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Corporation

Over 70  
Applications Inside  
**32 NEW!**



## APPLICATION BOOK



**YES WE HEAT THAT!**



ANNIVERSARY  
EDITION

Since 1949

# YES WE HEAT THAT!

Since 1949, BriskHeat Corporation has been providing surface heating, insulating, and temperature control solutions to a wide variety of industries. There are limitless applications for BriskHeat products because of the many needs for surface heating found in nearly all industries. BriskHeat offers the widest variety of surface heating solutions to meet those needs.

The purpose of this application book is to share with you some of our success stories that will enhance your knowledge and experience with BriskHeat. We believe you will find this book to be both educational as well as a useful reference tool.

Within the pages of this book you will find a variety of helpful applications that outline the many challenges key global industries must face and the solutions BriskHeat has to offer them. You will also find many references to key customers, with which BriskHeat has enjoyed long-term successful partnerships. These references highlight the diversity of industries and uses for BriskHeat products. Customer references in this book are organized by both industry and by application for your convenience.

The application notes within this book are organized in 5 major category groups:

- Viscosity Control
- Process Temperature Control
- Freeze Protection
- Condensation Prevention
- Composite Curing

We appreciate your commitment to BriskHeat heating, insulating, and temperature control solutions and we look forward to the opportunity to serve you.



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## Viscosity Control

Asphalt Sealant Warming .....	2
Biodiesel Drum Heating .....	3
Catalyst and Stabilizer Viscosity Control .....	4
Drum and Pail Viscosity Control .....	5
Food Shortening Melting .....	6
Food Service Equipment Heating .....	<b>NEW APP NOTE</b> 7
Honey Warming .....	<b>NEW APP NOTE</b> 8
IBC/Tote Tank Warming .....	9
Mid-Temperature Drum/Pail Warming .....	<b>NEW APP NOTE</b> 10
Mid-Temperature Material Management .....	<b>NEW APP NOTE</b> 11
Perfume & Flavor Viscosity Control .....	12
Petrochemical Viscosity Control .....	13

## Process Control

Annealing Manufacturing Process .....	<b>NEW APP NOTE</b> 15
Blown-Film Manufacturing .....	<b>NEW APP NOTE</b> 16
Brewery Lab Flavor Testing .....	<b>NEW APP NOTE</b> 17
Cannabis Distillation .....	<b>NEW APP NOTE</b> 18
Chemical and Material Process Heating .....	<b>NEW APP NOTE</b> 19
Compressor Cold Weather Protection .....	<b>NEW APP NOTE</b> 20
Controlling Multiple Heating Zones .....	<b>NEW APP NOTE</b> 21
Cosmetics and Other Liquid Process Heating .....	22
Creating More-Efficient HVAC and Heat Pump Systems .....	<b>NEW APP NOTE</b> 23
Dry Chemical Processing .....	<b>NEW APP NOTE</b> 24
Furniture Adhesive Curing .....	25
Gas Handling .....	26
Heated Hoses for Spray Foam Insulation .....	27
High-Temperature High-Watt Heating .....	<b>NEW APP NOTE</b> 28
Overheat Protection for Temperature Sensitive Processes .....	<b>NEW APP NOTE</b> 29
Hopper Heating for General Manufacturing .....	30
Industrial Packaging of Bags, Boxes, Cases, and Cartons .....	<b>NEW APP NOTE</b> 31
Laboratory Round Bottom Flask Heating .....	<b>NEW APP NOTE</b> 32
Liquid Caustic Soda Temperature Maintenance .....	33
Medical Equipment Requiring Surface Heat .....	<b>NEW APP NOTE</b> 34
Plastic Bending and Forming .....	35
Plastic Injection Molding .....	36
Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering .....	37
Reaction Chamber Fluid Processing .....	<b>NEW APP NOTE</b> 38
Refrigerant Cylinder Jug Warming .....	39
Scientific/Analytical Instrumentation .....	40
Steam Pipe Insulation .....	<b>NEW APP NOTE</b> 41
Temperature Maintenance – Valves, Pumps, and Other Components .....	<b>NEW APP NOTE</b> 42
Vacuum Bake-Out .....	43
Wet Laboratory Heating .....	44-45

**Freeze Protection**

Agricultural Trough Heating..... 47

Battery Warming ..... **NEW APP NOTE**..... 48

Emergency De-Icing ..... 49

Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments ..... **NEW APP NOTE**..... 50

Freeze Protection for Control Panels ..... 51

Freeze Protection for Natural Gas Production Wells..... **NEW APP NOTE**..... 52

Freeze Protection for Pipes..... 53

Freeze Protection for Pipes, Residential and Commercial Use..... 54

Freeze Protection for Tanks and Vessels..... 55

Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments ..... **NEW APP NOTE**..... 56

Freeze Protection in Class I, Division 1 Industrial Environments ..... **NEW APP NOTE**..... 57

Freezer Door De-Icing ..... 58

Localized Heat for Agricultural Applications..... **NEW APP NOTE**..... 59

Protecting Mechanical Devices from the Inclement Weather..... **NEW APP NOTE**..... 60

PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing..... **NEW APP NOTE**..... 61

Roof & Gutter Ice Dam Prevention ..... 62

Steam Turbine Power Generation Freeze Protection ..... **NEW APP NOTE**..... 63

Waste Water Treatment Freeze Protection ..... 64

**Condensation Prevention**

Deposition and Etch Processes..... 66

Food Drip Pan Condensation Prevention ..... 67

Fly Ash Hopper Heating for Power Generation ..... 68

Gas Delivery System Heating ..... 69

Gas Line Heating for Solar Cell Production..... 70

Gas Sample Heating..... **NEW APP NOTE**..... 71

**Composite Curing**

Composite Curing for Aviation Use ..... 73

Composite Curing for Marine Use ..... 74

Tool/Mold Heating and Hot Debulking..... 75

Vacuum Curing/Debulking Tables ..... **NEW APP NOTE**..... 76-77

Wind Power Turbine Blade Repair..... 78

**Customer References and Examples**

Customer Reference List..... 79

Industries We Serve..... 80

Applications by Industry ..... 89

Customer References and Examples by Application ..... 96



# VISCOSITY CONTROL

## ASPHALT SEALANT WARMING

*An easy way to warm asphalt sealant in IBC/Tote tanks*

### Application

Asphalt sealants are used to enhance and protect asphalt by filling cracks or sealing entire surfaces. Often they are kept in large IBC/ tote tanks for bulk storage and/or transportation to a job site. They are typically thick and hard to extract from the IBC/Tote tank through a hose or applicator without preheating. Preheating or keeping asphalt sealants warm reduces viscosity and makes them much easier to extract. Common application temperatures are around 125°F (59°C). In cooler environments or outdoors, it can be extremely difficult or nearly impossible to apply without preheating the material and keeping it warm.

### Solution

BriskHeat TOTEW series heaters installed on the tank provide the heat and insulation necessary to keep asphalt sealants at an optimum operating temperature, even outdoors in cold weather. TOTEW series heaters are adjustable fitting full-coverage heaters with insulation and built-in temperature controller. No special wiring or equipment needed, these heaters are plug-and-play ready for maximum efficiency and ease-of-use. A built-in high-limit cut-off feature ensures safe use. Since the heater wraps around the outside of the IBC/Tote it never comes into contact with the material avoiding contamination or scorching and can easily be installed and removed as needed. The adjustable-fit design wraps around any size IBC/Tote tank 170 to 330 gallons (640 to 1250 litres). If a moisture resistant heater is not required, BriskHeat's TOTE wrap-around IBC/tote tank heaters will provide the solution.



### Additional Uses

Wrap-around IBC/tote tank heaters can be used on any product that is stored in IBCs/totes or other storage tanks that needs to be kept warm.

#### Industries

Concrete/Asphalt

Construction

#### Types of Users

Design Engineer

Production Manager

Maintenance Manager



### BIODIESEL DRUM HEATING

Lower the production cost of biodiesel with BriskHeat

#### Application

Biodiesel is a renewable fuel for use in diesel vehicles, generators, and homes. Biodiesel is typically made from a chemical reaction when vegetable oil, soybean oil, or animal fat is combined with an alcohol producing fatty acid esters. The result is a less expensive and cleaner burning alternative fuel than petroleum diesel.

The oil should be kept at an optimum temperature for the most efficient filtering during production. WVO (Waste Vegetable Oil) and SVO (Straight Vegetable Oil) tend to thicken-up at room temperature, so refineries and home brewers must reduce the viscosity to flow better during filtration.

#### Solution

BriskHeat drum heaters provide a safe and efficient heating source to increase biodiesel production efficiency. BriskHeat drum heaters are designed to provide a practical and efficient means for viscosity control. Applying heat to the WVO and SVO reduces viscosity of the oil and makes the production process faster, smoother, controllable, and more efficient. BriskHeat drum heaters are a silicone band style heater that wraps around the circumference of a drum or pail creating a uniform heat source. They are available in a variety of sizes from 5 gallon (19 liter) pail to 55 gallon (208 liter) drum and even custom sizes.

For hazardous area locations, BriskHeat offers two types of models. DHCX series silicone drum heaters are rated for Class I, Division 2 locations. ATEX full coverage drum heaters are approved for ATEX Zones II 2G/2D use. They are fully insulated and water resistant.

Configure-to-order tank heaters along with a full line of temperature controllers, heating cable, heating tape, and insulators are also available to meet the needs of many unique applications.

#### Standard Sizes and Models

	5 Gallon (19 liter)	15/16 Gallon (57/61 liter)	30 Gallon (114 liter)	55 Gallon (208 liter)
Economy ECONO	✓	✓	✓	✓
Heavy Duty DHCS/DPCS	✓	✓	✓	✓
Hazardous Area DHCX	N/A	N/A	✓	✓
Full Coverage FGDH	✓	✓	✓	✓



**Ordinary-  
Location  
Model**

**Hazardous  
Area Model**



**ATEX  
Approved Model**



#### Industries

Biodiesel	Petrochemical/Chemical
Oil & Gas	Processing

**CATALYST AND STABILIZER VISCOSITY CONTROL**

*A simple way to lower viscosity of catalysts and stabilizers*

**Application**

A stabilizer's purpose is to hinder reactions between other chemicals whereas a catalyst aims to increase the rate of a chemical reaction. Typical catalyst applications include: making gasoline and fuel oils (catalytic cracking), making bulk chemicals, food processing, and more. Typical stabilizer applications include corrosion inhibition, pest control, pharmaceuticals, natural dietary supplements, UV radiation protection, polymerization inhibition, food preservation, and more.

Catalysts and stabilizers can be thick and extremely viscous when stored at room temperature and this makes them difficult to extract from their bulk container. Warming the drum reduces viscosity and provide easier extraction. Typically these materials are stored in 55-gallon (208 Liter) drums and classified as hazardous materials.



**Solution**

A BriskHeat DHCX hazardous-area drum heater provides the necessary heat to reduce viscosity while meeting the strict Class I Division 2 Groups A, B, C, and D, and Class II Division 2 Groups F and G hazardous-area requirements. Installation is quick and easy using an adjustable spring-and-hook closure. The DHCX includes a NEMA 7 temperature controller. ATEX full coverage drum heaters are approved for ATEX Zones II 2G/2D use. With a T3 temperature rating, these can be used in applications up to 200°C (392°F)



**ATEX  
Approved Model**

**Other Applications**

DHCX and ATEX series drum heaters are used for many applications that involves heating materials in drums located in hazardous area locations.



**Hazardous  
Area Model**

**Industries**

Aviation/Aerospace	Food Processing	Insecticide
Biodiesel	Pharmaceutical	Metal Coating
Petrochemical/Chemical Processing	General Manufacturing	Water Softener
Oil & Gas	Plastics	
	Cosmetics	

**Types of Users**

Facilities Maintenance	Production Managers
Process Engineers	



### DRUM AND PAIL VISCOSITY CONTROL

*An easy and effective way to improve flow in containers with surface heat*

#### Application

There are several types of viscous materials like grease, wax, and honey that are stored in drums and pails. These types of materials are thick at room temperature, making flow difficult during pouring, dipping, pumping, coating or mixing operations.

#### Solution

Use BriskHeat Drum and Pail Heaters to help reduce the viscosity levels in containers. They are easy-to-install, use, and provide uniform heat around the container. Uniform, even heat is necessary to prevent sensitive materials from scorching or degrading.

#### Key Features

- Choice of silicone rubber band or full-coverage insulated drum heaters.
- Uniform, even heat.
- Plug-and-play.
- Available in 5 to 55-gallon (19 to 208 liter) sizes.
- Heaters designed for metal or plastic drums.
- Temperatures up to 450°F (232°C).
- Patented grounded heating element for safety.
- Hazardous-area rated model available.
- Custom heaters can be made to fit other sizes and application requirements.

#### Additional Uses

Drum heaters are also used for freeze protection, maintaining materials at elevated temperatures, and melting of solids.



#### Examples of Materials Stored in Drums

Agriculture	Oil & Gas
Aviation/Aerospace	Petrochemical/Chemical
Biodiesel	Processing
Concrete/Asphalt	Plastic/Injection Molding
Catalysts	Pulp & Paper/Packaging
Diesel Exhaust Fluid	Surfactants & Chemicals
Food Processing	Wax & Solid Oils
General Manufacturing	

## FOOD SHORTENING MELTING

*An easy way to maintain liquid shortening as it is transported through pipes*

### Application

Food shortening is a solid fat made of hydrogenated vegetable oils. It is widely used in many bakeries and food production facilities as a cooking ingredient. It is commonly used for making breads, cookies, cakes, pies, pastries, and much more. It is often provided to high production commercial bakeries in a solid bulk form contained in bag-in-box containers. At room temperature, the shortening is a solid and difficult to process through pipe and tube systems on production lines. At an elevated temperature the shortening softens therefore reducing its viscosity and allowing it to flow efficiently and pass through production lines. Keeping the shortening warm through the production process is a critical step to ensure the shortening doesn't solidify and cause blockages and costly downtime.

### Solution

Install BriskHeat BSO silicone rubber heating tapes onto pipe and tubing systems that transfer food shortenings. These tapes provide the necessary heat to maintain a reliable temperature needed to prevent the shortening from solidifying. They are extremely flexible to easily wrap around small diameter pipes and tubes. The heating element is encapsulated within a highly flexible silicone rubber, which increases its durability and makes it suitable for use in food-service environment. The tapes are connected to a temperature controller used to program and monitor heat output. BSO tapes are an ideal solution for keeping the shortening liquefied and production lines operational.

Viscosity control applications such as melting shortening do not require tight temperature control. TD101 thermostats and TS0991 Bulb and Capillary controllers are low cost options for use with heating tapes and silicone heaters. TC4X Digital temperature controllers can be used in outdoor as well as indoor applications.



Note: The storage vessel/tank that attaches to the transfer pipe system may also need to be heated to initially melt the shortening. SRL silicone heaters are perfect for this application. One heater or a series of heaters can be attached to the outside of the tank to provide the necessary heat. Silicone heaters are thin, flexible, and durable heaters that are easily applied using an adhesive backing.

### Alternate Solution

Some melting operations such as blending chocolates, may be more temperature sensitive than others. Cloth heating jackets used with BriskHeat's **LYNX™** modules couple superior temperature uniformity with easy-to-use accurate PID control technology. Modules can be used to control other heaters such as BSO tapes.



Industries
Food Production and Manufacturing
Food Processing
Food Service

Types of Users
Production Manager
Maintenance Manager
Design Engineer

### FOOD-SERVICE EQUIPMENT HEATING

*Keeping food at optimum temperatures for extended periods of time*

#### Application

Food-service equipment such as buffet tables, warming boxes & cabinets, salad bars, and chafers often need heat to keep the food warm. These items may also have several chambers or wells holding different items that require different temperatures. Additionally, chambers and wells requiring heat coverage may have varying sizes, and many have tight space restrictions for the heaters. Of course, engineers designing these products are always looking for solutions that provide the right balance of affordability and quality. If the proper heaters are not used and functioning properly, the food can get cold, and worse, spoil and cause food poisoning.

#### Solution

BriskHeat's flexible aluminum foil heaters are the ideal solution for warming food in food service equipment. They have an extremely low profile (.186 in/4.7 mm) and can be manufactured in almost any shape to fit even the most uniquely-shaped chambers or wells. They are easily installed with either built-in adhesive backing or by mechanically fastening. They have rapid thermal response due to their high watt density of up to 3 W/in<sup>2</sup> (0.47 W/cm<sup>2</sup>) and highly conductive aluminum construction and can reach temperatures up to 300°F (149°C). The foil heaters are also extremely affordable and have cULus, CE, and CSA quality approvals. Additionally, if designers require custom features such as holes or cut-outs, unique lead materials or terminations, or dual wattages or voltages, they can be accommodated, and with low development costs.

Temperature controllers to be used near food service equipment should be suitable for exposure to moisture. The TC4X-2 comes with a 78 in (198 cm) long temperature sensor allowing the probe to be located near the heater and the control box hidden from access.

#### Additional Uses

BriskHeat's flexible aluminum foil heaters can also be used as replacement units for malfunctioning original equipment heaters. BriskHeat has no minimum orders for custom foil heaters.

#### Industry

Food Processing  
Food Service Equipment Manufacturing

#### Types of Users

Design Engineers  
Facilities Maintenance and Facility Managers



#### More Applications

**The features and benefits listed in the Food Service Equipment Heating Application Note make aluminum foil heaters a popular choice for many other applications.**

#### Other Common Applications for Aluminum Foil Heaters include:

- Laboratory Equipment** – To provide heat for apparatus such as chambers, vessels, piping, beakers, test tube heaters, magnetic stirrers, cylinders, and more
- Medical Products** – To provide heat for items like incubators, blood warmers, in vitro fertilization heaters, surgery beds, biofluid warmers, anesthesia heaters, and more
- Automotive Components** – To prevent condensation on mirrors and warm batteries
- Electrical boxes** – To protect electronics from cold and prevent condensation
- Ceilings and Walls** – To provide radiant heat
- Heated Tabletops** – To provide heat for processes where a heated surface is required
- Small Appliances** – To provide heat to coffee makers, crock pots, pressure cookers, etc.
- Large Appliances** – For anti-condensation of ice makers in refrigerators
- Bulk Containers such as IBC/Tote** – To warm contents of the containers
- Refrigerated Display Cabinets** – To eliminate condensation

**HONEY WARMING**

*A simple, safe, and efficient way to heat honey and avoid overheating or burning the mixture*

**Application**

Bulk honey can be thick and very difficult to process through filtering and bottling operations. For beekeepers and others in the honey-producing business or even those who use bulk honey as a food ingredient, it's a common problem to overcome. This is because pure raw honey crystallizes and turns from a liquid state to a semi-solid state at temperatures under 70°F (21°C).

Crystallization occurs naturally because pure honey is an over-saturated sugar solution typically about 20% water and 80% sugars with 25-40% of those sugars being glucose. The glucose crystallizes and spreads throughout the honey mixture and the result is a thickened mixture and a dramatic increase in viscosity making it extremely difficult or even impossible to pump or pour.

To re-liquefy the honey and reverse the crystallization process, the honey must be slowly and evenly heated to approximately 95°F (40°C). To greatly increase the fluidity of the honey, packers and bottlers may heat the honey up to 150°F (60°C) for a short period of time to strain/filter and package the honey into bottles.



**Solution**

BriskHeat's DHLS silicone band heaters are an excellent source of heat for warming and re-liquefying honey. The 4 in (10 cm) wide wrap-around band heaters deliver an even heat to nearly the entire circumference of the container, ensuring an efficient and controlled warming process. A built-in dial control is used to adjust the heat output of the heater up to a maximum setting of 160°F (71°C) while avoiding overheating and scorching the product.

DHLS heaters have a high watt density that ensures rapid heat-up and are grounded for a safe worry-free operation. The reinforced silicone rubber outer cover is moisture and chemical resistant and provides durability and long-lasting reliable performance. With models available for metal and plastic\* containers ranging from 5 to 55 gallon (19 to 208 liter), BriskHeat is sure to have a heater that meets your needs.

\* For plastic containers, BriskHeat recommends the use of DPCS series silicone band heaters.

**Industries**

- |                   |                      |
|-------------------|----------------------|
| Agricultural      | Food Processing      |
| Beekeeping        | Food Preparation     |
| Honey Bee Farming | Cereal Manufacturing |
| Honey Processing  |                      |

**Types of Users**

- |                          |                       |
|--------------------------|-----------------------|
| Beekeepers               | Small and Large Farms |
| Hobbyist Producers       | Cooks/Bakery          |
| Commercial Producers     | Managers              |
| Honey Packers & Bottlers | Food Plant Managers   |

**Similar Applications**

- |             |            |              |
|-------------|------------|--------------|
| Syrup       | Catalysts  | Chemicals    |
| Wax         | Greases    | Solvents     |
| Fats & Oils | Lubricants | Much more... |

### IBC/TOTE TANK WARMING

An easy and reliable way to warm the contents of an IBC/Tote tank

#### Application

Users of Intermediate Bulk Containers (IBC) often need to raise the temperature to reduce viscosity or protect the contents from the cold. Maintaining an elevated temperature ensures materials remain ready for production and easy to dispense. If the temperatures of the contents fall below desired levels, the contents could be ruined or unable to dispense at all. This can result in increased production cost or damage to equipment. Replacing ruined materials and damaged equipment could be very expensive and cause serious downtime.



#### Solution

BriskHeat's **Wrap-Around IBC/Tote Tank Heaters** fit around IBC/Totes to warm the contents. They are a convenient all-in-one heater that includes built-in insulation and a 2-zone temperature controller. The 2 independent controllers accommodate 2 adjustable heating zones, (top and bottom) at 50° up to 160°F (10° up to 71°C). When the material level is reduced, heat can be removed from the unheated portion of the tank. BriskHeat Wrap-Around IBC/Tote heaters are designed for use with caged, plastic, or metal IBC/Tote tanks and adjustable to fit many sizes.

- Adjustable nylon straps/buckles allow for easy installation and secure fit.
- Standard grounded 3-prong plug makes for easy power connection (240 V models have bare wire).
- Fiberglass insulation ensures thermal efficiency while a built-in high limit thermostat and grounded heating element prevents overheating and provides safe worry-free operation.

Another IBC Tote heating option is the BriskHeat **TTH Silicone Rubber IBC/Tote Tank Heater**. These heaters are for use with IBC/Tote models where the bottle can be safely removed from the cage. They are installed directly underneath the empty bottle and fit safely inside the cage. This in-cage design provides faster heat-up time because the heater is in direct contact with the bottle. The heater comes complete with a digital temperature controller and is safe for indoor/outdoor use.

- TTH heaters are made using fiberglass reinforced silicone rubber and 1/2 in (13 mm) thick foam padding to provide outstanding durability
- Thermocouple temperature sensor is built directly into the heater for accurate and reliable temperature sensing.
- The grounded heating element provides safe use.

Now available in wet-area/outdoor-rated versions

#### Common Materials Used in IBC/Totes:

Lubricants/Oils	Liquid/Granulated/Powdered Food Ingredients
Solvents	Honey/Syrup/Molasses
Detergents	Chemicals, and More
Adhesives	



#### Products

Wrap-Around IBC/Tote Heater  
TTH Silicone IBC/Tote Heater

#### Industries

Adhesives	Food Processing	Plastic/Injection Molding
Aviation/Aerospace	General Manufacturing	Power Generation Pulp & Paper/Packaging
Agriculture	Heavy Industry	Transportation
Biodiesel	Mining	Waste Water Treatment
Composites	Oil & Gas	
Concrete/Asphalt	Petrochemical/Chemical	

#### Types of Users

Facilities Maintenance  
Process Engineers  
Production Managers

## MID-TEMPERATURE DRUM/PAIL WARMING

*An effective way to warm contents quickly while avoiding excessive or unwanted heat*

### Application

Bulk materials stored in metal and plastic containers often have an increased viscosity due to the material’s properties and/or cooler storage temperatures. These materials can be extremely difficult or even impossible to extract by pumping or pouring.

Warming the container reduces the viscosity of the material inside and makes extracting the contents easier and much more manageable. The actual temperature needed to effectively reduce viscosity will depend on the material, but the typical range is between 100°F and 150°F (38°C and 66°C).

Too much heat can be dangerous for many materials, therefore it is important to warm materials quickly and evenly without overheating. Overheating can cause increased costs and downtime if the product is damaged or if the material is too hot to work with.

### Solution

BriskHeat’s DHLS silicone band heaters are an excellent source of heat for warming and reducing viscosity in many materials. The 4 in (10 cm) wide wrap-around band heaters deliver an even heat to nearly the entire circumference of the container, ensuring an efficient and controlled warming process. A built-in dial control is used to adjust the heat output of the heater to a maximum setting of 160°F (71°C) while avoiding overheating and scorching the product.

DHLS heaters have a high watt density that ensures rapid heat-up and are grounded for a safe worry-free operation. The reinforced silicone rubber outer cover is moisture and chemical resistant and provides durability and long-lasting reliable performance. With models available for metal and plastic\* containers ranging from 5 to 55 gallon (19 to 208 liter), BriskHeat is sure to have a heater that meets your needs.

\* For plastic containers, BriskHeat recommends the use of DPCS series silicone band heaters.



### Similar Applications

Syrup	Food Ingredients	Chemicals
Wax	Catalysts	Solvents
Fats & Oils	Greases	Much more...
Honey	Lubricants	

### Industries

Petrochemical	Food Processing
Adhesives	General Manufacturing
Agriculture	Plastics
Chemical Processing	Oil & Gas

### Types of Users

Facility Maintenance	Process Engineers
Process Engineers	Design Engineers
Production Managers	Contractors
Small and Large Farms	Food Plant Managers
Cooks/Bakery Managers	

### MID-TEMPERATURE MATERIAL MANAGEMENT

An effective way to reduce viscosity while avoiding excessive heat

#### Application

Bulk materials used in manufacturing and industrial environments must often be warmed-up to be usable for production processes. This is due to the materials' high room-temperature viscosities which make flowing, pumping, or pouring difficult or impossible. Typical examples of materials include food ingredients, oils, catalysts, chemicals, lubricants, waxes, solvents, and greases. They are commonly stored in tanks or vessels or moving through pipes.

