords and Velcro® flaps rather than hook and wire closures. This makes them easy to install, remove, and reinstall with no tools and no assistance.

Personnel can easily access equipment for maintenance and reinstall the jacket in a matter of seconds.



## Less heat emissions means safer employees

OSHA requires that heated surfaces be no more than 120°F for employee safety. UniTherm insulation jackets easily reduce surface temperatures to meet this requirement. For example, a valve operating at 350°F will have a surface temperature of 104°F with an insulation jacket installed.

Safety is about more than meeting OSHA requirements; employees deserve to work in an environment that is safe from the risk of burns.



Operating Temperature	Ambient Air Temperature	Blanket Surface Temperature
180°F	72°F	79°F
350°F	76°F	93°F

OSHA Requires 120°F

## Benefits

- » Proven to save energy and lower costs
- » Investment provides quick payback
- » Protects personnel and allows easy access to equipment
- » Prevents heat loss and unnecessary emissions

## Features

- » One-piece design is easy to remove and reinstall by hand
- » Sturdy construction is a long lasting, reusable solution
- » Custom solutions are tailored to specific working conditions

## Applications

UniTherm manufactures custom insulation solutions for all applications including:

- » Valves
- » Pipes
- » Sight glasses
- » Flanges
- » Filters & regulators
- » DeSuper heaters
- » Fittings
- » Pumps
- » Heaters
- » Strainers
- » Manifolds
- » Steam Traps

# Custom Solutions with Versatile Features

Custom insulation keeps your equipment within the right operating range, creating optimal working conditions that allow the system to conserve energy and run more efficiently. This way, you can actively control your energy consumption and save on utility costs.

## Heat and insulate with a one-component system

Whether your equipment runs at high or low temperatures, we will design your insulation solution specifically to meet the needs of your system. We custom build each jacket by combining layers of high temperature material and adding internal heating elements and rigid outer shell as needed.

» **Freeze protection** - Pipes, valves, flanges and other pipe components exposed to harsh weather conditions are subject to damage and failure when they freeze. FlexWatt® insulation jackets are ideal for providing freeze protection and can incorporate a thermostat controlled or self regulating heating element for temperatures from -10°F to 180°F.



» **High temperature processes** - Replace traditional heat sources with RapidTherm®, an all in one insulation jacket and thermal vein designed to heat and insulate up to 900°F while increasing energy efficiency by as much as 70%.



» **Passive fire protection** - UniTherm manufactures insulation jackets designed to protect critical equipment in the case of a fire. FirePro™ jackets exceed all UL1709, ASTM E119 and API2218 standards for passive fire protection and have been independently assessed and verified by Underwriter's Laboratories® and the Southwest Research Institute®.



## Protect your investments from damage

We can also cover your jacket with a rigid outer shell to better protect equipment by shielding insulation and equipment from moisture, impact, and abrasion.

## Process pipe and hose insulation

Process pipe and hose removable insulation jackets are ideal for customers who cannot use permanent pipe insulation because of maintenance requirements. These jackets provide the same insulation benefits at traditional pipe insulation with the added advantage of being removable and reusable.

Pipe insulation jackets are custom manufactured to insulate lines to lower heat loss and conserve energy. Insulating your pipe and hose lines allows systems to run up to 50% more efficiently. For most energy rebate programs, this insulation is a prescriptive product, which decreases project approval time and greatly increases the payback period and return on investment.

### Benefits

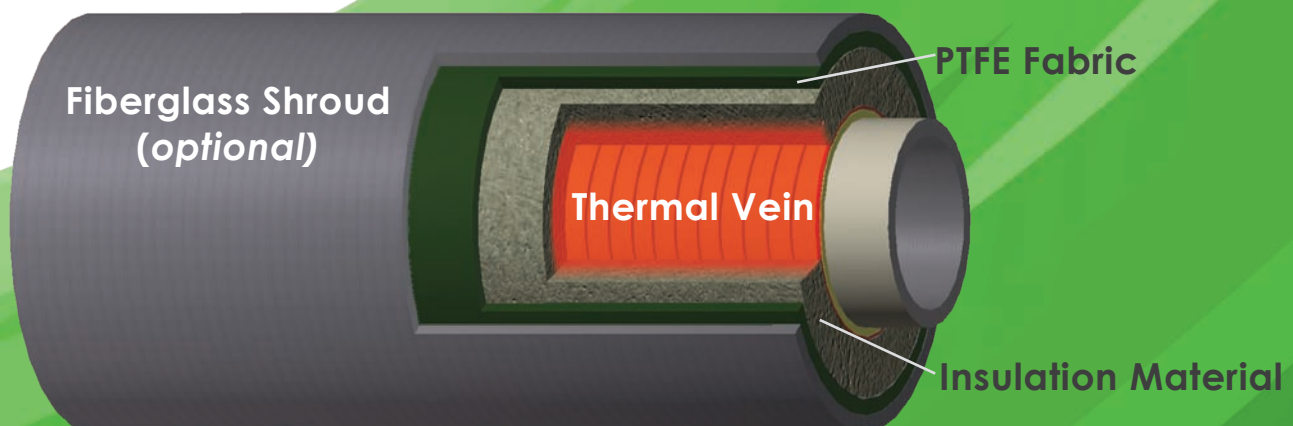
- » Provides personnel protection
- » Reduces heat loss & energy waste
- » Decreases ambient air temperature
- » Improves energy efficiency

### Design components

- » 1.5"-2" of insulation
- » Hook and loop enclosure flaps
- » Non-stick exterior
- » In-house design & machining

### Optional design features

Pipe insulation jackets are available with the same versatile features as our other insulation jackets and can incorporate thermal elements and protective shrouds.