Warming these storage or transportation areas lowers the viscosity and makes the materials much more manageable. Desired temperatures vary from one material to another, but the range is normally between 100°F and 150°F (38°C - 66°C). Care must be taken when warming the products as excessive heat can cause damage or handling problems, which could increase costs or lead to expensive downtime.

#### Solution

BriskHeat's MSTAT mid-temperature silicone heating tapes are a versatile and effective solution to warm vessel and pipe systems. They simply wrap around the areas that needs heat. The plug-and-play designs feature 50°F to 160°F (10°C to 71°C) built-in thermostats to eliminate excessive heat, and the low-profile 1in (2.5cm) width maximizes flexibility. They are available in lengths between 2 ft and 50 ft (0.6 m to 15 m), and the multi-stranded grounded heating element ensures safe use and durability. Additionally, they can be used repeatedly.

#### Alternate Solution

Some melting operations such as blending chocolates may be more temperature-sensitive than others. Cloth heating jackets used with BriskHeat's **LYNX™** modules couple superior temperature uniformity with easy-to-use accurate PID control technology. Modules can also be used to control other heaters such as silicone BSO tapes.



#### Industries

Adhesives	Power Generation	Oil & Gas
Concrete/Asphalt	Agriculture	Waste/Water Treatment
Plastics	Food Processing	Petrochemical/Chemical
Aerospace	Pulp & Paper	Processing
Construction	Biodiesel	

#### Types of Users

Facilities Maintenance Personnel	Production Managers
Process Engineers	

## PERFUME & FLAVOR VISCOSITY CONTROL

*A simple and effective means to maintaining good flow and viscosity control of concentrated oils*

### Application

Grasse, France is considered to be the perfume capital of the world. Heat is required to maximize production and ensure proper dosing of concentrated and (very) expensive oils. Failure to sufficiently heat these oils will lead to improper dosing and inconsistent formulas. During the production of perfume and flavorings, manufacturers require the temperature of the oils to be maintained from 140°F to 176°F (60°C to 80°C). This allows for good viscosity control and reliable production standards.

Raw material oils are stored in 208 liter (55 gallon) drums and pumped into production through pipe lines. The drums, pipes, and associated valves need to be heated to ensure proper flow and dosage.

### Solution

Heat the 208 liter (55 gallon) drums with BriskHeat's full-coverage drum heaters. These insulated heaters are energy efficient and provide evenly distributed heat throughout the drum, ideal for perfume and flavor production. A built-in digital temperature controller allows the user to accurately set a temperature and monitor the heater's performance. These are now available in wet-area models.

SLMCBL mid-temperature and self-regulating heating cable is used to maintain temperature through production. It is a great solution for heating pipes, valves, etc. because of its reliability and it can be installed around custom systems. Self-regulating cable is semi-flexible and can be straight traced or spiral wrapped for long runs on a single circuit. It will automatically adjust its heat output, based upon ambient conditions, and never exceed its specific rated temperature. A protective outer shell encasing the cable resists moisture and chemicals for worry free use in harsh or hazardous environments.

Custom cloth jackets can be used for the valves, pipes and vessels. BriskHeat ... wet-area version. The LYNX™ Temperature Control System with individual control modules can link up to 1024 heaters into a single Operator Interface.

### Additional Uses

Silicone rubber heating tapes can be used on many pipe-heating applications for freeze protection, temperature maintenance, and process control. The highly flexible heating element and durable silicone cover allow for BSO heating tapes to flex and contour to nearly any size object that needs heat.



### Optional Accessories

- Drum top insulator lid
- INSUL-LOCK®DS flexible pipe insulation
- High temperature aluminum adhesive tape

#### Industries

Oil	General Manufacturing
Perfume & Flavor Manufacturing	Food Processing
Personal Care & Cosmetics	

#### Types of Users

Chemical Engineer	Production Managers
Facilities Maintenance Personnel	Quality Director
Process Engineer	Technical Director



## PETROCHEMICAL VISCOSITY CONTROL

*A cost-effective and simple way to reduce viscosity and improve production efficiency*

### Application

Petrochemicals are chemical products derived from petroleum sources. Some of these chemicals are obtained from resources such as coal, natural gas, corn or even sugar cane. The two most common petrochemical classes are olefins and aromatics and they are the building-blocks used to manufacture a wide range of everyday materials such as solvents, detergents, adhesives, plastics, resins, fibers, elastomers, lubricants, and gels.

Throughout petrochemical processing plants, there are many chemicals and gasses passing through pipelines and stored in tanks. Petroleum-based chemicals often thicken and do not flow well at lower temperatures. If the petrochemicals are not maintained at the desired temperature, viscosity issues cause the liquids to inefficiently flow and could starve or clog production lines. To complicate matters, these petrochemicals often require hazardous-area-rated heating products.

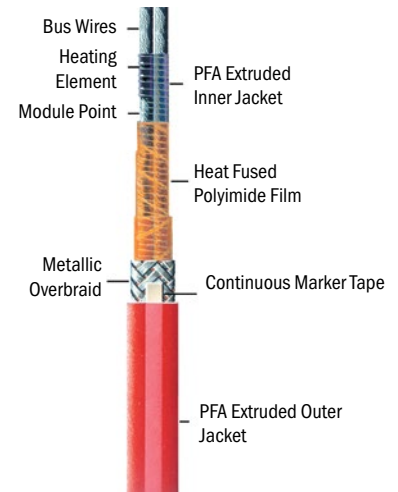


### Solution

Install BriskHeat constant-wattage heating cable along piping to maintain the elevated temperatures necessary for petrochemical production. Constant-wattage heating cable is a flexible heating cable that is installed along the outside of the pipes and valves (Heat-Tracing) and is capable of maintaining temperatures up to 500°F (260°C). Often referred to as heat tape, constant-wattage heating cable is used for heating long runs of piping systems of up to several hundred feet. BriskHeat's constant-wattage heating cables are suitable for outdoor use and are FM-Approved for hazardous locations.

Insulation is always recommended to maximize heat and energy efficiency. A temperature controller is required to control constant-wattage heating cable and BriskHeat offers several temperature controller options depending on the specific needs of the application.

Self-Regulating heating cable is another option for maintaining systems at lower temperatures. This type of heating cable automatically adjusts its heat output based upon ambient conditions and never exceeds a specific rated temperature, most commonly 149°F (65°C). Higher temperature self-regulating heating cable can reach 248°F (120°C). Typical uses for self-regulating heating cable are low temperature maintenance and freeze protection applications.



### Additional Uses

Constant-wattage heating cable can be used on nearly all pipe heating applications. These include applications for freeze protection, reducing viscosity, preventing condensation, and more.

#### Industries

Biodiesel	General Manufacturing
Petrochemical/Chemical	Oil & Gas

#### Types of Users

Maintenance	Process Engineers
Production Managers	Design Engineers
Plant Managers	Contractors

The image shows a complex industrial facility, likely a refinery or chemical plant, with a strong red color cast. Large, insulated pipes run across the ceiling and through the space. In the foreground, there is a control panel with several gauges and valves. The overall atmosphere is industrial and technical.

# PROCESS CONTROL

## ANNEALING MANUFACTURING PROCESS

*Band Heaters mounted to cylindrical shapes create annealing chambers for small parts. Annealing is a heat treatment that alters the physical and sometimes chemical properties of a material to increase its ductility and reduce its hardness, making it more workable.*

### Application

A manufacturing company processes small steel alloy parts for the electronics industry. Tungsten rods used as electrodes in crystal processing are a major part of their business and these require annealing as part of their manufacturing. Other small steel parts require heat to add or remove minerals from the chemical composition, or change the grain structure. Test parts are processed one at a time or in small batches. Different soak temperatures and cooling rates will produce different results with regards to the metal grain structure. It is necessary that temperatures are uniform within the chamber to achieve the desired result.

### Solution

BriskHeat band heaters provide the heat required for a low temperature annealing process. To save energy and decrease cycle times, small chambers which may be made by the customer are used as ovens. Cylindrical heating chambers can be made from stainless steel or ceramic materials up to 12 inches (305 mm) in diameter. BriskHeat Mica Band Heaters are installed around the circumference of the chamber and secured in place by the integrated clamps. Several heaters of the same diameter can be installed as a group to evenly heat the entire length of the cylinder. Each heater includes an integrated thermocouple for temperature measurement. Cloth insulators may be used to decrease heat loss. Parts to be heat treated are placed inside the chamber and a lid used to cover the opening to retain heat during the annealing process. A variety of temperature controllers may be used for each heater depending on the size and amp requirements. Benchtop controllers such as the SDX or SDC can be used to control heaters rated for 15 amps or less. For larger heaters, BriskHeat's MPC2 series controllers may be the better choice.

BriskHeat Band Heaters can be used for application temperatures up to 850°F (454°C) and have a high temperature galvanized sheath to provide oxidation resistance in high humidity areas. Mica insulation provides electrical insulation at high temperatures. Nickel/Chromium resistance wire is evenly wound around the heating surface to produce uniform heat distribution. Band heaters are approximately 1/8 inch (3 mm) thick and available in sizes as small as 3-1/2 inches (89 mm) diameter x 1 inch (25 mm) wide, up to 12 inches (305 mm) diameter x 2 inches (51 mm) wide. For diameters between 1 inch (25 mm) to 3 inches (76 mm), BriskHeat offers a line of Nozzle Heaters with similar features and benefits.



#### Products

Band Heaters	Custom Cloth Insulators
Nozzle Heaters	SDX, SDC, and TB4000 Controllers

#### Industries

General Manufacturing

#### Types of Users

Lab Managers	Scientists
Process Engineers	Chemists
Manufacturing Engineers	

## BLOWN-FILM MANUFACTURING

*For high-standard and space-constraint applications requiring precise heat*

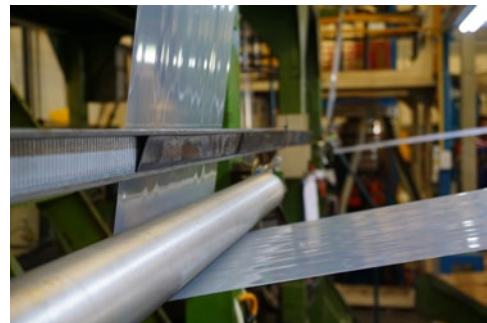
### Application

“Blown Film” refers to a broad range of plastic films manufactured for a wide range of uses. Examples of products made from blown film include trash and kitchen bags, plastic wrap, cellophane tape, laminating films, food packaging, agriculture and membrane films, industrial packaging wraps, and much more. To manufacture blown film, air and plastic are blown through heated tubular chambers of varying diameters to create a thin film which is then cooled and transferred to rollers. A precise combination of heat and air is used to properly produce the blown film. If it is not combined accurately, the product may be defective, causing huge losses of finished goods in addition to production downtime.

### Solution

BriskHeat’s mica band heaters provide the precise heat required to properly manufacture blown film. These band heaters are computer designed and manufactured to exact application specifications. Materials are the highest quality, low-thermal-expansion stainless-steel clamps are used to maximize surface contact, the nickel/ chromium resistance wire is evenly wound for uniform heat distribution, and exact watt densities can be attained. Additionally, they are moisture and corrosion resistant, have a low-profile 0.125 in (3 mm) design, and can be manufactured to UL standard UL499 and CE compliance.

For industrial applications where monitoring temperature is a critical need, the TTD controller is an easy-to-use controller that offers a digital display for easy programming and visual temperature identification. Larger heaters with amp ratings greater than 12 Amps, should use a TC4000 Series controller with ratings up to 50 amps.



### Other Applications

BriskHeat Band Heaters are used in applications found in injection molding, die casting, tank & drum heating, pulp & paper processing equipment, food & candy extruders, vending machines, and analytical instrumentation.



Industries	
General Manufacturing	Plastics
Packaging Film and Tape	Laminating Films

Types of Users	
Production Engineers and Managers	Process Engineers
Design Engineers	Plant Managers
Facilities Maintenance	



TC4000

TTD

### BREWERY LAB FLAVOR TESTING

*Distillation to ensure quality and consistency of a product*

#### Application

Diacetyl is a chemical commonly used to give a buttery flavor to food products including craft beers. Diacetyl is produced by the fermentation of yeast during the brewing process and is the flavor commonly found in Dry Stouts, Scotch Ales, certain types of Pilsners, and many other styles of beers. Brewery laboratories such as Columbus Brewing Company in Columbus, OH require a simple distillation set-up to test the level of Diacetyl in their special craft beers to ensure the flavor is consistent from batch to batch. If they are not able to test this, the result could be bad batches that result in negative customer experiences and significant loss of revenue.

#### Solution

BriskHeat HM-HS Cloth Heating Mantles for round-bottom flasks are used to fulfill this requirement. The beer is placed in a round-bottom flask and set into the heating mantle. The temperature, controlled by a PID digital temperature controller such as BriskHeat's SDX controller, is set at a boiling level to ultimately collect the distillate at the end of the process. At that point it can be effectively tested. To prevent the overheating or scorching at a specific point of the process, BriskHeat's HL101 High-Limit Cut-Off Controller is used. If a programmed set-point temperature is reached or exceeded, the HL101 will audibly alarm and cut power to the application.

The **LYNX™** Temperature Control Module is a small Plug & Play alternative for low wattage heating applications. With the footprint being a fraction of a standard benchtop controller, it fits almost anywhere.

An alternative heater is one of BriskHeat's metal-housed heating mantles. They feature plug-and-play designs with built-in magnetic stirrers.

#### Additional Uses:

Heating mantles and high-limit controllers are commonly used in laboratory and R&D facilities for applications such as:

**Distillation** – Separating a component or substance from a liquid mixture by selective evaporation and condensation.

**Chemical Reaction** – A process during which one or more substances (the reactants) are converted to one or more substances (the products).

**Refluxing** – Used to supply energy to heated reactions over long periods of time, refluxing involves the condensation of vapors and the return of this condensate back into the system where it originated.

#### Industries:

Food Processing

Laboratory/ R&D



HM Lower Hemispherical Heating Mantle



HM Metal Housed Heating Mantle



SDX



HL101



LYNX™

## CANNABIS DISTILLATION

*An effective way to distill THC and CBD cannabinoids from cannabis plants*

### Application

Extracting and purifying cannabinoids from cannabis involves a multi-step process. The most popular cannabinoids being isolated in the industry right now are tetrahydrocannabinol (THC) and cannabidiol (CBD). These are two naturally occurring major cannabinoids, or biologically active chemical compounds found in cannabis. Both are used in various ways to treat medical conditions such as anxiety, sleep problems, movement disorders and chronic pain, and may also be used recreationally depending on state laws.

The process of purifying and isolating cannabinoids starts with extraction, where milled plant material is processed in a way that removes the cannabinoids. There are many methods to achieve this but this step usually involves a solvent such as ethanol or supercritical carbon dioxide. After extraction the cannabis crude oil needs to be further refined to purify and isolate the desired cannabinoids. **A common practice to achieve purification is through distillation.** One common distillation process is called “continuous” and is often referred to as “wiped film”. This distillation process contains several steps, and during a couple of these the extract is run through objects where heat is required to reduce the viscosity and evaporate unwanted impurities. The process components that must be heated vary from method to method, but consistently include glass or stainless-steel tubing, pumps, small vessels, and dispensing machines. Heaters must be extremely flexible in order to contour to a variety of surfaces, removable and reusable, easily controllable between 80 and 100°C (176-212°F), and moisture and chemical resistant. If the heaters do not feature these characteristics, inefficiencies and reduced production can occur, and lead to lost revenue and increased downtime.

### Solution

BriskHeat silicone rubber heating tapes (**BS0 and RKF tapes**) are the preferred heaters for most of the distillation steps. They possess all the desired characteristics listed above. Additionally, they are manufactured in widths ranging from 0.5 in to 2.0 in (13 mm to 51 mm), and lengths from 2 ft to 200 ft (0.6 m to 61 m) so are versatile enough to use on both small vessels and tubes/pipes. To control the temperature of the heaters, one preferred controller is the **LYNX™** PID digital temperature controller. It is available in a free-standing single-zone plug-and-play version or a multi-module system with a full-color operator interface. **LYNX™** is a state-of-the-art temperature control system with extraordinary features and benefits including 1:1 control for each heater, highly-visible LED display, communication abilities for system integration, and 3-button programming. To maximize thermal efficiency, custom cloth removable and reusable insulators are used. As an alternative to using tape and cloth



insulators, BriskHeat can provide custom cloth heating jackets designed to use **LYNX™** controllers. BriskHeat can manufacture almost any size and configuration of cloth heating jackets and insulators, and the durable construction and oil-resistant PTFE (Teflon) cloth allows them to last for years.

Higher capacity heaters, up to 15 amps, that require PID control may utilize the SDX digital benchtop style controller. This works well with larger blankets, totes or drum heaters.

Cannabinoid producers must have the ability to tailor heaters to their unique processes. BriskHeat offers the most complete variety of surface heating products and temperature control options available to provide optimal solutions. Examples include drum heaters, custom cloth heating jackets, beaker heaters, band and cartridge heaters, and silicone rubber heating blankets.

### CHEMICAL AND MATERIAL PROCESS HEATING

*A better way to heat pipes, tanks, and vessels*

#### Application

Facilities that use or process chemicals, gasses, or even water must maintain them above 55°F (17°C) to prevent them from solidifying, freezing, or becoming too viscous to move. A few examples of these materials include varieties of diethylene (resins and polyurethanes), DMSO (solvents), paraffin's (petroleum product), #6 crude oil (for asphalt), and many more. Often these materials travel through unique cone, funnel, or bowl-shaped vessels and then through a series of pipes, tubes, hoses, pumps, valves, metering devices, level transmitters, and more. During a cold season, if not protected, these systems can fail to operate efficiently or even freeze causing significant damage and downtime.

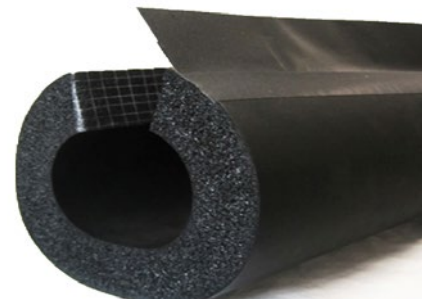
Often the complex nature of these systems, having many twists and turns, makes them difficult to install traditional heat trace cable to protect against the cold. Also, limited access or difficult to reach areas have their own unique challenges. Traditional semi-flexible self-limiting heat-trace cable is simply too rigid for many of these installations and does not provide adequate surface contact to be effective enough.

#### Solution

BriskHeat's XtremeFLEX® RKP silicone heating tapes are the perfect solution for these challenging applications. The RKP tapes have an ultra-thin profile with a super-flexible 0.125 in (6 mm) bend radius. No additional temperature controller is required because a built-in pre-set thermostat continuously monitors and controls the temperature output of the heater. The complete unit is fully encapsulated in silicone rubber to provide an extremely flexible, durable, and moisture resistant heater. The unique flexibility provides exceptional surface contact for maximum heat transfer and effectiveness around systems that have complex curves, bends, and contours. The heater is also pre-terminated with a power cord and electrical plug to provide quick and easy power connection. RKP silicone heating tapes are a true plug-and-play heater that is both easy to install and easy to maintain. This design makes the RKP an extremely versatile heater for a wide variety of indoor/outdoor installations.

It is always recommended to insulate any heating device to provide a safe and energy efficiency system. BriskHeat offers an Insul-Lock® DS foam pipe insulation that is perfect for use with RKP heating tapes.

Note: Standard pre-set thermostat control options include a choice of 70°F (21°C) or 120°F (49°C). Standard lengths are available up to 200 ft (61 m). Standard watt density is 6 W/ft (17W/m). Custom configurations are available upon request.



#### Industries

Chemical/Petrochemical	Oil & Gas
Construction	Food Processing
Pulp & Paper	Wastewater
General Manufacturing	Power Generation
Plastics	Public Utilities

#### Types of Users

Facility Maintenance	Design Engineer
Production Manager	Contractor
Process Engineer	Plant Manager

## COMPRESSOR COLD WEATHER PROTECTION

*An efficient way to avoid damage to heat pump, air conditioner, and refrigeration unit compressors.*

### Application

Heat pumps, air conditioners, and refrigeration units all have compressors, which are pumps that move refrigerants through the systems. Compressors must be lubricated by oil to operate efficiently. When the compressor is not operating, the oil sits in a compartment located underneath the unit in a sump, or crankcase, and can get cold. If the oil is not kept warm during shut-down periods, pressure in the area will be reduced and refrigerant inside the cooling system will migrate back into the oil because refrigerant is attracted to lower pressure (colder) areas. When this happens, two problems may occur after re-starting which damages the compressor.

- 1) The oil will boil the refrigerant, causing it to foam and carry oil away from the compressor which could lead to an insufficient amount of oil to lubricate the compressor.
- 2) The refrigerant mixes with and thins the oil and reduces its ability to lubricate.



### Solution

BriskHeat's crankcase heaters are the solution to keep the compressor oil at an elevated temperature to ensure the refrigerant does not migrate and mix with the oil. Each heater is composed of a long thin electrical heater with a built-in adjustable strap that easily fits around the cylindrical housing of the crankcase. They come in a variety of sizes to fit almost any size industrial or residential crankcase. They are easily wired to the electrical box of the HVAC unit, and because of the way the HVAC wiring is set-up, the crankcase heaters will only operate when the system is turned off.





## CONTROLLING MULTIPLE HEATING ZONES

*Control multiple heaters from a single multipoint control panel*

### Application

Companies often require multiple surface heaters to heat large objects or control a heating process. Examples of equipment that may use multiple heating products include industrial ovens, hoppers, tanks, mixers and pipe systems. Typically, each heater would be controlled to an identical temperature to complete the desired process. Some applications include industrial baking, composite curing, bulk solid drying, dry or wet chemical mixers or reactors, condensation prevention and viscosity control.

Similar components may be used as part of a process that requires different temperatures at different locations throughout the process cycle. For example, minerals may be placed in a continuous batch oven to be heated to 150°F (66°C) for a certain period after which the minerals may be crushed into smaller pieces. These smaller pieces may then be added to a mixer and heated to 250°F (121°C) to remove additional moisture.

To efficiently maintain a process, technicians need to be able to monitor temperatures at a single location and know that those temperatures are accurate. If they can't directly change setpoint temperatures, they lose efficiency and could potentially damage the heated products, which could increase costs and downtime.

### Solution

BriskHeat's MPC2 Multi-Point Digital PID Temperature Controller can accurately and simultaneously control multiple independent applications with heaters up to 60 amps per zone for maximum versatility. The control system is fully configurable and allows the end-user to choose number of zones, type of sensors, voltages, alarms, connection types, communications, and protections. Each controller can be individually programs to operate in PID or On/Off modes, and are capable of running ramp/soak programs of up to 12 steps. Features and benefits include easy-to-read actual and set-point displays in °C or °F, password protection and three latching alarm options for added security and safety. Controllers have storage for up to 4 programs for easy repeatability, a large temperature range up to 999 °C or °F, and accuracy of 0.2% for improved performance. They can also be used indoors or outdoors. Additionally, these controllers are cULus and CE compliant.

The MPC2 temperature controller can be used with a wide variety of heaters including heating blankets, heating tapes, drum heaters, customer cloth jackets, cartridge and nozzle heaters, aluminum foil heaters and more.

BriskHeat's **LYNX™** Temperature Control System is an alternative solution for control of multiple heating zones. Each Operator Interface can control up to 8 strings of 128 controllers for a maximum of 1,024 zones of heat.



#### Industries

Aviation/Aerospace	General Manufacturing
Chemical	Oil & Gas
Composites	Plastic/Injection Molding
Construction	Semiconductor
Food Processing	Waste Water Treatment

#### Types of Users

Facilities Maintenance	Production Managers
Process Engineers	

## COSMETICS AND OTHER LIQUID PROCESS HEATING

*The Total Heating Solution for the cosmetics' manufacturing process*

### Application

Manufacturing cosmetic creams and lotions involves an emulsion process in which an oil, wax, and/or fat component is combined with a water component and an emulsifying agent. The combination is heated to an elevated temperature of 150 to 160°F (66 to 71°C). During the progression from development to dispensing, the lotion passes through a series of storage and transportation devices. These may include the mixing/holding tank, transport lines, a pump, a valve, a hopper, and the dispenser. Throughout the process it is critical the elevated temperature be accurately maintained. Even distribution and precise temperature control is critical to this application to prevent hardening or scorching and is necessary for the formula to be consistent from one batch to the next.



### Solution

BriskHeat manufactures surface heating products, insulators, and a precise modular control system that will meet all these requirements. Surface heating products and insulators for this application include:

- Silicone Rubber Blankets – Attach to the sides of tanks and hoppers
- Silicone Rubber Tapes – Run along transport lines or around pumps and valves
- Cloth Heaters – Wrap around pumps and valves
- Cloth Insulators – Installed over blankets and tapes

To ensure that the heating products maintain the required temperatures, BriskHeat's **LYNX**™ PID temperature control system is used. It features individual modules that control each component of the process. The performance of each heater can be independently monitored through a large full-color touchscreen, the modules' highly visible displays and indicator lights, remote monitoring, or email alerts. Additional features of the

**LYNX**™ system include:

- Accuracy up to 0.25°C (0.45°F) for maximum precision
- Low and high temperature alarms for safety
- Self-diagnostics of heaters and sensors for peace of mind
- USB port for easy data downloads
- Zone-locator for easy performance identification
- Idle mode setting for energy savings and improved safety



BSO



### Additional Uses:

Many other industries have multiple-step processes that need temperature-controlled solutions. BriskHeat can design almost any flexible heater, insulator, and temperature controller system to meet those application requirements.

#### Industries

Cosmetics	Food Processing
General Manufacturing	Wastewater
Oil & Gas	

#### Types of Users

Facility Maintenance	Design Engineer
Production Manager	Plant Manager
Process Engineer	

## CREATING MORE-EFFICIENT HVAC AND HEAT PUMP SYSTEMS

An effective way to reduce capital costs and add longevity to A/C systems

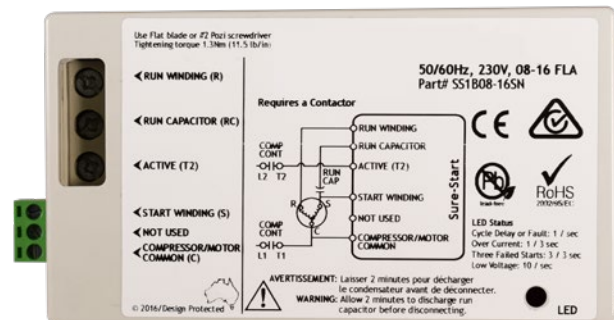
### Application

An A/C compressor is one of the most important components of a cooling system. It condenses refrigerant to a gas in order to move it to other parts of the system. Without this component, the A/C system can't work.

When an A/C system, and specifically its compressor, is started-up, there is a momentary surge in current. This occurs with all electric motors due to the start-up resistance. The initial surge can be several times higher than the "running" amperage. When a main-power-grid is the power source, this is not an issue; however, when the system is started by a back-up generator, the generator's power capacity must be able to handle the highest surge. If it does not have the higher capacity, the inrush will "choke" the generator and not allow it to start the system. The result is a requirement to purchase a generator that is several times larger than the size/capacity of the normal "running" current. The owner may need to spend thousands of additional dollars simply to withstand the momentary inrush current that is not required to operate the system.

### Solution

BriskHeat's Surestart compressor soft starters reduce the inrush current by 60% and automatically adjust the starting current to match the compressor size and available supply voltage. This eliminates the requirement to purchase expensive, oversize generators, and allows the owner to purchase units that are rated much closer to the lower, required operating amperage. For example, an average-size 4 hp motor can create an inrush current as high as 100 A, but with the addition of a soft starter, that number is reduced to 40 A. So rather than purchasing a 24,000-watt generator, the owner can purchase a 9,600-watt unit.



### Types of Users

HVAC Contractors and Repair Technicians

### Industry:

HVAC

Construction

## DRY CHEMICAL PROCESSING

*A solution for drying bulk solid materials*

### Application

A chemical manufacturing company needs to mix several different dry compounds to produce their product. Indirect heating is required to remove all moisture that would impact the weight or percentage of each individual compound. Drying at precise temperatures removes volatiles, decreases clumping and promotes uniform particle sizes. Batch mixing at elevated temperatures promotes the chemical reaction for the final product. A warm air vacuum system is used to move the product through piping to the final packaging area.

Key features required by the customer are ease of operation, communications capabilities for integration into their Central Monitoring System (CMS), flexibility to use various heaters throughout their process, accurate PID control, and expandability to allow for future growth.

### Solution

A combination of BriskHeat heaters controlled by the **LYNX™** Temperature Control System meets the needs of this manufacturer and offers many more features and benefits.

Configure-to-Order low watt density silicone rubber heating blankets with built-in foam insulation apply indirect heat to the drying chamber where raw materials are introduced. Silicone tapes are wrapped around the irregular shape of the hopper to preheat prior to adding the dried material. **XtremeFLEX® BIH Heating Tapes** covered with insulation provide heat to the exterior of the batch mixer to ensure the correct temperature is maintained for reaction. Custom cloth heating jackets are used throughout the system to prevent material from absorbing moisture which would result in material accumulating on the inside walls of the piping or valves.

Each heater in the system including blankets, cloth heating jackets, tapes and cords are fitted with, and controlled by individual **LYNX™** Temperature Control Modules. Modules on the drying chamber are operated independently using the 3-button keypad to adjust the set point and alarm temperatures. Settings are displayed on the 3-digit display and a high-visibility LED glows green to indicate the heaters are operating as programmed. Blankets and BIH tapes receive power from the **LYNX™** Docking Station assemblies with modules. They are linked together in strings to reduce the number of power connections and provide for remote communication. A Power Harness with communication cable at the beginning of the string can be connected to the **LYNX™** Operator Interface, allowing the technician to access each module from the large touch screen. Custom cloth jackets are similarly linked. Flexibility of the **LYNX™** Temperature Control System allows for strings to be combinations of jackets, tapes and blankets. The Operator Interface has a connection for using Modbus TCP, allowing the system to be monitored and controlled as part of the Central Monitoring System (CMS).

### Additional Uses:

BriskHeat's **LYNX™** Temperature Control System can be used to control many process heating applications such as cosmetic manufacturing, food production, pharmaceutical manufacturing and petrochemical processing. Since it can be used with almost any heating product, **LYNX™** Temperature Control Modules can replace other PID temperature controllers in laboratory facilities, clean industrial environments, and composite repair facilities.



### Industries

- |                       |                        |
|-----------------------|------------------------|
| Agriculture           | Petrochemical/Chemical |
| Food Processing       | Processing             |
| General Manufacturing | Pulp & Paper/Packaging |
| Oil & Gas             |                        |

### Types of Users

- |                      |                 |
|----------------------|-----------------|
| Facility Maintenance | Design Engineer |
| Production Manager   | R & D Engineer  |
| Process Engineer     | Plant Manager   |

## FURNITURE ADHESIVE CURING

*An easy and effective way to cure adhesives and resins used in furniture construction and manufacturing*

### Application

Adhesives and resins used in the furniture assembly process often need to be heated in order to cure properly and ensure strength and structural uniformity. While being heated, parts are shaped and formed in a press to give them their unique design and style. Uniform heat across the entire surface is necessary to ensure a proper cure while in a press. This application requires a surface heating product that can easily conform to complex geometries of furniture parts while being able to withstand extreme pressures from a press. It must also be thin and have a smooth surface to avoid transferring unsightly patterns or markings to the furniture parts while in the press.



### Solution

BriskHeat SR series silicone rubber heating blankets are ideal heaters to cure adhesives and resins for furniture manufacturing. They provide the necessary heat while a temperature controller maintains a specified temperature for the adhesive and/or resin to cure. The heating blanket's smooth design and extreme flexibility will easily conform to the contours of the furniture mold and be able to withstand the extreme pressures generated by a furniture press. The uniform heat generated by the heating blankets provide a reliable cure for consistent and repeatable manufacturing.



### Additional Uses

SR silicone heating blankets can be used for nearly any application that involves the use of uniform heat to cure an adhesive, resin, epoxy, etc.

Industries	
Furniture Manufacturing	General Manufacturing
Furniture	Woodworking
Restoration/Repair	Composite Curing

Types of Users	
Design Engineers	Production Managers



## GAS HANDLING

*An efficient way to maximize gas yield from storage cylinders*

### Application

The temperature of gas within a gas cylinder plays an important role in the efficiency of gas removal. As gas is expelled, the pressure drops within the cylinder. This pressure drop causes the temperature inside the cylinder to decrease, which makes it increasingly difficult for the gas to vaporize and be expelled. Often cylinders appear empty and get discarded or refilled prematurely when the cylinder does not have enough pressure to evacuate 100% of its contents. The result is wasted gas, extended production times, and increased production costs.

If the cylinder temperature gets cold enough due to rapid expulsion of gas, freezing conditions can occur. If the cylinder freezes over, gas cannot be expelled and the cylinder must be warmed before production can resume. Because freezing occurs due to gas being rapidly expelled, this occurs in warm and cold environments. In cold environments, cylinders are more likely to experience reduced temperatures and cylinder warmers become increasingly important.

### Solution

BriskHeat's gas cylinder warmers are ideal for maximizing gas yielded from a storage cylinder by ensuring contents remain at an elevated temperature for optimal efficiency. To maximize efficiency, the temperature of a gas cylinder is typically maintained just over 100°F (38°C). It is recommended that cylinder warmers are installed and operating during production.

The easy to install plug-and-play BriskHeat cylinder warmers fits snugly around the cylinder to maintain a warm temperature of the contents. This ensures that the gas can be efficiently discharged. Built-in insulation minimizes heat-loss to increase thermal efficiency. A self-regulating technology heating element ensures that the cylinder will not overheat and maintains an optimal operating temperature. BriskHeat gas cylinder warmers reduce operating costs by increasing gas efficiency and reducing downtime.

Ordinary and Hazardous area rated models are available.

### Additional Uses

Variations of these units can be used for freeze protection on other small tanks and cylinders such as propane tanks. HVAC contractors and technicians use surface heaters to maximize gas yield from refrigerant recovery cylinders.



Industries	
Adhesives	Mining
Aviation/Aerospace	Heavy Industry
Chemical	Laboratory/R & D
Food Processing	Oil & Gas
General Manufacturing	Petrochemical
Specialty Gases	Plastics
	Pulp & Paper

Types of Users	
Facilities Maintenance	Production Managers
Process Engineers	

Gases Known to Benefit from This Process			
SF6	Nitrogen	BCI3	HF
Propane	Oxygen	WF6	

### HEATED HOSES FOR SPRAY FOAM INSULATION

*An efficient cost effective way to heat spray foam hoses*

#### Application

Spray foam is a popular insulation alternative to traditional fiberglass materials. It is a two-component mixture (isocyanate and resin) that is typically stored in cylinders or small barrels. The liquid materials must first pass through two separate hoses that come together into an applicator gun that mixes the materials to form an expanding foam spray. Typically, these components flow best at temperatures above 70°F (21°C). If the components get too cold, they become difficult to extract and they don't flow well through the hose and the applicator gun. This can result in slow production time or even clogs and damage within the system that can cause significant downtime.

#### Solution

Heat the hose with XtremeFLEX® RKP silicone rubber heating tape. This super flexible heating tape is designed with a built-in pre-set thermostat that maintains heat output at 70°F (21°C). The supplemental heat ensures an optimum operating temperature is provided to assist spray foam components as they travel through delivery hoses and into an applicator gun. The RKP heating tape has a low watt-density of 6 W/ft (20 W/m) to provide safe operation and avoid overheating the chemicals. Standard lengths are available from 10 ft to 200 ft (3 m to 61 m) to meet your needs. If necessary, higher temperature, higher watt-density and custom length options are available. For added protection and efficiency, wrap the hose and heater assembly with an insulated abrasion resistant cover. This solution eliminates downtime and extends the service life of your spray foam equipment.

Protect the cylinder or barrel with a BriskHeat DHLS Drum Heater. The DHLS drum heater is adjustable up to 160°F (71°C). Both heating solutions are easily installed and “plug-and-play” ready, allowing the warmers to be plugged into a standard electrical source without special wiring.

#### Additional Uses

BriskHeat's RKP long-length silicone rubber heating tapes with built-in pre-set thermostats can also be used for freeze protection on complex winding or difficult-to-install pipe applications, or on objects that have unique shapes and sizes. Custom RKP heating tapes are available.



#### Industries

- |                                    |                       |
|------------------------------------|-----------------------|
| Insulation Manufacturers           | Construction          |
| Insulation Contractors             | General Manufacturing |
| Foam Delivery System Manufacturers | Marine                |
| Aviation/Aerospace                 |                       |

#### Types of Users

- |                    |                               |
|--------------------|-------------------------------|
| Production Manager | General Contractor            |
| Design Engineer    | Commercial Roofing Contractor |
| Project Manager    |                               |

## HIGH-TEMPERATURE HIGH-WATT HEATING

*A safe and efficient way to provide extreme temperatures and high watt density heating*

### Application

Manufacturing/Industrial companies often need to heat tanks, hoppers, vessels, conveyor ovens, piping & valve systems, etc. to extremely high temperatures. Additionally, they may require the heat-up to occur rapidly. Often these applications are located in hazardous areas, wet areas, or environments where products may be subject to harsh conditions.

### Solution

BriskHeat's Mineral Insulated (MI) Heating Cable is an excellent heating solution for these types of applications. MI cable can reach temperatures of 1,832°F (1,000°C) and has a watt density of up to 76.2 w/ft (250 w/m). The high watt-density capabilities of MI cable provides incredibly fast heat-up and reliable temperature maintenance at extremely high temperatures. Additionally, its high-quality construction offers numerous benefits:

**Magnesium Oxide Core** - Safe electrical insulation with maximum thermal transfer.

**Tubular Metal Sheath Cover** - Extreme durability and environmental protection.

**Laser-Welded Sleeves** - Ultimate reliability and extended service life.

**4 Outer Sheath Options** - To best match application environments.

**Custom Lengths** - Manufactured to meet exact requirements.

**Waterproof** - Completely submersible and chemical resistant, IP67.

**Hazardous Areas** - ATEX approved for use in hazardous area locations.



### Additional Uses

- |                                  |                                 |
|----------------------------------|---------------------------------|
| Tanks and vessels                | Floodgate heating               |
| Power generation hoppers         | Reactors                        |
| Containers and drums             | Plate Heating                   |
| Valves, flanges, and metal tubes | Pump Heating                    |
| Radiant heaters                  | Continuous heating ovens        |
| Furnaces                         | Refining and Crude Distillation |



II 2 G Ex e IIC Gb  
II 2 D Ex tb IIIC Db

### Industries

- |                     |                            |
|---------------------|----------------------------|
| Petrochemical       | Nuclear                    |
| Chemical Processing | Railway                    |
| Oil & Gas           | Food Processing            |
| Steel Production    | Plastics/Injection Molding |
| Aluminum Processing | General Manufacturing      |
| Power Generation    |                            |

### Types of Users

- |                        |                   |
|------------------------|-------------------|
| Facilities Maintenance | Process Engineers |
|------------------------|-------------------|



### OVERHEAT PROTECTION FOR TEMPERATURE SENSITIVE PROCESSES

*Add high-limit safety to temperature maintenance applications*

#### Application

Processing of many materials requires tight temperature tolerances. Exceeding temperatures by as little as 5 to 10 degrees may be the difference between a properly processed material and material that must be scrapped. An example of this would be processing of chocolate or other dairy products that may scorch when overheated. Overheating of wax, oil or other emulsified materials can affect viscosity and mixing.

Equipment may also require protection from excessive temperatures. Surfaces surrounding a heating application may need temperature monitor to prevent damage. For example, a customer was dissipating heat from a thermal process into the atmosphere. Their building was damaged when the excessive heat radiated up to an unmonitored surface and burned the paint on the ceiling.

As a safety measure, a large chemical manufacturing plant requires all temperature controllers use a secondary High Temperature Limit Controller. This is required on adjacent surfaces or on the processing equipment itself to monitor temperature uniformity.

Some applications require temperature limit protection as specified by their industries' governing agencies. For example, ovens or kilns may be regulated by the National Fire Protection Agency (NFPA) to reduce the risk of fires or explosions when materials are being processed. These requirements exist to protect employees.

#### Solutions

High temperature limit devices provide vital protection during thermal heating processes. These devices can cut power to temperature controllers/heaters in the event the maximum high-limit temperature is exceeded. This ensures product quality, reduces waste from poorly controlled product batches, can prevent damage to equipment, and adds to plant and worker safety.

BriskHeat's HL101 High Temperature Limit Controller can be used with almost any electrical heating product, either with an integrated temperature controller or with a stand-alone temperature controller. The HL101 does not control the heating temperature, but rather ensures the temperature does not exceed a defined set-point. It utilizes a separate temperature sensor that is placed on the surface that needs to be monitored. It can also protect an adjacent surface from excessive radiant heat. A materials engineer from the large chemical manufacturing plant using the HL101 states, "The cost is much better than the competitive models, and the nice thing is, it's simple to use."

#### System Integrations

Some applications require the accuracy and fast response of a PID controller. BriskHeat's SDX Digital PID Controller is a great choice to use with all our heaters including Silicone Blankets, XtremeFLEX® Heating Tapes, Etched Foil, GBH Silicone Rubber Griffin Beaker Heaters, and HM Series Hemispherical Heating Mantles. The SDC and SDCE Benchtop Digital Controllers are also great controller options. These controllers and heaters feature "Plug and Play," design, so simply plug the heater into the controller, the controller into the HL101, and the HL101 into an electrical outlet.



#### Industries

- Process Heating
- Laboratory/ R&D
- Petrochemical/Chemical Processing
- General Manufacturing
- Food and Beverage

#### Types of Users

- Industrial Engineers
- Process Engineers
- Scientists/ Researchers
- Chemists
- Safety/Compliance Managers

## HOPPER HEATING FOR GENERAL MANUFACTURING

*A durable and effective way to heat manufacturing hoppers*

### Application

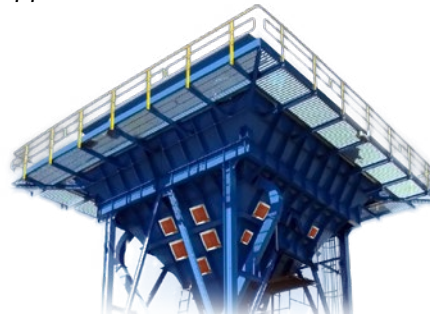
Manufacturing facilities often use hoppers to collect all different types of materials. These hoppers come in all shapes and sizes and can be found indoors and outdoors. Typically they have large openings at the top where materials are loaded and much smaller openings at the bottom to dispense the contents as needed. General manufacturing hoppers are often used as material storage areas or a pre-heating stage before dispensing. During the cold season, outdoor hoppers are at an increased risk of freezing and clogging. When this happens, operators often experience long periods of downtime and a significant loss of productivity. To reduce risk, heat is used to ensure the contents remain at optimal operating temperature for peak performance.

### Solution

BriskHeat's SRL/SRP silicone rubber heating blankets are a perfect, easy-to-install solution to ensure hopper clogging and freezing does not occur. Heaters are typically placed on the bottom half of the outside of the hopper. To assist with installation, the heaters are held firmly in place using the peel-and-stick adhesive backing. SRL heaters are used for metal hoppers and SRP heaters are used for plastic or composite hoppers. The flexibility of silicone heaters allows for easy installation around unique geometries found on hoppers. The system is easily monitored and temperature is regulated with a single controller.

For maximum efficiency, cover heaters with a sheet of Insul-EZ foam insulation; a closed-cell weatherproof foam insulation that protects the heater while increasing thermal efficiency. The insulation features a peel-and-stick adhesive for easy installation over silicone heaters or it can be used as insulation only. An abrasion resistant top layer provides added durability that reduces tears and extends service life of the insulation. Insul-EZ is in-stock and available in 48 in x 48 in (1.2 m x 1.2 m) sheets to fit large and small applications. Cut and shape the insulation in the field with a box-cutter, knife, or scissors. Insul-EZ has a R-value of 3.

SRL-ADJ Silicone Rubber Heating Blankets are equipped with a built-in temperature controller for plug-and-play operation. Other SRL and SRP heaters require a temperature controller suited to the voltage, amp requirement and environment specific to the application. The BH-510 Digital Controller can be used indoors or out for 100 - 240 volts applications requiring up to 16 amps. If higher capacity is required, the TB4000 and TC4000 series can operate up to 2 contactors each with loads of 50 amps per contactor. These also operate at voltages up to 480 VAC.



TC4000



BH-510

### Key Features

- 20-mil thick silicone rubber provides extreme durability and flexibility.
- Acceptable for indoor/outdoor use.
- Grounded for safety.
- Peel-and-stick adhesive for easy installation.
- Available models for metal or plastic/composite hoppers.
- Voltage up to 600V.

### Additional Uses

BriskHeat's SRL/SRP silicone rubber heating blanket systems can be used on troughs, tanks, and vessels of all shapes and sizes where heat is used to protect against cold weather. BriskHeat can help design a heating system for any tank size, shape, industry, or geography.

### Industries

Adhesives	Concrete/Asphalt	Petrochemical/
Aerospace	Food & Beverage	Chemical Processing
Agriculture	General Manufacturing	Plastics
Biodiesel	Heavy Industry	Pulp & Paper
	Mining	Waste Water Treatment

### Products

SRL/SRP Silicone Heaters  
Insul-EZ™ Foam Insulation

## INDUSTRIAL PACKAGING OF BAGS, BOXES, CASES, AND CARTONS

*A simple and efficient way to seal industrial packaging systems*

### Application

Many industries use automated packaging machines to prepare their products for distribution. Two common packaging technologies include “form, fill, & seal machines” and “hot-melt glue sealers”. Form, fill, and seal machines typically create the finished packaging of products that are sold in bags such as crisps/chips, candy, medical devices, vegetables, pet food, grains, condiments, capsules & pills, nuts, tablets, and many more. Hot-melt glue sealers complete the final stage of the packaging process for items sold or shipped in paper boxes or cardboard cases/cartons. Common industries using these products include food processing, consumer & household products, pharmaceutical, beverage, beauty/personal care, electronics, toys, and more. In both processes, high-temperature heat is required to complete the process. In the form, fill, & seal process the bags must be bonded together using a heated clamp at each end, and in hot-melt processes glue must be melted before being applied to create the final seal. In both, space restrictions, heating tolerances, sanitary concerns, quality issues, and unique design requirements of the heating elements must be solved to determine the best heating option.



### Solution

BriskHeat cartridge heaters will fulfill all heater requirements for most fill, form, & seal machines and hot-melt glue seal applications. They are available in diameters as small as 0.125 in (3.2 mm) and lengths as short as 1 in (25.4 mm), and they can be manufactured with built-in thermocouples for precise temperature control. The outer sheath options include stainless steel which is suitable for use in food production environments, and all cartridge heaters are cRUus approved, RoHS and CE compliant. There are 16 lead configuration options, 11 fitting & flange choices, and 6 end seal/potting options for maximum design flexibility.



### Additional Uses

BriskHeat cartridge heaters have watt-density capabilities up to 300 W/in<sup>2</sup> (46.5 W/cm<sup>2</sup>), standard diameters up to 1 in (2.5 cm) and lengths up to 10 ft (3 m), curved-design and multi-zone choices, an Incoloy sheath option, and can reach temperatures of up to 1,600°F (871 °C). This versatility makes BriskHeat cartridge heaters an attractive solution for many heating applications.

Industries	
Beauty/Personal Care	Plastics
Food Processing	Pulp & Paper/Packaging
General Manufacturing	Consumer Products

Types of Users	
Production Engineers and Managers	Process Engineers
Design Engineers	Plant Managers
Facilities Maintenance	

## LABORATORY ROUND-BOTTOM FLASK HEATING

*A safe and efficient way to heat liquids in round-bottom flasks*

### Application

Many applications in chemistry, biology, and research laboratories involve heating liquids for research experimentation. Glass round-bottom flasks are commonly used for distilling, chemical reactions, and refluxing. Round-bottom flasks are desirable for these operations because they have a spherical base that allows more surface area to be heated than a standard flat-bottom flask. Because of the round-bottom design, careful consideration must be made to stabilize the flask and keep the flask upright and safe during use.

There are several methods for heating round-bottom flasks, but most have challenges. Common heating techniques and concerns include:

1. Open flame – This method can create uneven hotspots and less desirable heating performance. It can also introduce many significant safety hazards in a lab environment.
2. Oil and water baths – These are uniform heating methods but leave a liquid residue on the flasks and require special handling.
3. Hot plates – They require additional accessories to accommodate for the round flask shapes in addition to introducing safety concerns.

In addition to simple heating, many of the liquids must be stirred during the heating process. Stirring is required for several reasons:

1. For quicker dissolving time or to speed-up a reaction
2. For mixing or to prevent material separation
3. To assist with a reaction as some reactions require liquid movement

If the process does not include a way to efficiently stir flask contents during the application, additional cost and effort will be required. For example, extra equipment will need to be purchased or manual stirring will be required.

### Solution

BriskHeat's heating mantles are specifically designed to heat round-bottom flasks. BriskHeat offers cloth mantles for use on ring stands, soft-sided tabletop mantles and metal-housed mantles. Sizes range from 50 ml to 6,000 ml. The flask rests within the spherically shaped knitted fiberglass heating basket to provide stability and safety. The basket's spherical design also allows for premium surface contact to be made around the lower half of the flask for an even distribution of heat. The high-temperature heating capability up to 450°C (842°F) provides the versatility needed to perform a wide variety of experimentation processes. For added convenience, the metal-housed mantles are available with or without a built-in temperature controller. An accessory clamp can be mounted to the heating mantle's housing to accommodate a frame rod used for connecting clamps, rings, etc. to the apparatus

Metal-housed round-bottom flask heaters are also available with magnetic stirrers. A poly-coated metal pellet is placed in the contents of the round-bottom flask, and a magnet under the heater moves in a circular motion causing it to follow and stir the liquid. These versions include a built-in temperature controller and are available in sizes from 100 ml to 1,000 ml



#### Industries

Laboratory	Petrochemical/
Universities R & D	Chemical Processing
Food Processing	Aerospace

#### Types of Users

Lab Managers	Chemists
Process Engineers	Project Managers
Scientists	

## LIQUID CAUSTIC SODA TEMPERATURE MAINTENANCE

Prevent solidification and increase efficiency of liquid caustic soda in tanks and pipes

### Application

Liquid caustic soda, also called sodium hydroxide or lye, is a highly corrosive material used as a catalyst or cleaner in many industries such as petroleum refining, textiles, pulp and paper, and chemical processing. A 50% concentration by weight is the most commonly used and to prevent solidification, this material must be maintained at a temperature above 70°F (21°C). Failure to properly maintain temperature leads to decreased efficiency, clogging, and production downtime.