# Standard Applications



*Check Valve*



*Butterfly Valve*



*PRV Pressure Regulating Valve*



*Y - Strainer*





*Ball Valve*



*Ball Valve*



*Gate Valve*



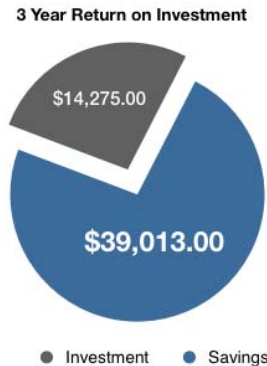
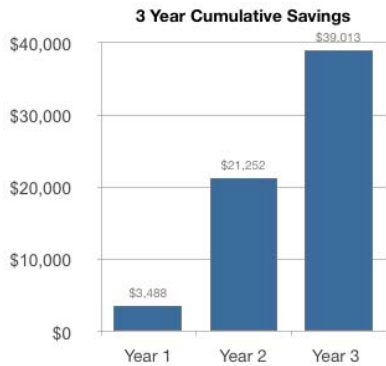
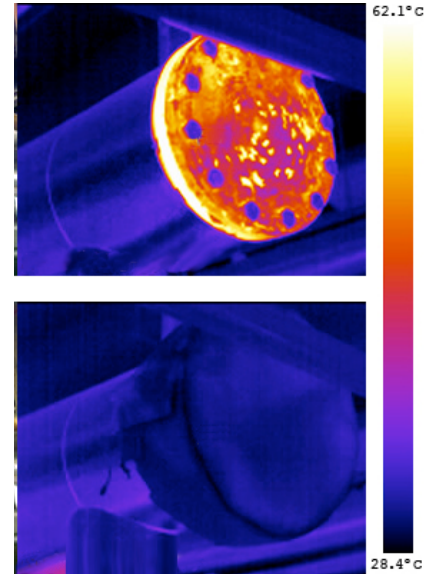
*Y - Strainer*

# Payback & ROI

Example of an energy and thermography study with associated payback

Total Investment	\$14,275.00	Annual Savings	\$17,762.82	Payback Period	<b>0.8 Years</b>
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Factors	Uninsulated	Insulated
8760 Hours/year		
350F Operating Temperatures	<b>350F</b> Surface Temperature	<b>76F</b> Surface Temperature
\$8.00 MMBtu		



## How Payback is Calculated

We base our formula on the US Department of Energy's format.

$$\text{Annual Fuel Savings} = 5,992 \text{ Btu/hr} \times 8.760 \text{ hr/yr} / (0.8 \times 10^6 \text{ Btu/MMBtu}) = 65.6 \text{ MMBtu}$$

$$\text{Annual Dollar Savings} = 65.6 \text{ MMBtu/year} \times \$8.00/\text{MMBtu} = \$525 \text{ per 6-inch gate valve}$$

Energy Savings from Installing Removable Insulated Valve Covers, Btu/hr						
Valve Size, Inches						
Operating Temperature of	3	4	6	8	10	12
200	800	1,090	1,560	2,200	2,900	3,300
300	1,710	2,300	3,300	4,800	6,200	7,200
400	2,900	3,400	5,800	8,300	10,800	12,500
500	4,500	6,200	9,000	13,000	16,900	19,700
600	6,700	9,100	13,300	19,200	25,200	29,300

\*Based on insulation of a 1-inch thick insulation pad on an ANSI 150-pound-class flanged valve with an ambient temperature of 65°F and zero wind speed.



# Testimonials & Customer Feedback

“The cover fit like a glove. I really like the leak detecting grommet feature so we can identify leaks easily.”

–*Stuart Moore, Facilities Manager, Plant Operations, Baylor Regional Medical Center, Plano, Tx*

“UniTherm provided fast turnaround on my prototype application, which required durable, easily installed insulation with secure retention. They also responded quickly when design adjustments were required.”

–**Matthew Cords, Design Engineer II, Atlas-Copco Drilling Solutions, Garland, Tx**

“As global energy costs continue to rise, the University of Cincinnati has implemented an energy plan to reduce its energy usage for the next six years while still meeting the energy needs of UC’s Uptown Campus. While university energy costs might still increase, ongoing conversation measures will mitigate their impact.

Steam-valve insulation is being added throughout the campus utility system. Nearly **2,000 removable, reusable insulation covers** will cap valves, and so, will retain heat at 350 degrees. These covers will cost about \$300,000 but will **reduce energy costs by nearly \$500,000 per year**, thus having an almost immediate payback. The covers save energy and costs because the covered valves, located within room walls and in maintenance closets, **will not heat rooms during the summer**—rooms that then require extra cooling. In addition, covering the valves means less energy loss along the conduits from UC’s utility plant to the various building of the Uptown Campus.”

–*University of Cincinnati*

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