### Solution

Caustic soda is often stored in tanks and vessels. To maintain temperatures above 70°F (21°C), BriskHeat SRM-ADJ silicone rubber heating blankets with mid-temperature controls are used. Their plug-and-play designs feature built-in controllers with a maximum adjustable temperature up to 160°F (71°C), designed specifically for maintaining mid-level temperatures such as those needed for caustic soda. Additionally, they have peel-and-stick adhesive for easy installation, industrial strength silicone construction for maximum durability, 2.5 W/in<sup>2</sup> (0.39 W/cm<sup>2</sup>) power density for rapid thermal response and are grounded for safety. These heating blankets come in a variety of sizes to properly fit around tanks and vessels even if they contain obstructions. To maximize thermal efficiency, custom cloth removable and reusable insulators are used. BriskHeat can manufacture almost any insulator size and configuration, and the durable construction and moisture-resistant PTFE (Teflon) cloth allows them to last for years.

For caustic soda pipelines, BriskHeat KE-series constant-wattage heating cable installed along the pipe will keep the solution at the desired temperature. The KE series has a FEP extruded outer jacket that protects the cable from the corrosive nature of sodium hydroxide. To insulate, BriskHeat's Insul-Lock pipe installation is essential. It featured double-seal technology for maximum thermal efficiency, easy-to-handle 6 ft (1.8 m) lengths, internal (pipe) diameters between 0.5 and 4 in (1.3 and 10 cm), and a temperature tolerance of 220°F (104°C). Additionally, external aluminum tape is an available accessory to guard against corrosion. To control the cable temperature, BriskHeat offers a wide range of temperature control options. A good all-purpose choice is the TC4X digital temperature controller with NEMA 4X enclosure. The TC4X is inexpensive, has a digital display, and is suitable for wet and corrosive environments.

### Additional Uses

BriskHeat's SRM-ADJ silicone heating blankets can be used on most tanks or vessel applications requiring heat up to 160°F (71°C). Similarly, constant wattage heating cable can be used on most long-run pipe heating applications that require temperatures up to several hundred degrees.



Industries	
Chemical Processing	Oil & Gas
General Manufacturing	Pulp & Paper
Petrochemical	Textiles

Types of Users	
Facilities Maintenance Personnel	Production Manager
Process Engineer	

## MEDICAL EQUIPMENT REQUIRING SURFACE HEAT

*For high-standard and space-constraint applications requiring precise heat*

### Application

The medical industry is filled with machines, devices, and instrumentation that require thermal management. In many cases, these parts are highly sensitive, intricate, state-of-the-art apparatus. Examples include:

- Incubators
- Blood analysis equipment
- Medical instrumentation
- Dental instruments
- Operating room equipment
- Surgical tools
- Laboratory equipment
- Ultrasound equipment
- Sterilizers
- Defibrillators
- Dialysis equipment
- Respirators
- Monitors

These items have extensive medical quality requirements. Because they are dealing with the human condition and play an important role in restoring or maintaining people's health, all components of the devices are held to the same high-quality standards, such as extreme accuracy and repeatability. Medical device qualification procedures and FDA traceability expectations must be achieved, and if all requirements are not fulfilled, consequences could be very negative and harmful. Additionally, space and size constraints are often challenging and require special heater specifications.

### Solution

BriskHeat etched foil heaters will meet medical industry requirements to provide precise heating and thermal control. Etched foil heating elements are created using a photolithography process which allows for more even and repeatable heat. Heaters are fabricated using computer-guided tools to complete the primary processes of drilling, imaging, etching, laminating, and excising, in addition to various sub-processes. The result is even-heat-distribution, accurately-shaped heaters that can be as small as 0.5 in (13 mm) square, as thin as .0045 in (0.11 mm), and whatever shape is required. Additionally, because of the automated manufacturing process, large quantities of heaters are extremely affordable.

High amp draw heaters require a suitable temperature controller. For applications when the power will be 15-50 amps, BriskHeat's TB4000 or TC4000 are the correct controllers. For applications where there are numerous heaters, the MPC2 is the preferred choice. The MPC2 has digital PID control modules for each zone for more accurate control.

### Additional Applications

Similar high-quality and space-constraint requirements exist in other industries such as Aerospace, Telecommunications, and Analytical Instrumentation. BriskHeat's etched foil heaters will meet the requirements of these industries as well.



Etched Foil Heaters



MPC2

### Types of Users

Laboratory and Medical Science

### PLASTIC BENDING & FORMING

An easy effective way to bend acrylic plastics for home hobbyists, makers, inventors, and professional use

#### Application

Plastic bending is common for makers, sign makers, inventors, display manufacturers, fixture manufacturers, and more. These users often need to make custom bends in sheet acrylic products. One of the most useful properties of acrylic is its thermo-formability. As it becomes warm it softens and can be bent or formed into any shape imaginable. The typical forming temperature range of most acrylic sheet plastics is 275°F to 350°F (135°C to 177°C). A consistent and controlled heat source is necessary so that the bends are smooth and the finished parts are aesthetically pleasing.



#### Solution

BriskHeat RH plastic bending strip heaters are a flexible strip heater that provides a fast, easy, and cost effective way to bend, shape, or form acrylic and other thermoplastic sheet products. Using a BriskHeat bending strip heater as a heating element you can quickly build a plastic line bending tool for safe, reliable, and efficient bends.

BriskHeat's high temperature heating tape distributes heat uniformly throughout the tape to apply a consistent, controlled heat to the bend area without affecting the surrounding area. This provides a clean, uniform bend without hot-spots that can damage acrylics. The heating element is incredibly flexible and can be configured for straight or complex geometries for making custom bends. In addition, they include a cord and plug for a connection to an electrical outlet or temperature controlling device.



#### Optional Accessories

- TPO Temperature Controller - Time percentage control varies the proportion (length) time the heater is in the "on" or "off" heating mode.
- SDC Temperature Controller - Programmable digital temperature controller controls h output in F° or C°.
- AAT2180 - High temperature aluminum adhesive tape

#### Industries

Home & Hobby	Plastic/Injection Molding
Custom Fabrication	Universities & Education
Fixture Manufacturing	Inventing & Prototyping
Sign Making	Laboratory
Tradeshow Display	General Manufacturing

#### Types of Users

Makers	Inventors
Hobbyists	Engineers
Business/Shop Owners	Students
Shop Managers	

## PLASTIC INJECTION MOLDING

*High temperature heating for melting plastic pellets*

### Application

Common plastic products created through injection molding include toys, packaging, consumer items, furniture, containers, machine parts, tools, and much more. To create these plastic products, manufacturers begin the process with plastic granules or pellets. The pellets are fed through a hopper and into a barrel or chamber where they are melted and directed by a screw-conveyor to the individual molds. The melting process must be fast and powerful to ensure production efficiency. Temperatures required to melt plastic can be at or above 500°F (260°C), and the heaters used must be able to survive contact with molten plastic if leaks occur. If the temperatures are not maintained across the entire surface, the process loses efficiency which could lead to costly downtime.

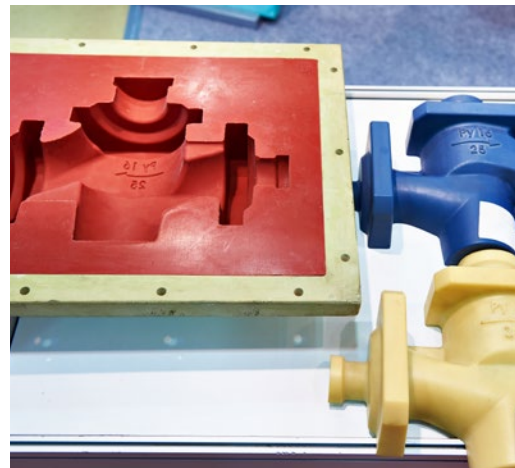
### Solution

BriskHeat’s mica band heaters wrap firmly around the barrel to provide the necessary heat to efficiently melt the pellets. They are designed to the exact dimensions of the barrel to ensure maximum heat transfer and extended heater life. They can generate up to 40 W/in<sup>2</sup> (6 W/cm<sup>2</sup>) and reach temperatures up to 850°F (454°C). They are moisture and corrosion resistant, have a low-profile 0.125 in (3 mm) designs, and are constructed with evenly-wound nickel/chromium resistance wire for uniform heat distribution. Additionally, they can be manufactured to UL standard UL499 and CE compliance.

For industrial applications where monitoring temperature is a critical need, the TTD controller is an easy-to-use controller that offers a digital display for easy programming and visual temperature identification. Larger heaters with amp ratings greater than 12 Amps, should use a TC4000 Series controller with ratings up to 50 amps.

### Other Applications

This application is very similar to plastic extrusion, where long, pre-shaped plastic products are created. Additionally, BriskHeat Band Heaters are used in applications found in die casting, blow molding, tank & drum heating, pulp & paper processing equipment, food & candy extruders, vending machines, and analytical instrumentation.



TTD



Band and Nozzle Heaters

#### Types of Users

Production Engineers and Managers	Process Engineers
Design Engineers	Plant Managers
Facilities Maintenance	

#### Industry

Plastic/Injection Molding	General Manufacturing
---------------------------	-----------------------



### PRE-HEATING AND POST-HEATING METALS FOR WELDING, BRAZING, AND SOLDERING

*A simple and effective way to preheat and post-heat metal objects to reduce joint failures*

#### Application

When welding, brazing, or soldering metals such as steel, aluminum, Inconel, stainless steel, and other ferrous or nonferrous alloys, joint failures and other defects can occur due to the extreme thermal stresses imposed by rapid heating and cooling at the connection area. Preheating and post-heating the connection area is done to better prepare the surfaces and slow the cooling process to reduce the potential for joint failure. It also drives out moisture which may also cause problems. As a result, there is less rework required and the finished piece performs better. Technicians in this field know, and governing bodies such as ASME, API, ASM, NAVSEA, in addition to proprietary entities, have codes that require preheating and post-heating many metals when welding, brazing, or soldering.

A preheating application BriskHeat assisted with was a submarine manufacturer welding large steel beams to reinforce a nuclear reactor chamber within a nuclear submarine. The steel beams were 6 in thick x 12 in wide x 120 in long (152 mm thick x 305 mm wide x 3048 mm long). Preheating to 360°F (182°C) before joining was critical to prepare the surface, and post-heating to ensure a slow enough cooling rate to avoid failure was also required. Preheat temperatures can vary from metal to metal depending on carbon/alloy content and thickness but are generally 175°F to 500°F (79°C to 260°C). To be truly effective, preheating and post-heating must be uniform across the entire joining area. Depending upon the size and shape of the materials being joined, hours of manpower and large amounts of fuel could be wasted using other heating methods such as torching or steaming. Hotspots and uneven heating are likely to occur when preheating in these manners. Additionally, torching or steaming greatly increases the risk of technicians sustaining burns.



#### Solution

BriskHeat BWH heavy insulated fiberglass heating tapes can deliver heat up to 1400°F (760°C). They have a high watt density of 13.1 W/in<sup>2</sup> (2.0 W/cm<sup>2</sup>) which ensures a rapid thermal response and even distribution of heat. BWH fiberglass heating tapes are a safer, more efficient, and provide more even heat for pre and post-heating than other methods such as torching or steaming. They are exceptionally flexible and easily conform to complex shapes, making them ideal for a variety of difficult metal joining applications. Industrial heating applications require temperature controllers that can be sealed from dust. BriskHeat's BH-510, TB4000 and TC4000 controllers meeting this requirement with IP65 and IP66 enclosures. Heater, power and temperature sensor are all connected through sealing glands in the enclosure. These can be wall mounted or mounted to a frame using mounting clips or plates (optional).

In other applications where the required heat is never more than 450°F (232°C), BriskHeat full line of BSO silicone heating tapes or SRL silicone heating blankets are an effective solution.



BH-510

#### Additional Uses

BWH heavy Insulated fiberglass heating tapes can also be used to preheat and expand metals for the insertion or removal of components within an assembly or to remove moisture for testing, and more.

#### Industries

- |                       |                       |
|-----------------------|-----------------------|
| Aviation/Aerospace    | Defense               |
| General Manufacturing | Mining                |
| Construction          | Power Generation      |
| Metal Fabrication     | Oil & Gas             |
| Marine Shipbuilding   | Waste Water Treatment |

#### Types of Users

- Welding Technicians
- Production Managers
- Design Engineers
- Fabricators and Builders

## REACTION CHAMBER FLUID PROCESSING

*Fluid temperature uniformity within laboratory, research, and manufacturing operations*

### Application

A reaction chamber requires gases or liquids to be maintained at an elevated temperature to facilitate processing. The size and unusual shape do not allow for conventional tapes or insulating heating jackets to be used. Thermowells are built into the chamber to allow for heating and temperature monitoring; however, the size and length of thermowells is limited. Tight specifications for temperature uniformity inside the chamber require heat to be applied externally in addition to internally. A custom water bladder is developed by the chamber manufacturer with an elastic material on the interior surface which, when filled will easily conform to the contour of the reaction chamber. The exterior material is a high temperature, water resistant material. The bladder will contain heated water, keeping the surfaces of the reaction chamber at a uniform temperature.

### Solution

BriskHeat cartridge heaters will be used to heat the water within the bladder. Pockets or “fingers” are built into the exterior material that protrude into the water bladder. Each finger is designed to hold a specific size cartridge heater. Once the bladder is filled, the material fits tightly around the cartridge heater to maximize thermal transfer and eliminate air gaps. Cartridge heaters are cycled on and off to promote temperature uniformity of the water within the bladder. The cycling is also used to prevent hot spots within the material. Additional cartridge heaters are inserted into the thermowells built into the chamber to provide heat to fluids inside the chamber that are further from the chamber walls. These heaters are not continually cycled but have built-in thermocouples to control power.

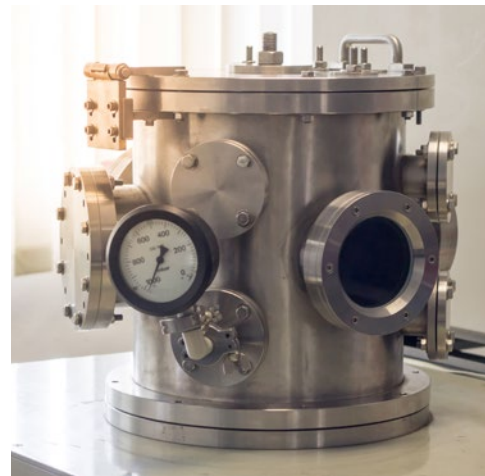
BriskHeat’s TB4000 family of high amperage temperature controllers are ideal to use on a single chamber with heaters up to 50 amps. In addition to controlling a single zone of heat, the TB4000 may be ordered with a high limit switch or with two control zones of up to 50 amps each. This controller can be used in wet areas or where temperatures are sub-zero with the optional panel heater. An alternative is the MPC2 multipoint control panel. It can be used to control larger systems where multiple chambers/zones require independent control of multiple heaters.

### Additional Solutions

BriskHeat offers many options for applying surface heating to chambers of any size and shape. Mica band heaters with nickel-chromium resistance wire maximize surface contact and provide uniform heating along the inside surface of the band when used on cylindrical shapes. Custom cloth heaters can be designed to provide both heat and insulation to your chamber.

### Other Applications

BriskHeat cartridge heaters have watt-density capabilities up to 300 W/in<sup>2</sup> (46.5 W/cm<sup>2</sup>), standard diameters up to 1 in (2.5 cm) and lengths up to 10 ft (3 m). They are available with curved-design and multi-zone choices, and Incoloy sheath option. Application temperatures can be up to 1600°F (871°C). This versatility makes BriskHeat cartridge heaters an attractive solution for many heating applications including injection molding, packaging, mass spectrometry, 3-D printing, die casting and medical devices.



#### Products

Cartridge Heaters    Custom Cloth Heaters  
Band Heaters

#### Types of Users

Lab Managers                  Scientists  
Process Engineers              Chemists

#### Industries

Laboratory                          Oil & Gas  
Research and                      Petrochemical  
Development                      Chemical

### REFRIGERANT CYLINDER JUG WARMING

Warm a refrigerant cylinder jug and maintain optimal temperatures for servicing during cold seasons

#### Application

Residential and commercial buildings rely on many forms of cooling systems to keep people, animals, food, chemicals, etc. cool and comfortable. The most common systems are air conditioning or HVAC units, but there are also many refrigerators, freezers, and dehumidifiers used. When these units are serviced, the refrigerant gasses within the system must be removed and placed into a storage tank, then cleaned to remove impurities and pumped back into the unit.

Many HVAC units, walk-in refrigerators, deep freezers, etc. continue to require scheduled and unscheduled service during the cold season. The cold weather can cause unique problems for refrigerants and service technicians. Cold weather causes the pressure inside a cylinder jug to drop. At 0°F (-18°C), the pressure coming out of a jug of R22 Freon® is only 24 PSI. When the system being serviced is running, the suction pressure will be near 60 PSI or greater. Prior to servicing, the surface temperature of the cylinder must be elevated to approximately 100°F (38°C) or greater to maintain adequate pressure inside the cylinder.



#### Solution

BriskHeat's HotBelt is an ideal heater for pre-heating and keeping refrigerant cylinder jugs warm. The plug-and-play heaters fit snugly around the cylinder to warm the contents so that refrigerant gas can be effectively discharged during servicing. The heaters have an adjustable strap to fit any cylinders with diameters between 9 in (23 cm) and 13 in (33 cm). This fits the most common sizes of 30 lb, 50 lb, and 125 lb cylinders. A built-in controlling thermostat maintains cylinder surface temperature at approximately 120°F (49°C). This ensures that the refrigerant is kept at an optimal operating pressure for servicing.

The HotBelt heater is safe for indoor/outdoor use and grounded for safe operation.



#### Common Refrigerants:

- R22 Most common on older systems, known as Freon®
- R410A Most common on newer systems, since 2010
- R407C Retrofit gas for R22 systems
- R134a Vehicles and large chiller systems
- R404A Used in refrigeration and walk-in coolers/freezers

#### Industries

- HVACR Heating/Cooling and Refrigeration
- Gas Handling Construction

#### Types of Users

- HVACR Contractors
- HVACR Technicians

## SCIENTIFIC/ANALYTICAL INSTRUMENTATION

A superior way to apply heat to objects in the laboratory or research & development environments

### Application

In many Research & Development and Laboratory applications, surface heat is required to successfully conduct experiments and tests. The heat may be required for a number of reasons:

1. Temperature Compensation - Varying results due to temperature fluctuation are eliminated when the temperature is constant over several repetitions or tests.
2. Vacuum Bake-out - Heat helps release moisture and impurities/particulates in a closed system to allow the test results to be more accurate and consistent.

A higher temperature may be required to generate the desired results.

### Solution

BriskHeat's **Custom Cloth Heating Jackets** are ideal for scientific/analytical instrumentation applications. They can be custom designed and manufactured to fit almost any size and configuration. BriskHeat's multi-stranded grounded heating element provides ultimate durability, reliability, customization, and safety. Custom cloth heating jackets are made to ensure intimate surface contact. This provides maximum efficiency and consistent heat across the entire heated area. The built-in insulation maximizes thermal efficiency and provides safe touch while being heated up to 1100°F (593°C) and maintaining very tight tolerances. Custom cloth heating jackets can be made using low particulate materials to meet clean room standards and have several closure options to make installation and removal quick and easy without risk of damaging the heater.

Our custom cloth heating jackets can be engineered to integrate our **LYNX™** control systems. Multiple jackets can be "daisy chained" together and operate for a single operator interface. The MPC2 Multipoint Temperature Control Panel allows for multiple heaters to connect to each zone for PID control. Many desirable safety features are integrated into the panel.

**XtremeFLEX Flexible Heating Tapes and Cords** are extremely versatile, easy-to-use, and an economical choice for laboratories and research & development facilities. The durability and flexibility of XtremeFLEX heating tapes and cords allows them to twist, turn, bend, and wrap around many objects; even those with diameters as small as a pencil. In addition, they have high temperature capabilities up to 1400°F (760°C) and watt densities up to 13.1 W/in<sup>2</sup> (0.020 W/mm<sup>2</sup>). These features allow them to heat-up very quickly and maintain high operating temperatures. A wide range of standard sizes are available to fit most application needs, with custom sizes available upon request. To improve energy-efficiency, it is recommended that heating tapes are used in conjunction with insulation.



MPC2

### Products

Custom Cloth Heaters  
MPC2 Control Panel

XtremeFLEX® Heating Tapes  
and Cords

### Types of Users

Professors  
Students  
Lab Managers  
Scientists

Chemists  
Process Engineers  
Project Managers

### Industries

Universities  
Laboratories  
Research/Development  
General Manufacturing  
Oil & Gas

Petrochemical  
Aviation/Aerospace  
Petrochemical/  
Chemical Processing

## STEAM PIPE INSULATION

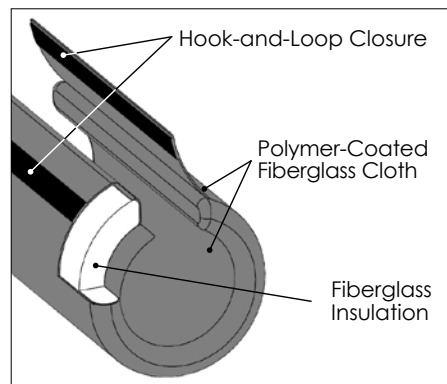
*An easy and effective way to insulate steam lines to increase efficiency and reduce hazards.*

### Application

Steam is a common energy/heat source used in a wide variety of manufacturing and Industrial operations. Common uses include freeze protection, process heating, radiant heating (air), hot water heating, cleaning, moisturizing, humidifying, propulsion, power generation, and much more. The steam is typically generated from large industrial boilers and transported through a series of pipes and valves. These steam lines must be insulated to ensure optimal system efficiency and employee safety. If left without insulation, large amounts of energy can be lost, condensation can reduce effectiveness, and employees are at risk of burn injuries and excessive heat from exposed steam lines.

### Solution

BriskHeat's Silver-Series removable cloth insulators are the perfect solution for insulating steam transportation systems. They are easy to install, save energy, reduce condensation problems, provide excellent surface protection, and improve overall system efficiency and safety. The Silver Series Insulators are easily removable and reusable when maintenance personnel must have quick access. A combination of standard size pipe, valve, and flange insulators are easily configurable to fit most steam line systems. Standard insulators are rated to 450°F (232°C), have an R-Value of 3.3, and are suitable for outdoor use. Standard designs include hook and loop closures, silicone coated fiberglass cloth, and fiberglass insulation. Valve covers and flange covers have draw-strings that tighten the insulators around pipes to maximize efficiency. Custom insulators can also be designed to fit nearly any shape and size including boilers and large storage tanks. There are a variety of custom options available including color and high-temperature cloth materials rated up to 1800°F (982°C) maximum exposure temperatures.



Industries	
Petrochemical/Chemical Processing	Wastewater
Food Processing	Pulp & Paper/Packaging
Refineries	General Manufacturing
Power Generation	Oil & Gas

Types of Users	
Facilities Maintenance	Production and Plant Managers
Process Engineers	

## TEMPERATURE MAINTENANCE – VALVES, PUMPS, AND OTHER COMPONENTS

Using BriskHeat's **LYNX™** free-standing control system in dry-area industrial applications

### Application

Manufacturers often need to provide temperature control to individual objects such as valves, pumps, or small tanks and vessels. The object may be in an unheated environment and susceptible to cold-air-related problems, or it may need to operate at an elevated temperature to ensure a process runs properly or viscosity is controlled. Maintenance workers responsible for heating these objects may also desire additional features and benefits to enhance accuracy, effectiveness, visibility, or simplicity. If these conditions are not met, the process may fail and lead to problems such as system damage, failures, or other types of downtime and costly repairs.

### Solution

Custom cloth heating jackets can be designed to fit even the most complex components. Engineered to meet the requirements of your process, heating wire, temperature sensor and insulation are covered with your choice of materials and are available with various closure styles. A **LYNX™** docking station is prewired and sewn to the jacket for easy installation. Other heaters can also be custom engineered and prewired.

BriskHeat's **LYNX™** is also available as a free-standing, fully functional compact PID temperature controller that can individually control heaters for most small objects or vessels. With approximate dimensions of only 5 cm x 8 cm x 5 cm (2 in x 3 in x 2 in), it features an easy-to-program 3-button touch pad and 3-digit digital display that shows the temperature in either °F or °C, and the multi-colored LED status indicator is highly visible for peace of mind. The unit snaps on to a pre-wired docking station for plug-and-play installation, and may be either attached to the heater or mounted on a nearby tabletop stand for easy viewing and access. **LYNX™** is compatible with both thermocouples and RTDs, and accurate up to a fraction of a degree. Adding to the versatility is universal voltage between 120 and 277 VAC, multiple options for heater plugs, and a temperature range up to 999°F or 600°C.

### Other common manufacturing items that **LYNX™** may help heat:

- Pipes
- Tubing
- Actuators
- Vats
- Filter Housings
- Gauges
- Hoppers
- Conveyers



#### Industries

Laboratory  
Biodiesel  
General Manufacturing  
Oil & Gas

Petrochemical/  
Chemical Processing  
Food Processing

### VACUUM BAKE-OUT

*A superior vacuum bake-out process within laboratory, research, and development operations*

#### Application

With many laboratory or research & development tests, it is critical that materials are free of gasses, water vapor, and other contaminants. A vacuum bake-out is a process used to remove such contaminants. Applying surface heat (normally up to 392 °F (200 °C)) is required to successfully complete a vacuum bake-out process. The removal of impurities allows vacuum-baked components to be used in ultra-high vacuum or ultra-high purity systems without fear of contamination. Heat is used to help release impurities and other contaminants, from components in a closed system (vacuum chamber), while a vacuum pump removes those impurities.

#### Solution

Custom cloth heating jackets are ideal heaters for vacuum bake-out applications. They fit around the outside of vacuum chambers to provide the necessary heat. Vacuum chambers come in many different sizes and shapes, often with complex shapes and multiple exterior surface obstructions. Custom cloth heating jackets can be designed and manufactured to fit almost any size and configuration, ensuring intimate surface contact for consistent heat across the entire heated area. The built-in insulation maximizes efficiency, and reduces heat-loss, allowing them to safely operate at several hundred degrees at very tight tolerances. High temperature Samox® or PTFE cloth construction provides extreme durability and long service life under high temperature uses. The heating element is BriskHeat's patented multi-stranded heating element. Several closure options are available to suit your needs such as hook-and-loop closure (pictured), lace and boot hooks, lace and grommets, or belts with D-Rings, making them easy to install and easy to remove.

Further customization of cloth heating jacket includes:

- Redundant circuits to act as back up if the primary element fails
- Non-ferrous compents for research and experimentation that include magnetic fields
- View ports to observe the chamber's interior during an experiment

A total solution for using cloth heating jackets includes choosing the right temperature control system. SDX, **LYNX™** or the MPC2 Multipoint Temperature Control Panel are designed to provide control needed for vacuum bake-out. The amperage load, heater configuration and environment will determine the best solution for your application.



#### Additional Uses

Apart from vacuum bake out, cloth heating jackets are also superb heaters for research projects involving systems with complex structures. Custom heaters can be made to fit all sizes and shapes of equipment such as tanks, pipes/tubes, joints, valves, and much more.

#### Additional Product

For laboratory or R&D experiments necessitating high wattage and very high temperatures, Mineral Insulated (MI) is recommended. MI cable is semi-rigid and electrically insulated using Magnesium Oxide (mineral) to ensure safe electrical insulation with maximum thermal transfer. MI cable has maximum exposure temperature of 1832 °F (1000 °C) and a 76.2 W/ft (250 W/m) watt density.

#### Products

Cloth Heating Jackets

#### Types of Users

Lab Managers  
Process Engineers

Scientists  
Project Managers

#### Industries

Laboratory  
Universities R & D

High Physics  
General Manufacturing

## WET LABORATORY HEATING

*BriskHeat flexible heating tapes, heating mantles, beaker heaters, cloth heating jackets, and temperature controls*

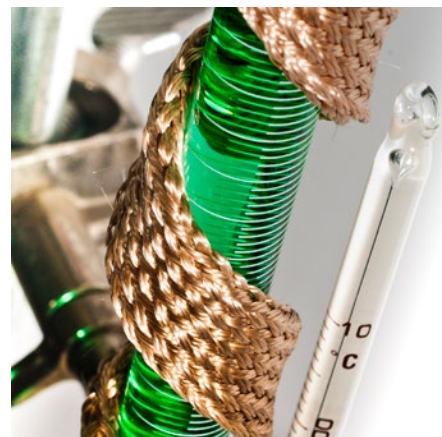
### Application

Wet laboratories are laboratories where chemicals, drugs, and other material or biological matter are handled in liquid or volatile phases. Examples include chemistry, biology, and research labs. There are several applications in this environment where it is necessary that the experimental conditions have elevated temperatures. Temperatures range from just over ambient to above 750°F (400°C) for the purposes of synthetic reactions, removal of moisture to eliminate it as a variable, sampling, preparation, detection, monitoring of liquids/solids/gases, and sterilization of laboratory equipment.



### Solutions

XtremeFLEX® Flexible Heating Tapes and Cords are versatile, easy-to-use, and an economical choice for wet laboratories. The durability and flexibility of XtremeFLEX heating tapes and cords allows them to twist, turn, bend, and wrap around many objects; even those with diameters as small as a pencil. In addition, they have high temperature capabilities up to 1400°F (760°C) and watt densities up to 13.1 W/in<sup>2</sup> (2.0 W/cm<sup>2</sup>). These features allow them to heat-up very quickly and maintain high operating temperatures. A wide range of standard sizes are available to fit most application needs, with custom sizes available upon request. For heating applications under 392°F (200°C), silicone rubber heating tapes are often selected due to their resistance to moisture and chemicals. To improve energy-efficiency, it is recommended that heating tapes are used in conjunction with insulation.



Custom Cloth Heating Jackets are a preferred option for applications that require exceptional accuracy and heightened functionality. These “all-inclusive” heaters are easy to install and remove and have tight temperature tolerances, built-in temperature sensors, and insulation. Each heater is custom made to fit perfectly around the object being heated and meet the exact requirements of the application.



Heating Mantles (HM) offer uniform heat distribution for round bottom flasks. These soft-sided heaters are a safe alternative to Bunsen burners. They are made to fit precisely around the flask and provide high temperature capabilities up to 900°F (482°C). Standard sizes of heating mantles range from 50 ml to 12000 ml. There are self-standing models and models designed for use with a basket ring stand. Heating mantles can also be custom designed to fit any shape and size.

Silicone Rubber Beaker Heaters (GBH) are moisture and chemical resistant heaters that fit precisely around Griffin and standard beakers. They are capable of providing an even distribution of heat around the surface of the beaker. Silicone beaker heaters can safely reach temperatures up to 450°F (232°C). Standard sizes range from 250 ml to 1000 ml. Custom sizes are available upon request.



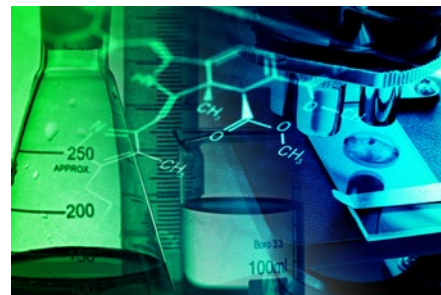
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## WET LABORATORY HEATING (Continued)

### Solutions

Temperature controllers are necessary to regulate any heater's performance. Pair any of these heaters with one of the many BriskHeat bench top temperature controllers for a complete system. An economical and popular choice for wet lab applications is the SDC digital on/off temperature controller. This temperature controller features simple on/off temperature control, digital display, and factory-installed Type-K or Type-J thermocouple sensor. It has a range up to 900°F (482°C) Type-K and 700°F (370°C) Type-J with accuracy of +/- 1%. When more precise temperature control is needed, we recommend our SDX digital PID bench top controller. It has an operating range up to 999°F (999°C) with accuracy of +/- 0.5%. The TC4X digital controller can be used if the controller will be in an area where it may get wet. Another option, **LYNX™**, BriskHeat's newest PID temperature controller, is often the preferred choice. It is a fully functional PID system in a small compact design, features easy-to-program and view 3-button/3-digit display, plug-and-play operation, and excellent accuracy of +/- 0.25°C (0.45°F) plus 0.125% of measured temperature. **LYNX™** also has a temperature range up to 999°F (600°C), features a highly visible alarm, degrees "C" or "F" programming, choice of thermocouple or RTD sensors, and a tabletop design option. Pair an HL101 High Temperature Limit Controller with our plug and play controllers for added safety. BriskHeat also offers custom-designed temperature controllers to fit unique application requirements.



### Examples of Laboratory Apparatus

Glassware Flasks	Tubing	Tanks
Beakers	Columns	And More
Graduated Cylinders	Condensers	
Piping	Chambers	

### Additional Uses

Silicone rubber heating tapes can be used in almost any hose or delivery system where viscosity issues are a concern.

### Products

XtremeFLEX® Heating Tapes and Cords	SDC and SDX Temperature Controllers
Heating Mantles	<b>LYNX™</b> Temperature Controller
Beaker Heaters	TC4X Digital Controller
Cloth Heating Jackets	HL101 High Limit

### Industries

Laboratory, Medical Services and Analytical Instrumentation	Petrochemical/Chemical Processing
Food Processing	Pulp & Paper/Packaging

### Types of Users

Scientist/Researchers	Laboratory Professionals
Chemists	Students
Biologists	



HL101



SDX



**LYNX™**



# FREEZE PROTECTION

### AGRICULTURAL TROUGH HEATING

*A simple and reliable way to ensure outdoor animals stay hydrated*

#### Application

Animal owners such as farmers and ranchers need to make sure their animals have water to drink. Some of these animals spend a considerable amount of time outdoors and have some sort of trough filled with water. Owners need to make sure that the water is accessible to the animals at all times and if the weather is extremely cold during winter months, the water can freeze making it impossible for the animals to drink and stay hydrated.

#### Solution

BriskHeat's SRL/SRP silicone rubber heating blankets are attached to the under side of the trough. They are easily installed and held in place using the peel-and-stick adhesive backing. Temperature is controlled using a TD101N automatic on/off temperature controller that senses trough temperature. It will automatically turn the system on in cold conditions and off when it's warm, so there is no need for monitoring. This system ensures that the trough doesn't get too cold or too hot.

Increase thermal efficiency and further protect the heater using Insul-EZ™ closed-cell (weatherproof) foam insulation. This foam insulation comes in 48 in x 48 in (1.2 m x 1.2 m) sheets that can be cut and shaped in the field with a box cutter or knife. They have a peel-and-stick adhesive back for easy installation, an abrasion resistant composite facing for extreme durability, and provide an insulating R-value of 3.

#### Additional Uses

BriskHeat's SRL/SRP silicone rubber heating blanket systems can be used on tanks and vessels of all shapes and sizes to protect against cold weather or maintain a desired temperature. The applications are generally not restricted by tank size or shape, industry, or geography.

The entire system is weatherproof, does not require maintenance, and is available in voltages up to 277 VAC. Additionally, the system is grounded for safety.



#### Products

SRL/SRP Silicone Heaters TD101N	Insul-EZ Foam Insulation
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#### Industries

Agriculture Farming Ranch	Livestock Production Companion/Pet Industry Commercial Kennels
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#### Types of Users

Farmers Ranchers	Commercial Kennel Owners
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**BATTERY WARMING**

*A simple and effective way to maximize lithium and lead-acid battery efficiency in cold weather environments*

**Application**

Both Lead-acid and lithium batteries have needs for heat in cold weather environments.

Lead-acid batteries are used in cars, trucks and motorcycles. Vehicles left in the open or in unheated garages require strong charges to start engines in harsh conditions. It can be harmful or potentially risky to use or charge batteries if their temperature drops below 32°F (0°C). Some manufacturers suggest warming above freezing, to 41°F (5°C) to minimize wear. To maximize the operating efficiency of lead-acid batteries in cold temperatures, the batteries should be warmed to an optimal temperature of 68°F (20°C) to 77°F (25°C). Batteries can be used at temperatures up to 122°F (50°C).

Lithium batteries have a higher charge density (i.e., longer life) compared to other batteries. This type of battery is utilized in electric vehicles where high performance is required to optimize the distance required between charges. Manufacturing companies typically utilize lithium batteries in their equipment where extended battery life is a must. Ambient temperatures impact both charging and discharging of batteries.

Unfortunately, lithium batteries do not perform well in extremely cold weather temperatures. In environments below 14°F (-10°C) the batteries must be heated, and some manufacturers recommend heating when exposure temperatures drop to freezing, 32°F (0°C) as batteries should not be charged below this temperature. Low working temperatures will greatly reduce the discharging current and the overall energy available. The batteries quickly lose their capacity below 60°F (17°C). Excessive temperatures can also pose a hazard. Batteries with full charges should not be exposed to temperatures above 95°F (35°C) and optimally, not exceed 68°F (20°C) to 77°F (25°C).

As an example, in remote areas of the country, surveillance equipment is used as part of security systems for military bases, storage facilities or other remote work areas. Lithium batteries are used for backup power and need to be reliable. Buildings housing equipment are typically not heated; however, to be ready for peak performance, batteries require a heat source.

**Solution**

BriskHeat offers several heating products that can meet the requirements to keep batteries warm for the applications described. Simple and easy to use, these may be “Plug and Play” to pair with temperature controllers and integrated plugs.

Silicone Rubber Heating Blankets are available in many different styles from thin SRW Economy Series to Custom Cut versions with or without integrated insulating foam. Blankets are available which may include built-in thermostats. SRW blankets are low profile and can be designed to fit into battery trays.

Aluminum Foil Heaters are typically a more economical solution to these applications. These are custom designed to fit almost any shape and can include complex cut-outs. The aluminum material will hold loose shapes to allow the heater to be loosely draped over the battery. Other options include semi-rigid plates, Pressure Sensitive Adhesives (PSA), various power options and are available with a variety of leads. Standard construction of these heaters lack the moisture and chemical resistance of silicone blankets; however, these can be ordered for applications requiring IP65 ratings for dusty or wet-area used.



**Industries**

- |                  |                       |
|------------------|-----------------------|
| Agriculture      | General Manufacturing |
| Concrete/Asphalt | Marine                |
| Construction     | Power Generation      |

**Types of Users**

- |                        |                     |
|------------------------|---------------------|
| Facilities Maintenance | Design Engineers    |
| Security Personnel     | Production Managers |

### EMERGENCY DE-ICING

*A safe, easy, and effective way to thaw or de-ice objects to reduce downtime*

#### Application

The cold weather can wreak havoc on exposed valves, pumps, pipes, bearings, filter housing, and other industrial objects. When these parts freeze, they typically become unusable, and in extreme conditions damaged. The freezing and damage causes extended and unwanted downtime and in some cases, costly repairs. Production teams cannot afford to allow the weather to restrict their productivity, and need a solution to remedy these problems quickly and safely.

#### Solutions

BriskHeat's HSTAT silicone rubber heating tape is the perfect tool for providing temporary heat to quickly get frozen systems back up and running and reduce downtime. When confronted with a stuck or frozen system, wrap the HSTAT heating tape around the frozen part, set the temperature, and allow the heat to quickly thaw/unfreeze the part. The easy-to-use portable heat tape provides instant localized heat to quickly de-ice parts efficiently and safely. When finished, the HSTAT heating tape is easily rolled up and kept in a toolbox or cabinet, ready for use again when needed.

HSTAT heating tapes are available in a variety of lengths and have a thin design for maximum versatility, and extreme flexibility. They can be fit around nearly any shape or size component. A built-in adjustable controller regulates the temperature which can provide intense heat of up to 450°F (232°C). HSTAT heating tapes offer true performance and reliability in even the coldest conditions down to -60°F (-51°C). The easy to use plug-and-play design requires no need for special wiring. They feature BriskHeat's patented, multi-stranded heating element for ultimate flexibility and reliability.

#### Additional Uses

HSTAT heating tapes have many additional uses. These include process control needs where a unique process requires heat, or for viscosity related needs where heat is used to reduce viscosity and increase flow, and more. They are used as a temporary heat source when needed or as a permanent installation. HSTAT heating tapes are used to heat all types of objects that require elevated temperatures.



#### Industries

Adhesives	Composites	Heavy Industry	Power Generation
Aviation/Aerospace	Concrete/Asphalt	Marine	Pulp & Paper
Agriculture	Construction	Mining	Transportation
Biodiesel	Food Processing	Oil & Gas	Waste/Water Treatment
Chemical	General Manufacturing	Petrochemical	

#### Types of Users

Facilities Maintenance Personnel	Process Engineers Production Managers
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## FREEZE PROTECTION AND WARMING BULK MATERIALS IN ATEX HAZLOC ENVIRONMENTS

*A safe and effective way to warm and protect bulk materials in hazardous areas*

### Application

Various liquids, gasses, and even solids are often stored in bulk containers. Common containers include drums, IBC tanks, and gas bottles. In order to effectively protect the contents from cold, reduce viscosity, or increase efficiency for easy dispensing, the contents must be kept warm. If the temperatures of the contents fall below desired levels, the contents could be ruined or unable to dispense at all. Many of these containers are in hazardous areas where ATEX certification is a requirement for the type of heaters permitted for use.

### Solution

BriskHeat offers ATEX certified heaters for drums, IBC tanks, and gas bottles. They are rated for zones 1/2 (gas) and 21/22 (dust) and are IP65/I for indoor and outdoor use. They fit most standard size units and certified for T6, T5, T4, and T3 operating temperatures. Common applications include viscosity control, freeze protection, temperature maintenance, heat-up, melting, and efficiency.

BriskHeat offers an ATEX certified temperature controller with built-in high temperature limiter that can be used with all BriskHeat ATEX container heaters. It also has an energy output limiter for slower heat-up rates on low resistance elements. It features easy programming, dual digital displays with clear window for easy temperature monitoring, a DIN rail terminal block for easy and reliable electrical connections, a 25 A high operating capacity, and a temperature range up to 450°C.



Industries	
Aviation/Aerospace	Specialty Gasses
Biodiesel	Oil & Gas
Concrete/Asphalt	Petrochemical/Chemical
General Manufacturing	Processing
Mining	Power Generation
Adhesives	Water/Wastewater

Types of Users	
Facilities Maintenance	Production Managers
Process Engineers	



## FREEZE PROTECTION FOR CONTROL PANELS

*An easy and effective way to protect electrical components within control panels*

### Application

Electronic components inside control panels and monitoring devices need protected from cold temperatures. Control panels are often located outdoors and if exposed to sub freezing temperatures, components could fail to operate properly and potentially become permanently damaged.

### Solution

BriskHeat TSREH enclosure heaters keep the control panel's interior warm. TSREH heaters are silicone heaters pre-adhered to a steel plate. Easily mount the heater inside the panel using screws or bolts through the pre-drilled holes on the steel flange and make electrical connections. The plate-mounting ensures that the heater is installed where it is needed most and held securely in place. The steel plate also helps radiate the heat for maximum effectiveness. A built-in ambient sensing thermostat automatically senses air temperature and switches the heater on and off to provide easy worry-free operation. TSREH enclosure heaters have a small profile of only 2.5 in (64 mm) minimizing required space within the panel.

For larger panels or those in hazardous areas, SRL or SRX silicone blankets can be used.

### Additional Uses

Enclosure heaters are also used in a variety of outdoor cabinets and enclosures to protect cold-sensitive components. Examples include mechanical control panels, gate operation, parking garages, outdoor electrical panels, and more.



Industries	
Agriculture	Oil & Gas
General Manufacturing	Petrochemical/Chemical Processing
Control Panel Manufacturing	Power Generation
Food Processing	Pulp & Paper
Mining	Waste/Water Treatment

Types of Users	
Process Engineers	Maintenance Managers
Production Managers	Facilities Maintenance

## FREEZE PROTECTION FOR NATURAL GAS PRODUCTION WELLS

*A safe way to reduce freeze-offs by protecting systems from freezing conditions*

### Application

Natural gas fracking is a drilling process that injects millions of gallons of fracking fluid (a mixture of water, sand, and chemicals) deep into horizontal wells at high pressure to break-up shale and rock to release natural gas. In 2017 the U.S. produced over 30 trillion cubic feet of natural gas. Once the fracking process is completed, the internal pressure of the rock formation causes the fluid to return to the surface through the well. This fluid is known as “flowback” or “produced water” and contains fracking fluid plus other naturally occurring brines, metals, radionuclides, and hydrocarbons. The produced water must then be transported through a “dump line” to on-site storage in tanks or pits before being processed for treatment, disposal, or recycling. Dump lines along with related components like fresh water lines, slug-catcher separators, and blow-down pressure-release valves must often be protected from freezing conditions to avoid freeze-offs and loss of production.

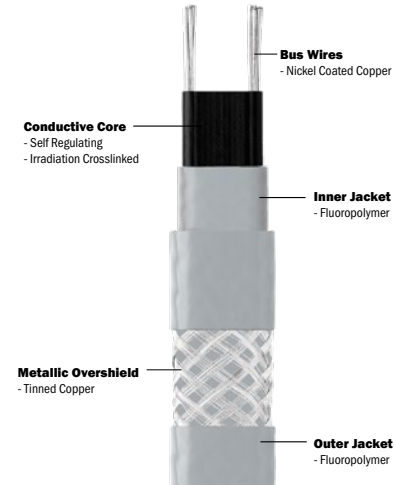
Freeze-offs occur when production is halted at the well because water and other liquids contained within the natural gas mixture freeze. At the peak of 2017/2018 cold season, freeze-offs reduced production by as much 7%, or 4.9 billion cubic feet in a single day. Due to the explosion risk of natural gas, well-pad locations are often classified as Class I, Division 1 hazardous area locations. Special considerations and precautions must be taken to ensure a safe heating source is used to prevent freeze-offs.



### Solution

BriskHeat’s SLCAB self-regulating heating cable is a safe and efficient heat source used to prevent freezing conditions on and around natural gas well pads. FM and CSA agency approvals for Class I, Division 1 locations ensure SLCAB heating cable is safe for use in the industry’s stringent explosion-proof environments. The unique construction of the heating cable self-regulates its heat output to provide an energy-efficient heater that delivers heat only when and where it is needed. By heat-tracing critical systems, the occurrence of freeze-offs is greatly reduced, ensuring a reliable supply of natural gas through the production process. SLCAB self-regulating heating cable can safely be spiral wrapped, loosely fit, or even crossed over itself without risk of failure or overheating, making it an easy-to-install and safe-to-use heater. Because of the rugged environment, an extremely durable fluoropolymer cover protects the heating cable for long life and reliable performance.

Insulation is required to maximize thermal efficiency and performance. BriskHeat’s Silver-Series cloth insulators are a configurable system of insulators that feature durable high-temperature cloth with fiberglass insulation and a hook & loop closures for easy installation and removal. Additionally, they are suitable for outdoor use, and can be custom made to fit tanks and large vessels.



### Industries

Fracking and Drilling	Oil & Gas
Gas Exploration	Power Generation

### Types of Users

Drilling Managers	Automation Foremen
Fracking Technicians	Automation Technicians



### FREEZE PROTECTION FOR PIPES

*A simple and easy way to protect pipe systems from freezing*

#### Application

Pipe systems designed to transport water or other liquids are often exposed to cold weather. They may be directly exposed to outdoor conditions, or may be in an unheated area of a building. If the ambient conditions are cold enough, the contents of the pipes may thicken and resist flow (viscosity) or even worse they may freeze and expand causing pipes to burst. The damage, repair cost, and downtime can be extensive and costly.

#### Solutions

Self-Regulating heating cable is the perfect solution to protect pipes from freezing. The cable is semi-flexible and can be straight-traced or spiral-wrapped around pipe for long runs or long lengths on a single circuit. Self-regulating cable is specifically designed for freeze protection because the temperature never rises to a level that would damage pipes or a heated system. It will automatically adjust its heat output based upon ambient conditions and never exceed a specific rated temperature, most commonly 150°F (65°C). Higher temperature self-regulating heating cable can reach 250°F (120°C). Self-regulating cable is grounded for safe worry-free operation. A protective outer shell resists moisture and chemicals for worry-free use in outdoor and wash-down environments.

Another solution is BriskHeat's RKP silicone tapes with built-in thermostats. They are super flexible, plug-and-play, and suitable for outdoor use.

To improve thermal efficiency, the cable is insulated with BriskHeat's Insul-Lock®DS flexible closed-cell foam pipe insulation. The insulation is offered in a variety of diameters to fit any pipe and tube size up to 4 in (100 mm). It is suitable for outdoor use and has an R-value of 3.0 to keep the heat on the pipe even in extreme cold conditions. Insul-Lock®DS is easy to install and the peel-and-stick flap ensures the insulation remains installed for extended service periods.

#### Additional Uses

Self-regulating heating cable is used to protect large tanks, vessels, and even small household pipes from freezing conditions. Pre-terminated SpeedTrace self-regulating heating cable is available for fast, easy, and convenient plug-and-play installations. Available in up to 150 ft (45.7 m) lengths.



Industries	
Adhesives	HVAC
Aerospace	Oil & Gas
Agriculture	Petrochemical/Chemical
Biodiesel	Processing
Concrete/Asphalt	Power Generation
Food Processing	Pulp & Paper
General Manufacturing	Waste Water Treatment
Heavy Industry	
Home & Office	

Types of Users	
Facilities Maintenance Personnel	Process Engineers
	Production Managers

**FREEZE PROTECTION FOR PIPES, RESIDENTIAL AND COMMERCIAL USE**

*A simple and easy way to protect your property from damage caused by frozen pipes during the cold season*

**Application**

Water pipes are often exposed to cold weather which presents a special set of hazards. If the conditions are cold enough, water in pipes can freeze and expand causing pipes to burst. Unfortunately this commonly results in extensive damage and repair costs in addition to being without a usable water source. Frozen pipes can occur inside homes where water spigots are used and is especially common in outside wells or where water is supplied for irrigation systems and farming. These pipes may be directly exposed to outdoor conditions or in an unheated space with little to no insulation like a crawl space.

**Solution**

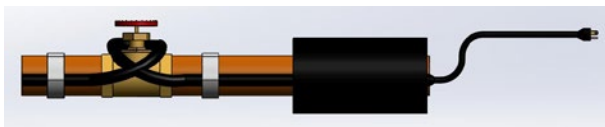
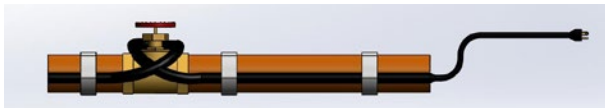
SpeedTrace self-regulating heating cable is the perfect solution to protect pipes from freezing. It's plug-and-play design comes pre-assembled with a grounded 3-prong plug for easy installation. The cable is flexible enough to fit around pipes and valves and approved for indoor/outdoor use. Self-regulating cable is specifically designed for freeze protection because it automatically adjusts the heat output based upon air conditions and never exceeds 150°F (65°C). It is completely safe for use with all types of pipe, tube, and filtration systems and available in several lengths up to 150ft (45.7m).

For added protection, insulate pipes with BriskHeat's Insul-Lock®DS foam pipe insulation. The insulation has an R-value of 3 to lock in heat and prevent it from being lost into the air, even in extreme cold conditions. Insul-LockDS easily installs around the pipe and heating cable while the peel-and-stick strip and flap ensure the insulation remains closed and sealed.

For added efficiency, install a ThermoCube® outlet that senses air temperature and automatically turns power on and off when needed. It turns power on when air temperature drops below 35°F (2°C) and off when air temperature exceeds 45°F (7°C). ThermoCube plugs directly into a standard outlet and is capable of operating any 120V electric heater up to 15A. It saves money by using electricity only when the temperatures require the heater to be on.

**Additional Uses**

Self-regulating heating cable is also used to protect large tanks, and vessels from freezing conditions.



**Industries**

- |              |                       |
|--------------|-----------------------|
| Agriculture  | Remodeling/Renovation |
| Commercial   | Residential           |
| Construction | Retail                |
| HVAC         |                       |

**Types of Users**

- |             |                      |
|-------------|----------------------|
| Homeowners  | Facility Managers    |
| Contractors | Maintenance Managers |

### FREEZE PROTECTION FOR TANKS AND VESSELS

*A simple and efficient way to ensure the contents of tanks don't freeze in cold weather*

#### Application

Tanks and vessels are often exposed to cold weather. Some are kept outdoors and exposed to the elements, while others may be indoors but in an unheated area of a building. If the conditions are cold enough, the contents of the tanks may freeze, solidify, or become too thick to flow properly causing production stoppages or even damage equipment. Additionally, some liquids may suffer irreversible physical changes which could cause them to become useless or ruined. Downtime and replacement costs can be extremely costly.

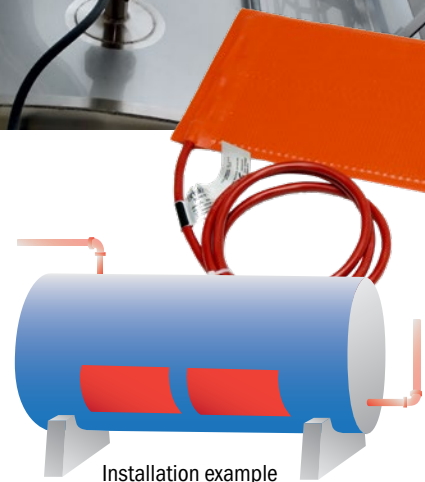
#### Solutions

SRL/SRP and SRW silicone heating blankets are the ideal solution to protect most tank contents from freezing. Once the appropriate required wattage is determined, several heating blankets can be symmetrically placed around a tank. The heaters are easily attached and held in place using built-in pressure sensitive adhesive. They are flexible to ensure good fit around curved surfaces, grounded for safety, and made with extra-thick water resistant silicone rubber for extreme durability and long life. SRL/SRP are preferable in more rugged environments.

To increase efficiency and lower cost, a single BriskHeat TD101N temperature controller can be used to control the temperature of many heaters simultaneously. The TD101N is a pre-set automatic on/off thermostat temperature controller that turns the system on in cold conditions and off when it's warm. For freeze protection applications, the controller can be installed to monitor ambient temperature and only turn on when the temperature drops below the pre-determined set point. For process control applications requiring an elevated temperature above ambient conditions, the controller can be installed to monitor tank temperature keeping its contents heated above a pre-determined set-point.

#### Optional Accessories

Optional Insul-EZ™ foam sheet insulation provides increased thermal efficiency by reducing the amount of heat lost into the air. The insulation is easily cut to size and installs easily over SRL/SRP and SRW heating blankets using a peel-and-stick adhesive backing. The foam material is a closed-cell foam that repels most liquids and resists mold and mildew growth. An abrasion resistant outer layer provides excellent mechanical and environmental protection.



#### Industries

Adhesives	Concrete/Asphalt	Petrochemical
Aerospace	Food Processing	Pulp & Paper
Agriculture	General Manufacturing	Transportation
Biodiesel	Mining	Water/Wastewater
Chemical	Oil & Gas	

#### Types of Users

Facilities Maintenance Personnel	Process Engineers
	Production Managers

## FREEZE PROTECTION AND VISCOSITY CONTROL FOR TANKS AND VESSELS IN HAZARDOUS ENVIRONMENTS

*A cost-effective and simple way to reduce viscosity and protect against cold weather in hazardous-area locations*

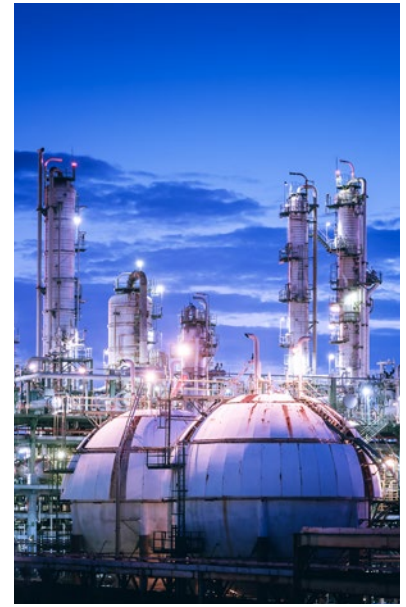
### Application

Petrochemicals are chemical products derived from petroleum sources. Some of these chemicals are obtained from resources such as coal, natural gas, corn, or even sugar cane. The two most common petrochemical classes are olefins and aromatics and they are the building-blocks used to manufacture a wide range of everyday materials such as solvents, detergents, adhesives, plastics, resins, fibers, elastomers, lubricants, and gels. Throughout petrochemical processing plants, there are many chemicals and gasses kept in storage tanks. Unfortunately, petroleum-based chemicals can thicken or freeze and are difficult to work with at lower temperatures, which could lead to clogging or starving production areas. To complicate matters, these chemicals are often processed and stored in hazardous-area locations and therefore require hazardous-area-rated heating products.

### Solution

BriskHeat SRX hazardous-area silicone blankets are rated for Class 1 Divisions 2 Groups A, B, C and D locations, and can prevent viscosity or freezing problems caused by cold weather for chemicals stored in tanks and vessels. They can be symmetrically attached to the outside of tanks using the built-in PSA (pressure-sensitive adhesive). SRX blankets are constructed with extra layers of silicone, high-limit thermostats, and conduit fittings at lead exit points for added safety. Additionally, they have an ingress protection rating of IP54 so they are suitable for outdoor use. A hazardous-area-rated temperature controller is required for use with SRX heating blankets and BriskHeat offers temperature controller options depending on the specific requirements of the applications.

Insulation is always recommended to maximize heat and energy efficiency. BriskHeat's Silver-Series removable cloth insulators provide the perfect combination of easy installation and thermal efficiency. They are quickly installed and easily removed for convenient maintenance access. They are constructed of a durable and moisture resistant polymer-coated cloth to suit a wide variety of applications. The Silver-Series insulators are available in a variety of sizes and configurations for tanks and vessels and may even include built-in magnets for easy installation.



### Additional Uses

SRX hazardous-area silicone heating blankets are often commonly used as enclosure heaters for control panels located in hazardous areas.

#### Industries

Aviation/Aerospace	Petrochemical/Chemical Processing
Biodiesel	Water/Wastewater
Mining	
Oil & Gas	

#### Types of Users

Facilities Maintenance	Plant Managers
Production Managers	Process Engineers

### FREEZE PROTECTION IN CLASS I, DIVISION 1 INDUSTRIAL ENVIRONMENTS

*Safe and reliable freeze-protection in CID1 hazardous environments*

#### Application

Hazardous environments that produce potentially explosive conditions can be found in many industries. Class I, Division 1 locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. This means that ignitable concentrations of flammable gases, vapors, liquids, or even dust can exist under normal operating conditions. Examples of industries with these environments include Oil & Gas Exploration and Refining, Chemical, Mining, Coal Processing, and many more. Flammable gasses, vapors, dust, etc. are often byproducts of production processes and in some cases, can be collected and used as fuel sources or solvents. An example of this is the oil & gas refining process, which can produce ethane, butane, methane, pentane, and propane.

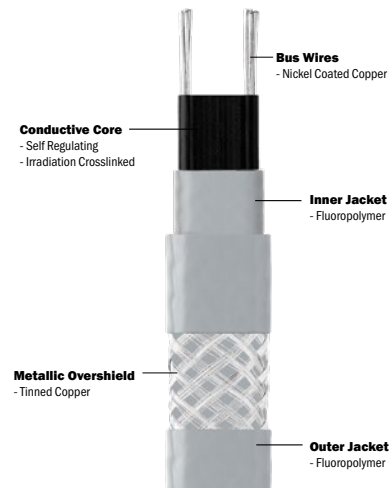
Liquids and gasses at these locations are stored in tanks or transported through pipes, and the pipes and tanks often need freeze-protection. Because of the high possibility that a spark or high temperature could result in an explosion, products used as protection from the cold must carry Class I, Division 1 approvals from accredited third-party service companies such as Factory Mutual (FM) or Canadian Standards Association (CSA). If these liquids and gasses are not properly protected from possible sources of ignition, the risk of a catastrophic event, lengthy downtime, and injury are greatly enhanced.

#### Solution

BriskHeat's SLCAB self-regulating cable provides safe freeze-protection for pipes and vessels and is approved by both FM and CSA for Class I, Division 1 explosive-condition environments. The self-regulating design of this heating cable is specifically designed to regulate heat output for efficient freeze protection needs. The cable simply needs to run along the length of the pipes or get wrapped around vessels to provide the required warmth needed to prevent freezing conditions. The heating cable is easy to install and can be spiral wrapped, loosely fit, or even crossed over itself without risk of failure or overheating. Exact installation configurations are determined by required wattage, and accessory kits for power connection, splicing, tees, and end-seals are available.

BriskHeat also offers the TB110 Series of Hazardous Area Temperature controllers. This can be used to set a specific process temperature.

To complete the system, BriskHeat also offers several insulation options to improve thermal efficiency. BriskHeat's Silver Series Cloth Insulators are a configurable system of insulators that feature a durable high-temperature polymer coated cloth, fiberglass insulation, and hook & loop closure. The hook & loop closure provides easy installation and easy removal for quick access for routine/preventative maintenance. BriskHeat's Insul-lock®DS and Insul-EZ insulators are preformed elastomeric foam systems that can be installed on most pipe and vessel systems.



#### Industries

Hydrocarbon Refining	Manufacturing
Chemical Manufacturing	Perfumes and Flavoring Production
Petrochemical	Oil & Gas
Coal Processing	Water/Wastewater
Mining	

#### Types of Users

Drilling Managers	Automation Foremen
Fracking Technicians	Automation Technicians

**FREEZER DOOR DE-ICING**

*A simple way to prevent freezer door ice formation*

**Application**

Walk-in and drive-in freezer doors are exposed to severe temperature differences from inside and outside of the freezer. When these doors are opened and closed often, condensation can form on the sliding channel and freeze. The ice can build up and interfere with the motion of the door, hindering the door from opening or closing properly.

Freezer door icing has the potential to occur with all types of freezer doors including sliding doors, bi-parting doors, overhead doors, vertical lift doors, and more.

**Solution**

To prevent ice formation, install SLCBL self-regulating heating cable on the door frame behind the door track. Self-Regulating heating cable is the perfect solution to protect freezer door tracks from freezing. The cable is semi-flexible and is specifically designed for freeze protection. It will automatically adjust its heat output based upon ambient conditions and never exceed a specific rated temperature, most commonly 149°F (65°C). Self-regulating cable is grounded for safe worry free operation and a protective outer cover resists moisture and most chemicals for worry free use.

If your application requires maintaining a specific temperature, a controller can be added to the installation. The TSO is an economical option for indoor use. Outdoor installations may use a BH-510, TB250 or TD4X.

**Additional Uses**

Self-regulating heating cable can be used on most sliding doors exposed to extreme cold including external vehicle entrances for parking garages, loading docks, maintenance facilities, hotels, commercial buildings, etc.



TC4X

Industries	
Food Manufacturing	Storage/Warehouses
Food Processing	Commercial Food
Restaurant/Food Service	Supply Warehouse
Grocery	Cold Storage
Hospital/Research	Equipment Supply

Types of Users	
Design Engineer	Production Manager
Maintenance Manager	

### LOCALIZED HEAT FOR AGRICULTURAL APPLICATIONS

*Increase crop production and variety with heat tape use*

#### Application

Growers of a variety of crops are always looking for ways to increase the yield of their fields. Factors such as growing season and temperature range can limit the variety of crops that can be grown in specific areas as well as how productive certain crops will be. This is especially true with grapes used for making wine. A late thaw or an early frost can make the difference in the quality and quantity of grapes grown in a region. A temporary rise in temperature followed by temperatures below freezing can result in no harvest at all. Even a few degrees of temperature change can impact the quality of the end-product.

#### Solution

After suffering catastrophic crop damage in 2014 and 2015, one vineyard owner in the Finger Lakes region of New York knew he needed a solution to remain in business. Traditionally, there are two ways to protect grape vines from damage during harsh winter temperatures. "Hilling-up" is a labor-intensive method of mounding-up dirt to protect vines, but also requires hills to be removed at the appropriate time. Failure to do so results in poor production. Another solution is use of a fan system to circulate air throughout the vineyard to keep the fruit warm; however, the equipment is expensive and prohibitive for smaller vineyards. The owner theorized that adding localized heat could prevent damage caused by dipping temperatures. Additionally, by maintaining temperatures of the grapes, he could increase the length of the growing season. This would preserve the quantity and quality of the fruit, and could increase the number of varieties planted.

BriskHeat Self-Regulating Heating Cable was wrapped around the wires used to support the grape vines. Self-regulating cable, often called heat trace cable, automatically adjusts heat output based on surface temperature. It is ideal for freeze protection and low temperature process maintenance. Cable with a weather-protective thermoplastic polyolefin outer jacket was used because the cable is outdoors in a wet environment. For simple freeze protection, a temperature controller is not required; however, to ensure the cable starts and stops heating within a specified temperature range, TC4X outdoor-rated digital temperature controllers with sensor were installed with the cable. The sensors were secured on wire, and based on the temperature sensed, the controller determined when power was applied and removed from the heating cable. Finally, Insul-Lock DS Flexible Closed Cell Pipe Insulation was applied over the wires, vines and heating cable to prevent heat loss. This system was designed to power-up as temperatures approach freezing and power-down after an 8 to 10°F (-13 to -12°C) temperature rise. Early results from the first winter after installation showed a measureable decrease in damaged buds as compared to vines that were not heated.

#### Additional Applications:

Self-regulating heating cable can be used in other agricultural applications. Warming the soil early in the growing season can help seeds germinate faster. This can protect seeds against spring frosts in addition to increasing growth rates. Constructing hotbeds using heating cable and temperature controllers can be more economical for smaller plantings than construction of larger greenhouses. Cable can also be used to prevent freezing of water pipes used for irrigation or in barns for livestock.



#### Products:

- Self-regulating cable
- TC4X temperature controller
- Insul-Lock DS pipe insulation

#### Industries

- Agriculture
- Food Processing

**PROTECTING MECHANICAL DEVICES FROM THE INCLEMENT WEATHER**

*Eliminate performance issues resulting from wintry conditions*

**Application:**

Manufacturers often need to run piping outdoors to save space, or move materials to another building or manufacturing area. Mechanical devices are used to control the flow of fluids and gases through the piping system. Exhaust fumes may exit the building on the roof and be routed to scrubbers for cleaning before releasing into the air. Examples of common mechanical devices are pumps, valves, actuators, regulators, heat exchangers and flow measuring components. Performance of all these mechanical components can be adversely affected by cold temperature, ice and snow. Failures can occur when lubricating oils cease to be effective or ice prevents actuators from moving freely. Not only can these failures stop a process, but devices may be damaged beyond repair. Once a failure occurs, the entire system may shut down, causing costly delays, difficult or dangerous repairs, and lost revenue.



**Solution:**

**BriskHeat's Wet-Area Custom Cloth Heating Jackets** will protect the devices to ensure the cold temperatures do not cause system failures. They form a pocket of warm air around the valves and actuators and are easily installed and held in place using built-in hook & loop, boot hook and lace, or any other preferred attachment/closure method. The heaters are extremely versatile with customization of lengths, widths, and diameter. The absence of a form-fitting requirement adds to their affordability. They are plug-and-play with built-in insulation, controlling thermostats and power cords and plugs. Additionally, standard features include high-limit thermostats and a 360° grounded heating element for added safety.



**Additional Uses:**

**Wet-Area Custom Cloth Heating Jackets** can also be used on tanks, drums, cylinders, vessels, conveyers, hoppers, pipes, pumps, gauges, meters, analytical equipment, and much more.

These heaters are also popular in washdown locations or anywhere moisture is present.

**Types of Users**

Facilities Maintenance	Process Engineers
Production Managers	Plant Managers

**Industries**

Construction	Oil & Gas
Gas Handling	Petrochemical/Chemical
General Manufacturing	Processing



## PVC PIPES – TEMPORARY TEMPERATURE MAINTENANCE OR EMERGENCY DE-ICING

*An easy and effective way to warm, de-ice, or thaw PVC pipes*

### Application

Polyvinyl Chloride pipes, commonly referred to as PVC pipes, are very common in industrial and manufacturing environments. Approximately 2/3 of liquid distribution in the United States is through PVC pipes and fittings. As with other types of piping systems, PVC pipes can be affected by cold environments, causing them to crack or burst. Additionally, frigid temperatures can slow liquids' flow. Both can lead to extended downtime and require costly repairs. Manufacturers often need to temporarily warm or de-ice PVC pipes to ensure continued productivity but must be sure to keep intermittent exposure temperature below 190°F (88°C) to avoid softening or damaging PVC systems.

### Solution

BriskHeat's MSTAT mid-temperature silicone rubber heating tapes are the perfect solution to provide temporary heat to PVC piping systems to quickly get them back to max efficiency and reduce downtime. Simply wrap the heaters around the area that needs to be warmed, and set the temperature on the built-in controller for instant heat. After the problem is solved or heat is no longer needed, the tape can be removed and stored for future use.

MSTAT heating tapes are available in a variety of lengths and are ultra-thin for superior versatility and extreme flexibility. The built-in controlling thermostat has a maximum temperature of 160°F (71°C) to protect against higher temperatures that could damage PVC pipe. The plug-and-play design requires no additional tools for use, and BriskHeat's patented multi-stranded grounded heating element ensures safety and reliability for long service life.

### Additional Uses:

MSTAT heating tapes are extremely versatile. They can be used on all types of pipes, tanks, and other objects where heat is needed to deice, thaw, or to reduce viscosity and improve flow. Additionally, they can be used in various process control applications where moderate, mid-temperature, and consistent surface heat is needed.



### Industries

Aviation/Aerospace	Petrochemical/Chemical Processing
Agriculture	Plastic/Injection Molding
Biodiesel	Power Generation
Concrete/Asphalt	Pulp & Paper
Construction	Waste/Water Treatment
Food Processing	
Mining,	
Oil & Gas	

### Types of Users

Facilities	Process Engineers
Maintenance	Production
Personnel	Managers

## ROOF & GUTTER ICE DAM PREVENTION

*An efficient and safe way to prevent the formation of ice dams on roof and gutters*

### Application

During cold winter months ice dams form on the edge of rooftops and cause significant roof damage along with safety hazards from falling ice. Ice dams form when snow on a roof-top melts and then freezes when it reaches a cold spot (typically the eave or roof's edge). The ice dam then traps additional snow melt preventing it from properly draining to the gutters. The trapped water leaks through the roof causing costly structural damage. Additionally, falling ice from ice dams and icicles breaking free from the roof can cause serious injuries and damage to vehicles and property.



### Solutions

BriskHeat SpeedTrace roof & gutter de-icing cable is an easy to install industrial grade heating solution. These kits prevent ice formation on roofs and in gutters by providing an electrical heat source during freezing conditions. The self-regulating design of the heating cable automatically adjusts heat output as ambient temperature changes making this a reliable energy efficient system. Kits come complete with heating cable, roof clips, downspout hangers, and ties for installation. The heating cable is plug-in ready with a standard 3-prong grounded 120V plug for easy power connection to an outdoor rated outlet (230V models are bare wire for attaching local electrical code required plug).



For added efficiency, an optional Thermo-Cube outlet accessory senses ambient air temperatures and automatically turns the heater ON when air temperature drops below 35°F (2°C).

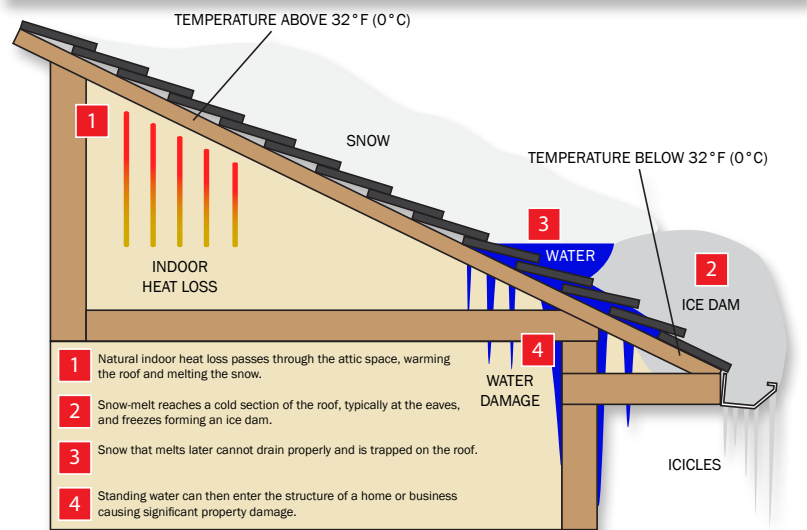


Industries	
Agriculture	Remodeling/Contractor
Commercial Mfg/Retail	Roofing
Residential Construction	Waste Water Treatment

Types of Users	
Facility Managers	Homeowners
Maintenance Managers	Contractors

Accessories
Thermo-Cube, ambient temperature sensing outlet

## What is an Ice Dam?



## STEAM TURBINE POWER GENERATION FREEZE PROTECTION

*Prevent instrumentation failures and frozen pipes during the cold season*

### Application

A steam turbine power generation plant must remain operational in the cold winter months because every day, thousands of customers depend on the electricity produced. Freezing conditions during the cold winter season can cause instrumentation to operate intermittently and eventually fail. One example of this can be found at an El Paso Electric Co. steam turbine power-generation plant where keeping systems operational during the cold season is a critical need. This can be challenging because often these types of systems include complex configurations of pipes, valves, pressure regulators, control valves, flow meters, etc. that are difficult to heat. Using traditional self-regulating heating cable is often very challenging to install due to the somewhat stiff and cumbersome nature of the semi-flexible heating cable. This coupled with the complex shapes of these systems and instrumentation devices, it can be very difficult to ensure an adequate amount of heat is transferred to the parts that need protected.



### Solution

BriskHeat's XtremeFLEX® RKP silicone heating tapes are the perfect solution for these challenging applications. The RKP tapes have an ultra-thin profile with a super-flexible 1/4 in (6 mm) bend radius. No additional temperature controller is required because a built-in pre-set thermostat continuously monitors and controls the temperature output of the heater. The complete unit is fully encapsulated in silicone rubber to provide an extremely flexible, durable, and moisture resistant heater. The unique flexibility provides exceptional surface contact for maximum heat transfer and effectiveness around objects that have complex curves, bends, and contours. The heater is also pre-terminated with a power cord and electrical plug to provide quick and easy power connection. RKP silicone heating tapes are a true plug-and-play heater that is both easy to install and easy to maintain. This design makes the RKP an extremely versatile heater for a wide variety of indoor/outdoor installations.



RKP

It is always recommended to insulate any heating device to provide a safe and energy efficiency system. BriskHeat offers Silver Series configurable and removable cloth insulators that are perfect for use with RKP heating tapes.

Note: Standard pre-set thermostat control options include a choice of 70°F (21°C) or 120°F (49°C). Standard lengths are available up to 200 ft (61 m). Standard watt density is 6 W/ft (17W/m). Custom configurations are available upon request.

#### Industries

Biodiesel	Mining	Pulp & Paper
Concrete/Asphalt	Oil & Gas	Transportation
General Manufacturing	Petrochemical	
Heavy Industry	Power Generation	

#### Types of Users

Facilities Maintenance Personnel	Production Managers
Process Engineers	

## WASTE WATER TREATMENT FREEZE PROTECTION

*Effective solutions to protect wastewater treatment facilities from cold weather*

### Application

Wastewater treatment facilities are extremely vulnerable to freezing conditions and other cold weather related problems due to the amount of exposed tanks, pipelines, mechanical moving parts, control boxes, etc. within the facility. Common problem areas include transfer lines, sludge lines, valves, floats, bar screening, stairs, platforms, and more. If these parts freeze, it can cause significant downtime, and in some cases damaged equipment. In many cases, these applications will require hazardous area approved products.

### Solution

For freeze protection on pipes, valves, tanks, and more, install BriskHeat SLCBL self-regulating heating cable. SLCBL heating cable is ideal for freeze protection applications because heat output is self-regulated by ambient conditions and only provides enough heat necessary to prevent freezing conditions. The cable is run along and around the areas that need heat to prevent freezing conditions. It can also be installed around doors, stairs, platforms, and moving parts as a convenient way to prevent ice from building-up. SLCBL self-regulating heating cable is approved for use in hazardous area locations.

For energy efficiency and a longer product life, use Insul-Lock® DS foam pipe insulation to wrap around pipes and heater assemblies where self-regulating cable is installed. The insulation helps to lock heat in where it is needed to ensure an efficient and reliable freeze protection system.

To prevent equipment from malfunctioning due to freezing electronics, the BriskHeat® TSREH enclosure heaters are installed inside the control panel. They are silicone heaters with a built-in on/off controller and mounted onto an aluminum plate. The heater radiates the necessary amount of heat within the control box to prevent freezing conditions from occurring. The aluminum mounting plate has holes pre-drilled onto the flange for easy installation. Additionally, Insul-EZ peel and stick insulation can be installed around the control box to decrease heat-loss and further protect electronics and keep systems operating.

MPC2 Multipoint Control Panels can be used with multiple heating cables, tapes and blankets to maintain specific temperatures in different locations.

### Additional Uses

BriskHeat's SLCBL self-regulating heating cable can be used to prevent freezing conditions on almost any pipe, tank, vessel, door frame applications and more.



#### Industry

Waste Water Treatment

#### Types of Users

Design Engineer  
Plant Manager

Maintenance Manager



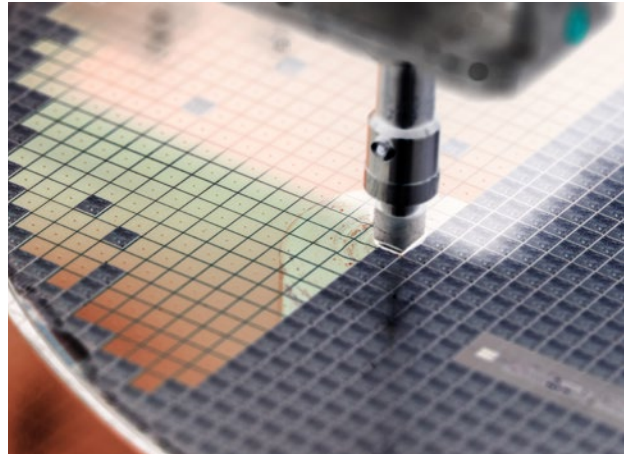
# **CONDENSATION PREVENTION**

## DEPOSITION AND ETCH PROCESSES

*A simple and effective way to prevent condensation during deposition and etch processes*

### Application

Manufacturers of semiconductors, flat panel displays, LEDs, and photovoltaics utilize several manufacturing processes that involve gas delivery and removal. Typical gas-transportation processes that need to be heated are either an etch process (removing material) or a deposition process (adding material or precursors). In Chemical Vapor Deposition Process (CVD), gases or vapor-phase precursors will condense and build-up on the sides of the transportation system if not properly heated, typically between 212°F to 392°F (100°C to 200°C) depending on the process and gas being used. A specific type of CVD called Atomic Layer Deposition (ALD) use precursors with higher solid content that may require heating to temperatures as high as 572°F (300°C) to remain as vapors for flow measurement and delivery. Accurate temperature control is required throughout process chambers or vessels to ensure appropriate amounts of vapor at required pressures for delivery and processing. Failure to retain required temperatures will result in condensation based on each precursors phase curve. After they are used for production, they travel from the process chamber to a vacuum pump via a foreline, then through an exhaust line to an abatement system where they are burned off or collected into water. If the gases are not heated and appropriate temperatures maintained during their delivery and processing, deposition rates and therefore product quality can be adversely impacted. Condensation during any part of etch and deposition processes result in costly production downtime and high maintenance costs.



### Solution

Heat the delivery, exhaust and foreline piping systems with BriskHeat Cloth Heating Jackets. BriskHeat's cloth heating jackets provide precise and uniform heat for all components in the system including the lines, valves, flanges, and unistruts. By heating all the components, hot spots and cold spots are reduced which drastically increases time between preventative maintenance cycles. These heaters are all connected as a system and each heater is individually controlled with a LYNX™ modular PID temperature controller to maximize efficiency and performance. Cloth heating jackets have built-in insulation for optimal energy efficiency. In addition, they are easy-to-install and remove, are suitable for clean room environments, meet SEMI S2 safe to the touch safety standards, and do not contain silicone which eliminates the risk of unwanted silicone outgassing.

is BriskHeat's most advanced modular temperature controller system that provides individual PID temperature controller for each heater in the system. Each heating jacket has a built-in highly accurate platinum 100ohm RTD or thermocouple sensor and is connected to a module that is local to the jacket. A touchscreen interface is provided to display real-time performance of every heating jacket (up to 1,024 zones) and offers data logging capabilities. Users will know each heater's performance status, either through the large full-color touchscreen, the highly visible status heater-indicator lights, remote monitoring, or email alerts.

#### Industries

Semiconductor	Photovoltaic/Solar
Flat Panel Display TFT-LCD, IGZO, LTPS, AMOLED, OLED	Tool Manufacturing
LED (MO based)	

#### Types of Users

Tool Manager in Fabs and Foundries  
Tool Designer/Engineer

### FOOD DRIP PAN CONDENSATION PREVENTION

An easy way to prevent condensation from forming on food preparation drip pans

#### Application

Food processing companies often use drip pans to collect liquid waste, such as grease or animal by-products, as part of their preparation process. In some instances, the liquid waste may be hotter than the surrounding air temperature, which leads to the formation of condensation on the exterior of the pan. Condensation drippings can lead to contamination, making the product unsafe for distribution.

#### Solution

Install BriskHeat's SRL flexible silicone heating blankets to the underside of drip pans to establish a constant temperature. When spread out evenly over the entire drip pan surface, the uniform heat provided eliminates temperature variations that lead to condensation. The heaters are easily installed using a built-in peel-and-stick adhesive backing and reinforced with high temperature aluminum adhesive tape for extended service periods. They have a thin profile of approximately  $\frac{3}{16}$  in (5 mm) to remain inconspicuous and save space. They are moisture resistant, chemical resistant, and flexible enough to conform to a variety of shapes making them ideal for use in the food service industry.

Easily program and monitor the heat output of the SRL silicone heaters with a TC4X temperature controller. These controllers are rated NEMA-4X and safe for wash-down environments.

#### Additional Uses

Any area where condensation forms due to temperature variations, air humidity, and more.



TC4X

#### Products

- SRL/SRP Silicone Heaters
- TC4X Temperature Controller
- Aluminum Adhesive Tape

#### Industries

- Food Processing
- Food Packaging

#### Types of Users

- Facilities Maintenance Personnel
- Process Engineers
- Production Managers

## FLY ASH HOPPER HEATING FOR POWER GENERATION

*An exceptional way to prevent condensation in fly ash hoppers*

### Application

Power plants that use waste-to-energy and coal-burning to generate electricity create a by-product called “fly ash”. Fly ash is a collection of fine particles that are produced from the combustion process. These fly ash particles are considered to be a hazardous waste, therefore they must be collected so that they are not able to escape into the atmosphere. A system of electrostatic precipitators and filtration systems with large metal hoppers extract the fly ash from the flue gas as it exits the system.

The temperature difference between the hot air inside the hopper and the cool air outside of the hopper causes condensation to form on the inside walls of the hopper. This allows the fly ash to stick to the walls and solidify into a concrete-like material. If not treated, the fly ash will eventually bridge the hopper walls and cause significant blockage that results in extended periods of downtime and expensive repairs.

### Solutions

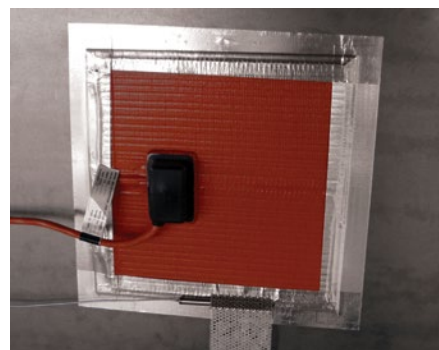
Silicone rubber hopper heaters create a temperature equilibrium that virtually eliminates the possibility of condensation from occurring. These heaters provide the best surface contact because they adhere to hopper walls and lay flat. They have an extremely low profile to avoid obstructions, are easy to install, extremely durable, and vibration resistant.

Metal clad heaters are available for higher temperature systems requiring up to 1000°F (538°C). Metal clad heaters meet all IEEE standards.

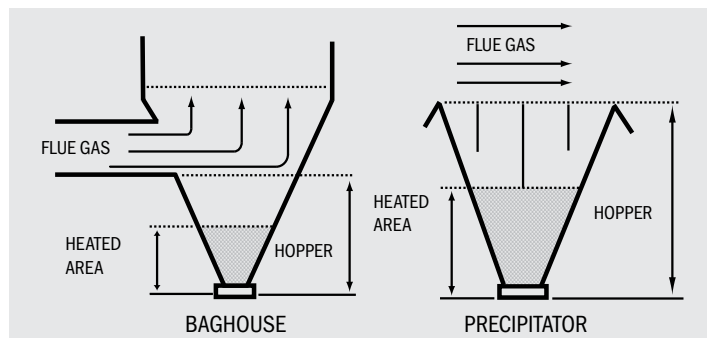
The TC4000 or MPC2 temperature controllers are two options for controlling these heaters.

### Additional Uses

Metal-clad and silicone rubber heaters can also be used on most any tank or vessel to prevent condensation or protect against freezing.



Types of Users	Industries
Design Engineer Facilities Maintenance Personnel Plant Manager	Power Generation Waste-to-Energy Power Generation



TC4000



### GAS DELIVERY SYSTEM HEATING

*A simple and effective way to prevent condensation*

#### Application

Elevate and/or maintain gas temperatures to ensure process gas is delivered at the proper temperature. Without proper temperature maintenance, condensation will form within gas lines. This condensation will eventually clog the gas line. The result is forced tool shut-downs and down-time due to maintenance. In addition, if processed gas is delivered to the process chamber either too hot or too cold, this can create further issues, leading to a shut-down or extended down-time.

#### Solutions

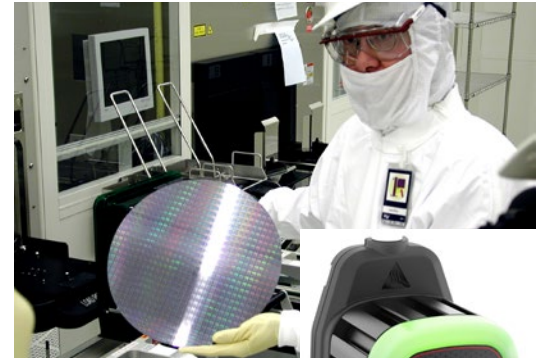
Custom cloth heaters provide the necessary heat for diameters as small as 1/4 inch (6 mm) while the **LYNX™** controller maintains the required temperature (and tolerance). The heaters are all connected and each heater is individually controlled to maximize efficiency and uniformity. All heaters are made to the exact dimensions of the pipes and valves to ensure the consistent heat and long life of the heating system. The **LYNX™** System also includes a monitor that shows each heater's temperature to ensure tolerances are met and downtime is minimized.

#### Benefits

- Economically reduces condensation build-up and contamination
- Increased productivity
- Decreased maintenance
- Energy-savings
- Safe & cool to the touch (meets SEMI S2 standards)
- Long service life: BriskHeat's typical heating jacket life is 10+ years. No need for aftermarket parts

#### Typical Projects

- Small and unique geometries
- Abatement
- Valves
- Tanks, drums, cylinders, and vessels
- Laboratory and analytical equipment
- Vacuum bake-out
- Emission testing
- Fluid delivery systems
- Gas lines
- Exhaust lines
- Forelines



**LYNX™**

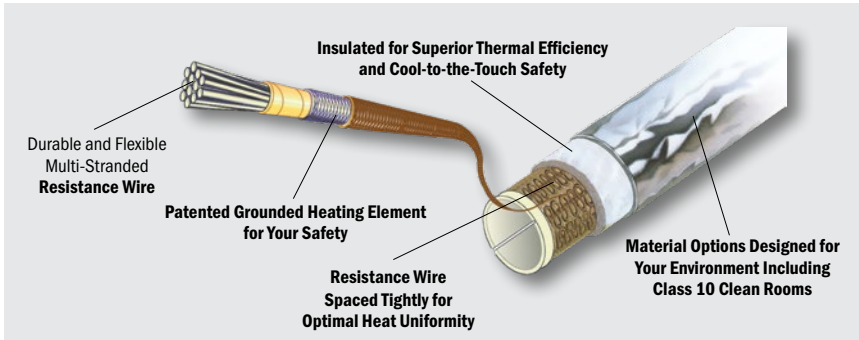


#### Industries

- Semiconductor
- Flat Panel Display
- Photovoltaic/Solar

#### Types of Users

- Tool Designers/Engineer
- Gas Panel Designers
- Tool Owners
- Fab Managers



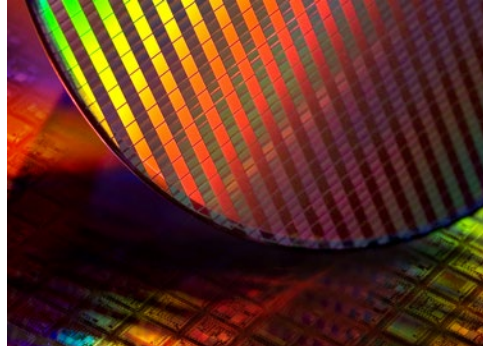
## GAS LINE HEATING FOR SOLAR CELL PRODUCTION

*A superior way to heat gas lines during solar cell manufacturing*

### Application

Photovoltaic solar cells are thin silicon disks that convert sunlight into electricity. These disks act as energy sources for a wide variety of uses including: solar power plants, satellites, telecommunications, rooftop panels for home and office, lighting, pumping, calculators and other small devices, and even for villages in developing countries.

Gases used in the production of solar cells must be transported through the manufacturing process via complex systems of tubes, pipes, valves, etc. These gasses must be kept at an elevated temperature to prevent condensation, which could lead to gas particulate build-up within the system resulting in clogs and unnecessary downtime.



### Solution

Install BriskHeat custom cloth heating jackets along with a LYNX™ PID module temperature controlling system on all parts requiring elevated temperatures. Custom cloth heating jackets provide the precise heat necessary and are manufactured with built-in insulation for ultimate reliability and efficiency. The heaters are made to the exact dimensions of the tubes, pipes, valves, etc. to ensure the most consistent heat and uniformity possible. The heaters are easily installed and removed for routine maintenance.

The LYNX™ temperature controlling system maintains the required temperature and tolerance needed for each jacket. All heating jackets are individually controlled and connected to form one system to maximize efficiency. The LYNX™ system includes an operator interface that shows each heater's temperature, set point, etc. to ensure tolerances are met and downtime is minimized.

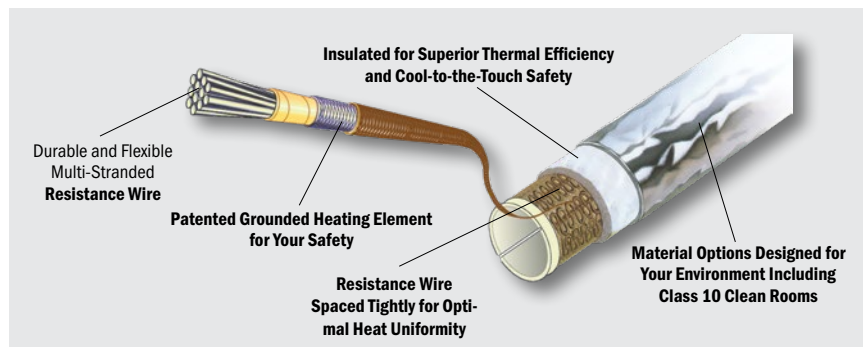
### Additional Uses

Custom cloth jacket systems are also used on gas delivery systems for Semiconductor, LED, and Flat Panel Display facilities.



Industries	
Solar Cell Chip Manufacturing	Power Generation Semiconductor

Types of Users	
Tool Designers	Tool Owners
Gas Panel Designers	Fab Managers



### GAS SAMPLE HEATING

*Etched Foil Heaters used in equipment for extracting and analyzing hot gas samples*

#### Application

Gas sampling is required by many industries to evaluate gaseous fuels, control process reactions or provide analysis of emissions to meet environmental requirements. The analysis of different gas mixtures is one of the most important challenges for measurement in industry. The results can assist in process improvement and product quality. It can also provide proof of adherence to government standards. Samples drawn from a reactive process may be hot, contain suspended particulate or condensable vapors. Gas temperatures impact the sample, so results of the analysis are usually stated with some accepted reference point. This can be at Standard Temperature and Pressure (STP), or at the elevated temperature. There may also be a reference to a component constituent contained in the gas such as oxygen. The amount of oxygen contained in a gas sample is extremely important as a requirement for or result of many processes. Prior to completing the analysis, it may be necessary to heat the sample. If the heating is not performed properly, the result will be a failed analyses causing lost time and money.

#### Solution

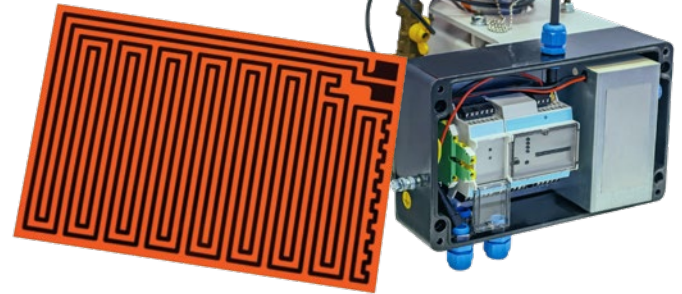
BriskHeat's etched foil heaters can provide the required heat to conduct accurate analyses. Extracting a gas sample through a probe is the first step to analysis. Oxygen displays different properties at elevated temperatures. Different types of probes may use oxygen's magnetic properties or the conductivity of voltages between electrodes for determining the amount of oxygen in the sample.

One manufacturer developing oxygen sensing equipment with a Zirconia Oxide fuel cell utilized BriskHeat's etched foil heaters as a means of maintaining sample temperature during extraction and preventing condensation in their analyzer. Accurate and repeatable results were obtained by using a tiny foil heater to maintain gas temperature. Samples are further heated above 315°C (600°F) in the analyzer. Production versions of their system include a BriskHeat foil heater as small as 1.2 inches x 1.5 inches (30 mm x 38 mm).

Another manufacturer is using BriskHeat Etched Foil heaters in their oxygen sensing probes utilizing paramagnetic technology. The probes maintain a consistent temperature of 55°C (131°F).

#### Other Gas Sampling Applications

Acid gas fuels require analysis to determine fuel-air ratios for efficient combustion. Condensation of the fuel can yield inaccurate analysis, clog or damage sensing lines. Hot/wet gas analysis requires the gas sample be maintained above the dew point



temperature. Heating probes and sensing lines prevent condensation of liquid and maintain particulates in suspension. Analyzers designed to work with hot/wet samples typically require temperatures of approximately 150°C (302°F). Etched foil heaters are perfect for analysis requiring heated gas.

Similar technology is used to test samples of flue and exhaust fumes. Heated gas extraction equipment is used in Continuous Emissions Monitoring Systems (CEMS) as required by the EPA and for analysis of automobile exhausts.

#### Industries

- General Manufacturing
- Laboratory, Medical Sciences
- Analytical Instrumentation
- Oil & Gas
- Petroleum/Chemical Processing
- Power Generation



# COMPOSITE CURING

### COMPOSITE CURING FOR AVIATION USE

State of the art technology to repair composite structures and surfaces in the aviation/aerospace industry

#### Application

Today's aviation & aerospace industry is utilizing the strength and weight benefits of composite materials more and more. Unfortunately, damage to these composites often occurs from weather conditions, rocks, bird strikes, military activity, and more. Special equipment and techniques are necessary to repair damage or even to make structural alterations and modifications.

Resins and epoxies within the composite material layers often require heat to fully cure. In addition to heat, the application often times requires vacuum pressure to be applied over the repair area to debulk and compact the repair patch per the aircraft manufacturer's recommended maintenance procedures.

#### Solution

The portable ACR®3 hot bonder and heating blankets provide a cost effective tool for repairing composite materials with precision and efficiency. The ACR3 hot bonder has a state-of-the-art touch screen user interface that allows for quick and easy ramp & soak programming. The ACR 3 records all pertinent temperature and vacuum pressure data for quality assurance and compliance.

The BriskHeat SR heating blankets are the most durable and flexible heating blankets on the market today. They provide extreme versatility with an impressive operating radius of 0.25 in (6 mm) while maintaining uniform curing temperatures up to 450°F (232°C). For high temperature needs, BriskHeat's cloth series heaters accommodate up to 1100°F (593°C).

#### Additional Uses

The ACR3 can be used to record up to 10 temperatures per zone with thermocouples provided even if the vacuum is not used. Use the USB port to download the data and import into Excel for your records.

#### Key Features & Benefits

- State-of-the-art touch screen with built-in vacuum system.
- Flexible, durable, and uniform temperature heating blankets designed and built to fit the application.
- Custom sized heaters and accessories for large surface area cures or complex 3D shapes.
- Standard and custom heaters, including Radome heaters for all the major aircraft models.

#### Examples of Applications

- Leading/Trailing Edge Wing Repair
- Radome Repair
- Composite Surface Repairs (Aircraft Fuselage, etc.)
- Reverse Thruster Repair
- Engine Cowling Repair/Rebuild
- Helicopter Blade Repair



#### Products

ACR 3 Hot Bonders      Composite Curing Heat Blankets

#### Industries

Airlines      Composite Repair Facilities  
 Aviation MRO      Technical/Vocational Schools  
 Aviation OEMs

#### Types of Users

Composite Repair Technicians      Engineers/Designers of Repair Techniques/Processes  
 Training Instructors      Production Personnel

## COMPOSITE CURING FOR MARINE USE

*An efficient and cost effective solution for marine/watercraft and high-end yacht builders*

### Application

The multi-million dollar yacht industry is utilizing composite materials to build monolithic-one piece hulls for their most demanding boat designs. The one-piece hull requires curing and post curing of resins while under vacuum. These structures cannot be easily put into an oven for curing due to their size and weight.

### Solution

The portable ACR®3 hot bonder and heating blankets provide a cost effective tool for curing and repairing composite materials with precision and efficiency. The ACR 3 is an all-in-one controller that provides vacuum while monitoring vacuum and heat output to ensure accurate, efficient, and quality cure cycles. The hot bonder is versatile enough to be used for manufacturing and repairing a wide variety of composite fiber structures.

The complete system consists of the ACR 3 hot bonder, custom-sized heating blankets, insulators, and a power booster box (for large cure applications). The ACR 3 provides a state-of-the-art system for accurate customizable ramp/soak programming. The highly flexible, yet durable silicone rubber composite curing blankets offer extreme versatility and adaptability with an impressive operating radius of 0.25 in (6mm) while maintaining uniform curing temperatures up to 450°F (232°C). For high temperature needs, BriskHeat’s cloth series heaters accommodate up to 1100°F (593°C). The power booster box increases voltage and amperage necessary up to 480 VAC 3-phase and 100 amps. Increased voltage and amperage is often required for large cure applications in marine manufacture/repair.

To make the process more efficient and improve performance, cloth insulators are placed on top of the heater to limit heat-loss and speed-up temperature ramp rates. This improves efficiency and curing performance by providing a higher quality cure in less time.

### Key Features and Benefits

- State-of-the-art, touch-screen-based hot bonders.
- Flexible, durable and uniform temperature heating blankets to fit the applications size.
- Power Booster Box that manages the high voltage and amperage required for large surface area cures.
- Re-usable insulating blankets for increased energy efficiency.



#### Products

ACR 3 Hot Bonder	Power Booster Box
SR Composite Curing	FGH and SXH Composite
Heat Blankets	Curing Blankets

#### Types of Users

Composite Repair	Repair/Process Design
Technicians	Engineers
Manufacturing Engineers	Production Personnel

#### Industries

Marine Manufacturing	Marine Repair
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### TOOL/MOLD HEATING AND HOT DEBULKING

*An efficient way to heat tool molds prior to working with pre-preg composite fiber reinforced materials*

#### Application

Tool molds are commonly used in the manufacturing industry to form and shape composite cloth materials into usable finished products. The composite cloth materials used (typically carbon fiber or fiberglass) are preferred because of their high strength and lightweight properties. Composite materials are a two-part system that consists of a cloth fiber material and an epoxy resin. The epoxy resin bonds the cloth layers together and through a curing process, forms a strong and lightweight product. The term “pre-preg” is used to identify cloth materials that are pre-pregated or pre-saturated with a resin. They are preferred over typical wet lay-ups because they provide less mess, less waste, faster cure time, better part uniformity, and better appearance. However, these pre-preg cloth materials can be challenging to fit into the sometimes complex shapes and contours of a mold. Preheating the mold to approximately 120°F (49°C) softens the pre-preg cloth material as it is hand laid into the mold. The heat makes the cloth more malleable and easier to work along the sometimes complex geometries of the mold.

#### Solution

Preheat the mold using a high-temperature BriskHeat fiberglass heating blanket. These heating blankets are a safer, more efficient, and less time consuming alternative to traditional heat lamps. BriskHeat fiberglass heating blankets can be custom designed to a specific size or shape and the built-in insulation of the heater provides minimal heat-loss for energy efficiency and a safe-to-touch surface. Additional benefits include reusability, exceptional heat uniformity up to 1100°F (593°C), and durability for long service life, making them a cost effective solution for preheating molds.

FGH Fiberglass heating blankets can be designed using a variety of temperature controlling options depending on the requirements of the applications. Options range from simple on/off temperature sensing to highly sophisticated ramp/soak programs. Some of these options include using a built-in preset thermostat, a variable temperature adjustable thermostat, a programmable digital PID controller, or even a BriskHeat ACR® Hot Bonder.

#### Hot Debulking

Hot debulking is a process where multiple layers of composite cloth and resin materials are assembled together into a layup and a vacuum is applied to remove unwanted air and voids within the layup. A variety of BriskHeat heater options can be used to elevate the temperature of the layup to approximately 120°F (49°C). Heat allows the materials to compress easier and limits the amount of voids in the layup to ensure a stronger, more reliable cure.



#### Industries

Aviation/Aerospace	Racing
Composite Curing	Sporting Goods
Manufacturing	U.S. Military
Pressure Vessels	

#### Types of Users

Engineers	Production Managers
Fabricators	Technicians

## VACUUM CURING/DEBULKING TABLES

Accelerating product research & design and composite part repair

### Customer Spotlight: Specialized Bicycle Components, USA



### Application

Specialized Bicycle Components (Morgan Hill, California) designs and manufactures innovative and customized bicycles, components, and apparel. Utilizing a series of individualized measurements, such as height, weight, flexibility, and riding style, along with a state-of-the-art R & D facility, Specialized Bike can evaluate a rider and recommend modifications to an existing bike or design a new customized bike. Whether a professional racer, weekend warrior, or a cycling enthusiast, a poorly-fit bike can lead to inefficient riding, muscle fatigue, or even injury.

Specialized Bike Components can ensure riders are quickly able get back on the road or gain every possible advantage to get across the line faster by having the ability to quickly manufacture engineered composite or replacement parts. In addition, product design requires the capability to bond and cure existing or new bike components together in new and innovative configurations.

*Continued on next page >*



**VACUUM CURING/DEBULKING TABLES (CONTINUED)**

**Solution**

BriskHeat has process heating equipment to cure composite resins, prepreg cloth (fabric reinforced with a resin), and bond adhesives. The BriskHeat VT4000 Vacuum Curing/Debulking Table, utilized at Specialized Bicycle Components, is specifically designed to quickly provide heat and vacuum in one easy step for composite manufacture or repair. BriskHeat tables are equipped with PID temperature controllers to provide better accuracy during ramp and cool cycles. The PID controllers can store and run ramp/soak programs or single temperature cures, as required by the composite material.

The custom engineered composite parts, with their specialized tooling, are placed directly on the table surface. A venturi pump quickly creates a vacuum to apply compression to the top and sides of the parts, within a rubber vacuum bag. The PID controller triggers the heating cycle and within hours, the customized parts are completely cured and debulked. To ensure temperature uniformity during the cure/debulk, an (optional) data-logger can be used to monitor the temperatures on multiple surfaces. For enhanced accuracy and precision, the data logger can be outfitted with up to 16 additional thermocouples. During the cure process, the thermocouple values can be charted and graphed for future evaluation. The data can be down-loaded and archived.

Compared to conventional and time-consuming, bagging and autoclaving composite repair processing, BriskHeat Vacuum Curing /Debulking tables allow for Specialized Bike customers to be back on the road or track in comparatively little time. They have realized additional value by using the table to create fixtures and display pieces.

**Types of Users**

- Research and Development Engineers
- Composite Repair Technicians
- Design Engineers
- Maintenance Managers
- Manufacturers
- Operation Managers

**Industries**

- Aviation/Aerospace
- Composite Curing
- General Manufacturing
- Marine

**Vacuum Table Features**

BriskHeat Vacuum/debulking tables are available in three standard sizes

- VT4000: 60 in x 66 in (1.5 m x 1.5 m); total 52 in x 56 in (1.3 m x 1.4 m) usable area
- VT8000: 60 in x 132 in (1.5 m x 3.4 m), total 52 in x 124 in (1.3 m x 3.1 m) usable area
- VT 10000: 72 in x 144 in (1.8 m x 3.7 m); total 66 in x 138 in (1.5 m x 3.5 m) usable area

Standard voltages options are 3-phase and range from 208-480 VAC. Each table is constructed on a rugged frame assembly with a stainless steel heating surface. A 2-stage vacuum pump, pressure gauge, dual mechanical actuators to lift and hold the lid, and a junction box are included in the frame assembly.

The stainless steel lid includes a reusable rubber vacuum bag capable of 800% elongation. The lid has safety interlocks which can be adjusted to limit the travel of the actuators. This allows for quicker loading and unloading of components or parts from the table. Once lowered, the vacuum bag is sealed to the base of the table. A single switch actuates the vacuum pump for the debulking process.

Tables feature single (VT4000) or two zone (VT8000 and VT10000) heating. To add additional heating capacity to the top surface of parts, a custom insulated heating blanket can be added to double the number of zones. Each zone is equipped with a separate PID temperature controller (programmable to either °F or °C) capable of storing four different ramp/soak programs, each with up to 12 steps. Curing temperatures can be programed up to 400°F (204°C).

## WIND POWER TURBINE BLADE REPAIR

*An ideal way to repair power turbine blades*

### Application

Wind power turbines (windmills) have become a popular renewable energy source used to generate electricity. The modern windmill is equipped with large airfoil shaped propeller-like blades that are constructed using lightweight high strength composite fiber materials. The high strength and lightweight features allow the blades to efficiently capture wind energy and convert it into electricity.

Over time, the wind turbine blades can develop small cracks and holes on their surface and repairs must be made before catastrophic damage results. Heat and vacuum pressure is required to repair composite blades. Removing these blades from a wind power turbine can be extremely time consuming and costly, therefore the ability to make repairs in the field is important.

### Solution

Use BriskHeat's transportable ACR® 3 Hot Bonder or ACR MiniPro Hot Bonder system. The hot bonder systems include the hot bonder, silicone rubber composite curing heating blankets, a power booster box, and vacuum bagging material used together to create a portable repair station.

ACR hot bonders are a portable composite curing/debulking tool that is capable of creating its own vacuum pressure and regulating heat using programmable ramp/soak cycles. It records cure data that can be downloaded via a built-in USB port and retained for quality assurance records. The ACR hot bonders electronics are enclosed within a virtually indestructible, impact resistant, waterproof, Pelican® case for easy transport and worry-free protection.

Silicone composite curing heating blankets provide fast, uniform, and consistent heat in an extremely durable and flexible design. The extreme flexibility ensures ultimate surface contact across the entire repair surface. BriskHeat also offers vacuum bag, breather cloth, release film, and sealant tape materials used to create a field ready vacuum chamber for the repair.

Often a power booster box is necessary to increase voltage and amperage of up to 480VAC 3-phase and 100 amps. The increased voltage and amperage is required for large curing applications where power cord assemblies must be long enough to reach the required height of a blade assembled on a wind power turbine.

### Additional Uses

The ACR advanced composite repair system is used to cure any composite fiber materials application that requires pressure and/or heat to cure.



#### Industries

Composite Curing  
Power Generation  
Wind Power Industry

#### Types of Users

Turbine Blade  
Manufacturers  
Design Engineer  
Operations Manager  
Maintenance Managers

3M	Honeywell International, Inc.
ABB Group	Hoali (HLMC)
Agilent Technologies	IBM
Air Liquide	Kurt J. Lesker
Airbus Group SE	Lawrence Livermore National Lab
Amcor Rigid Plastics	Lockheed Martin Aeronautics
Anheuser-Busch Companies, Inc.	Lufthansa Technik
Applied Materials, Inc.	Micron Technology, Inc.
Ashland, Inc.	Mitsubishi Heavy Industries, Ltd.
ASM	NASA
Babcock & Wilcox	Nestlé
Bayer AG	Northrop Grumman Corporation
BP Global	Oak Ridge National Laboratory
Brookhaven National Laboratory	Praxair
Canadian Energy Services	Procter & Gamble Company
China Aircraft Services (CASL), Ltd.	PSG Petro Service Gmbh & Co. KG
ChinaCoal Pingshuo Group, Ltd.	Saint-Gobain PPL Corp.
ConocoPhillips Company	San'an Optoelectronics Co.
Covanta Energy Company	Sharp Corporation
Cryogenic Specialty Manufacturing	Shell Chemicals
Dow Chemical Company	Shenzhen China Star Optoelectronics Technology Co., Ltd. (CSOT)
Duke Energy	SpaceX (Space Exploration Technologies Corporation)
DuPont	Texas Instruments
Dustex LLC	The BOC Group
Eastman Kodak Company	The Boeing Company
Entegris	The Hershey Company
ExxonMobi	Thermo Fischer Scientific
Facebook	Tokyo Electron Ltd.
First Solar	Taiwan Semiconductor Manufacturing Co. (TSMC)
Formosa Chemical	Tyson Foods, Inc.
Foxconn Technology Group	United Airlines, Inc.
Frito-Lay	WinCo Foods
General Dynamics	Several Universities around the world
General Mills, Inc.	...and thousands more within in a wide range of industries.
Goodrich Corporation	
HKC	

## Food Processing

Food Processing companies need to prevent condensation so food preparation areas are not contaminated. BriskHeat's silicone rubber heating blankets are used to create temperature equilibrium, thus eliminating condensation. In applications where ingredients must be heated to reduce viscosity so they can more easily move from one process to another, BriskHeat products such as IBC/tote tank heaters, drum heaters, heating cable, and silicone rubber heating blankets can be used. Additionally, there are often freeze protection issues which vary by facility, requiring BriskHeat's self-regulating heating cable or silicone rubber heating blankets.



- Anheuser-Busch Companies, Inc.
- Bimbo Bakeries USA
- Campbell Soup Company
- ConAgra Foods, Inc.
- Frito-Lay
- General Mills, Inc.
- H. J. Heinz Company
- International Sugars, Inc.
- Kellogg Company
- Nestle Purina PetCare Company
- PepsiCo.
- Royal Baking Company, Inc.
- Russel Stover Candies, Inc.
- Sara Lee Corporation
- Savannah's Candy Kitchen
- The Hershey Company
- Tyson Foods, Inc.
- WinCo Foods, Inc.
- Wrigley Brands

## Aviation/Aerospace

Aviation and Aerospace industries can benefit from BriskHeat's composite curing/process temperature maintenance solutions, such as hot bonders and silicone rubber heating blankets. The hot bonders and heating blankets allow for fast and easy composite repair/strengthening of damaged composite pieces with BriskHeat's out-of-autoclave solutions. Using the easily transportable ACR® series hot bonders and a properly sized silicone rubber heating blanket, these repairs can be made on-site without having to ship out pieces for repair. Easily heat and vacuum composite parts in one easy step for debulking and composite curing with BriskHeat's vacuum/debulking table. Its single set-up greatly reduces overall time and cost associated with traditional debulking and autoclave curing. Another common application that BriskHeat can help with in the Aviation and Aerospace industries is moisture detection in elevators and other aircraft components. Using BriskHeat NDT kits, end-users can perform these tests without damaging the component being tested.



- American Airlines
- China Aircraft Services (CAS), Ltd.
- Cobham Composite Products, Inc.
- Delta TechOps
- General Dynamics Land Systems (GDLS)
- HAECO
- KLX Aerospace Solutions
- Lockheed Martin Aeronautics
- Lufthansa Technik AG
- Northrop Grumman
- Pratt & Whitney - United Technologies
- Saint-Gobain Performance Plastics
- Space Exploration Technologies Corporation/SpaceX
- Team Aerospace, Inc.
- The Boeing Company
- The Spaceship Company (TSC)
- TPI Composites, Inc.
- Turkish Airlines, Inc.
- United Airlines, Inc.
- U.S. and Foreign Military

### Laboratory, R & D and Pilot Plant Production

BriskHeat's laboratory, R&D and small-scale production heating products make heating small components of analytical instrumentation to large gas chambers quick and efficient. Our off-the-shelf heating solutions provide rapid heat-up time, high temperature capabilities, and temperature control to meet the needs of each application. Common solutions include heating tapes, heating cords, mantle heaters, beaker heaters, heating blankets, and temperature controllers.

- Agilent Technologies (HP)
- Argonne National Laboratory
- Bayer AG
- Boston Scientific Corporation
- Brookhaven National Laboratory
- Fermilab
- Idaho National Laboratory
- International Scientific Group
- Lawrence Livermore National Laboratory
- Los Alamos National Laboratory
- Anton Pan Quantatec Instruments
- University of California, Berkeley



### Petrochemical/Chemical Processing

Petrochemical/Chemical Processing companies must often lower the viscosity of chemicals to enhance flow efficiency. Common products to solve viscosity issues include BriskHeat's heating cable, IBC/tote tank heaters, drum heaters, and silicone rubber heating blankets. Constant-wattage heating cable is especially popular to keep chemicals at elevated temperatures, sometimes several hundred degrees, when transporting them through pipes. Constant-wattage heating cable is easy-to-install, has circuit lengths up to 1,200 ft (366 m), is rated for hazardous areas, and is affordable. Additionally, there are often freeze protection issues which vary by facility, requiring BriskHeat's self-regulating heating cable or silicone rubber heating blankets.

- 3M Company
- Ashland, Inc.
- BP Global
- Chevron Phillips Chemical
- ConocoPhillips Corporation
- DuPont
- Eastman Chemical Company
- ExxonMobil
- PSG Petro Service GmbH & Co. KG
- Shell Oil Company
- Sigma-Aldrich Corporation
- Sun Chemical
- The Dow Chemical Company



## General Manufacturing

BriskHeat's products are used for a wide variety of applications in manufacturing. Processes that BriskHeat's products can benefit and make more efficient include: temperature process control, viscosity control, and condensation prevention. BriskHeat's wide variety of product offerings allows us to customize a solution to specific surface heating application needs. Additionally, there are freeze protection issues which vary by facility, and can benefit from using BriskHeat's self-regulating heating cable or silicone rubber heating blankets.

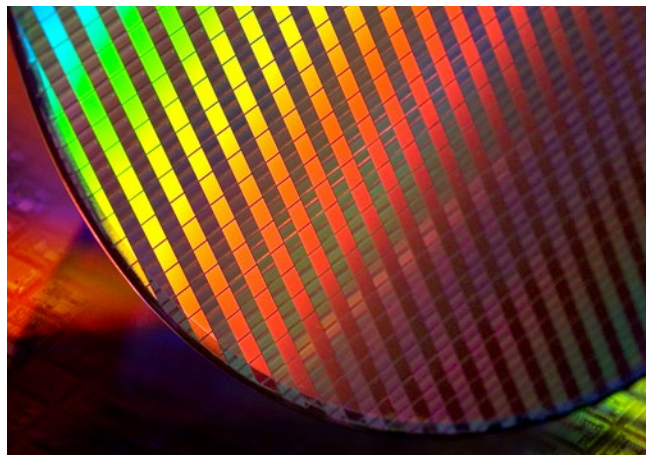
- ABB, Inc.
- Advanced Industrial Manufacturing
- Cargill, Inc.
- Caterpillar, Inc.
- Honeywell Manufacturing
- Vestil Manufacturing



## Semiconductor, Flat Panel, LCD, LED, and Photovoltaic/Solar

Semiconductor, Flat Panel, LCD, LED, and Photovoltaic/Solar companies use custom cloth heating systems on gas delivery, foreline, and exhaust pipe lines to prevent condensation which could cause clogging. The heating jackets provide precise temperature, are easy to install and remove, and have exceptional longevity and durability.

- Applied Materials, Inc.
- ASM International
- China Star Optoelectronics Technology (CSOT)
- Entegris
- Foxconn Technology Group
- HKC
- NXP Semiconductors N.V.
- Micron Technology, Inc.
- San'an Optoelectronics
- Taiwan Semiconductor Manufacturing, Co.
- Tokyo Electron Limited (TEL)



## Plastics/Injection Molding

Plastics/Injection Molding companies' most common surface heating application requires melting plastic pellets into a liquid before injecting it into plastic-forming molds. BriskHeat's band and cartridge heaters are a popular choice for use in this application. They have very high watt densities, high temperature capabilities, exceptional heat transfer, and can be made in hundreds of different sizes and configurations to meet unique requirements.

- Advanced Plastics
- Ball Plastic Packaging
- Eastern Molding, Inc.
- Miniature Plastic Molding Corp.
- Pechiney Plastics Packaging, Inc.
- Saint-Gobain Performance Plastics



### Power Generation

Condensation is a concern for Power Generation companies, specifically waste-to-energy and coal-burning, that use hopper systems to capture fly-ash during the burn process. The hoppers must be heated to prevent condensation, which disrupts the process. BriskHeat offers a full line of both metal-clad and silicone rubber heaters which will both solve the condensation issue and meet all regulatory requirements. Additionally, there are often freeze protection issues which vary by facility, requiring self-regulating heating cable or silicone rubber heating blankets.

- ABB, Inc.
- Alabama Power Company
- Babcock & Wilcox (BW)
- Black & Veatch
- ChinaCoal Pingshuo Group, Ltd.
- Covanta Energy Corporation
- Dustex LLC
- Georgia Power
- Nederman MikroPul
- Siemens Environmental
- Southern Company
- Tennessee Valley Authority (TVA)
- Tyco Electronics UK Ltd.
- Western Farmers Electric Cooperative (WFEC)



### Oil & Gas

Oil & Gas companies often require freeze protection for their oil and gas pipelines. To protect the oil and gas, they use BriskHeat's self-regulating heating cable. It is easy-to-install, extremely rugged, and has long circuit lengths up to 660ft (201m), and rated for use in hazardous-areas.

- BOC Gases
- Cabot Oil & Gas
- ConocoPhillips Co.
- Marathon Oil
- Seaport Petroleum
- Shell Oil



## Pulp & Paper/Packaging

Pulp & Paper and Packaging manufacturers often use glue that is stored in IBC/tote tank containers. BriskHeat's IBC/tote tank heaters can help maintain the proper glue temperature so it can be effectively used. Condensation is a concern during production because it can negatively affect many stages of the production process. Self-regulating heating cable is used to heat pipelines (such as fire suppression water lines) to prevent condensation. Additionally, many packaging applications require heat to complete the process, and cartridge heaters are a popular choice.

- Clearwater Paper Corporation
- Dotmar Engineering Plastics Products
- Evergreen Packaging
- Georgia-Pacific Corporation
- Great Northern Paper Company
- International Paper Company
- Kimberly-Clark Corporation
- Procter & Gamble (P & G) Co.
- Scott Paper Company
- Wausau Paper Corporation
- Weyerhaeuser Co.



## Water/Wastewater Treatment

Wastewater Treatment Facilities (WWTFs) often need to protect various components within their facilities against freezing conditions. BriskHeat's self-regulating heating cable or silicone rubber heating blankets help to prevent water in tanks, pipes, and vessels from freezing and keep processes running smoothly and efficiently.

- Association of Water Treatment Professionals & Resource Center (AWTP)
- Atlantic Environmental Solutions
- Bio-Microbics
- Consolidated Treatment Systems
- Delta Environmental Products
- Global Industrial Water
- Presby Environmental, Inc.
- Triplepoint Water Technologies
- Water Services, Inc.





### Gas Handling

Gas Handling/Processing companies use gas cylinders to store and dispense many types of gas. They can be both ordinary and hazardous-rated. BriskHeat's gas cylinder warmers increase the cylinders' temperatures and maintain the proper pressure to allow a much higher percent of the gasses to dispense. BriskHeat's gas cylinder warmers come in standard and hazardous-area options.

- Airgas, Inc.
- Air Liquide
- The BOC Group
- Cherokee M & C
- Kurk J. Lesker Company
- Linde Industrial Gas
- Matheson Gas
- Praxair, Inc.



### Construction

Freeze protection can be an area of concern in the Construction Industry. Easily protect and prevent water lines and tanks from freezing by using BriskHeat's self-regulating heating cable and silicone rubber heating blankets. For excavation of small areas, BriskHeat's snow melting mats can be used to warm the ground prior to excavation. BriskHeat also offers roof and gutter heating cable that can be installed to prevent snow and ice build-up on structures.

- Anderson and Sons Renovation, LLC
- Burlington Mechanical Contractors
- Center Concrete, Inc.
- Century Construction , Inc.
- Dobson Construction Service, Inc.
- Enercept Structural Insulated Panels (SIPs)
- F & F Roofing
- Firchau Construction Co., Inc.
- First Choice Custom Homes, LLC
- Nexans High Voltage USA, Inc.
- The D.S. Brown Company



## Concrete/Asphalt

Concrete manufacturers often use products called admixtures and liquid color as parts of their processes. These products may be stored in 55-gallon (208 liter) drum and IBC/tote tanks and must stay warm. Our full line of drum heaters and IBC/tote tank heaters are used to maintain the temperature. Asphalt manufacturers must maintain their asphalt's working temperatures between 200-300°F (90-150°C). Constant-wattage heating cable for pipes and silicone rubber heating blankets for vessels help asphalt manufacturers maintain the required heating level. Additionally, there are often freeze protection issues which vary by facility, which can be solved with BriskHeat's self-regulating heating cable or silicone rubber heating blankets.

- Asphalt Materials, Inc.
- Center Concrete
- Champion Concrete, Inc.
- Des Moines Asphalt & Paving
- Northeast Asphalt
- Southern Concrete Materials



## HVAC

HVAC contractors and technicians routinely need heat to complete daily tasks. Examples include jug warming to keep refrigerant warm during servicing, protecting compressors and condensation lines from cold weather, replacing water heater elements, and emergency de-icing. Additionally, BriskHeat offers soft starters for HVAC units and heat pumps to reduce inrush current which reduces the required size of back-up generators.

- Favret Heating and Cooling
- Plumbing Solutions
- Custom A/C and Heating
- G & M Plumbing and Heating
- Best Heating and Cooling
- Roto-Rooter
- U.S. and Foreign Military



## Marine

The Marine Industry can benefit from BriskHeat's composite curing/process temperature maintenance solutions, such as hot bonders and silicone rubber heating blankets. The hot bonders and heating blankets allow for fast and easy composite repair/strengthening of damaged composite pieces with BriskHeat's out-of-autoclave solutions. Using the easily transportable ACR® series hot bonders and a properly sized silicone heating blanket, these repairs can be made on-site without having to ship out pieces for repair. Freeze protection can also be an area of concern for boats and ships. Easily protect and prevent freezing by using BriskHeat's self-regulating heating cable and silicone rubber heating blankets.

- Black Shadow Yachts
- Boatman Repair
- Freedom Marine Center
- Northern Marine
- Sea Ray Boats & Yachts
- United States Marine, Inc.



## Mining

Freeze protection can be an area of concern in the Mining Industry. Easily protect and prevent water lines and tanks from freezing by using BriskHeat's self-regulating heating cable and silicone rubber heating blankets. These products are also available in hazardous-area models.

- Apex Silver Mines Corporation
- Eagle-Picher Company
- Hazen Research, Inc.
- Kennecott Utah Copper
- Kiewit Mining Group
- Newmont Mining Corporation
- Northwest Mine Supply
- Round Mountain Gold
- Texas Precious Metals



## Biodiesel

During one of the initial steps of the biodiesel manufacturing process, the manufacturer must heat waste-vegetable oil. This is typically heated in 55-gallon (208 l) drums. BriskHeat's full line of drum heaters can help with the heat-up. For larger manufacturers that use bigger tanks for this step, BriskHeat's silicone rubber heating blankets can be symmetrically installed around the tank to provide heat. Additionally, there are often freeze protection issues which vary by facility, and can be solved using BriskHeat's self-regulating heating cable or silicone rubber heating blankets.

- Baltimore Biodiesel Co-Op
- Benchmark Biodiesel, Inc.
- Dakota BioFuels
- Fryer to Fuel, Inc.
- General Biodiesel
- Midwest Biodiesel Products, LLC



## Agriculture

Freeze protection is an issue in the Agriculture Industry. Easily protect and prevent water lines, tanks, and troughs from freezing by using BriskHeat's self-regulating heating cable and silicone rubber heating blankets. BriskHeat's products can also be used on containers of pesticide and fertilizers to prevent them from freezing. BriskHeat also has a full line of wet-area/outdoor-rated cloth heating blankets.

- Agria Corp.
- BASF
- Dairy Farmers of America
- GEA Farm Technologies
- Heart and Hands Winery
- Matthews Farms
- Ohio Beekeepers



### Agriculture

Agricultural Trough Heating .....	47
Battery Warming .....	48
Drum and Pail Viscosity Control .....	5
Dry Chemical Processing.....	24
Emergency De-icing.....	49
Freeze Protection for Control Panels.....	51
Freeze Protection for Pipes.....	53
Freeze Protection for Pipes, Residential and Commercial Use .....	54
Freeze Protection for Tanks and Vessels.....	55
Honey Warming .....	8
Hopper Heating for General Manufacturing .....	30
IBC/Tote Warming .....	9
Localize Heat for Agricultural Application .....	59
Mid-Temperature Drum/Pail Warming.....	10
Mid-Temperature Material Management .....	11
PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing .....	61
Roof & Gutter Ice Dam Prevention .....	62

### Aviation/Aerospace

Catalyst and Stabilizer Viscosity Control.....	4
Composite Curing for Aviation Use .....	73
Controlling Multiple Heating Zones.....	73
Drum and Pail Viscosity Control .....	5
Emergency De-Icing.....	49
Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments .....	56
Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments.....	50
Freeze Protection for Pipes .....	53
Freeze Protection for Tanks and Vessels.....	55
Freeze Protection in Class I, Division 1 Industrial Environments .....	57
Gas Handling .....	26
Heated Hoses for Spray Foam Insulation .....	27
Hopper Heating for General Manufacturing .....	30
IBC/Tote Warming .....	9
Mid-Temperature Material Management .....	11
Pre-heating and Post-Heating Metals for Welding, Brazing, and Soldering.....	37
PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing .....	61
Scientific/Analytical Instrumentation.....	40
Tool/Mold Heating and Hot Debulking .....	75
Vacuum Curing/Debulking Tables .....	76-77

### Biodiesel

Biodiesel Drum Heating .....	3
Catalyst and Stabilizer Viscosity Control.....	4
Drum and Pail Viscosity Control .....	5
Emergency De-Icing.....	49
Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments .....	56
Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments.....	50
Freeze Protection for Pipes.....	53
Freeze Protection for Tanks and Vessels.....	55
Freeze Protection in Class I, Division 1 Industrial Environments .....	57
Hopper Heating for General Manufacturing .....	30
IBC/Tote Warming .....	9
Petrochemical Viscosity Control.....	13
Mid-Temperature Material Management .....	11
PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing .....	61
Steam Turbine Power Generation Freeze Protection .....	63
Temperature Maintenance - Valves, Pumps and Other Components.....	42

**Composite Curing**

Composite Curing for Aviation Use ..... 73  
 Composite Curing for Marine Use ..... 74  
 Controlling Multiple Heating Zones ..... 21  
 Furniture Adhesive Curing ..... 25  
 Tool/Mold Heating and Hot Debulking ..... 75  
 Wind Power Turbine Blade Repair ..... 78  
 Vacuum Curing/Debulking Tables ..... 76-77

**Concrete/Asphalt**

Asphalt Sealant Warming ..... 2  
 Battery Warming ..... 48  
 Drum and Pail Viscosity Control ..... 5  
 Emergency De-Icing ..... 49  
 Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments ..... 50  
 Freeze Protection for Tanks and Vessels ..... 55  
 Freeze Protection for Pipes ..... 53  
 Hopper Heating for General Manufacturing ..... 30  
 IBC/Tote Warming ..... 9  
 Mid-Temperature Material Management ..... 11  
 PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing ..... 61  
 Steam Turbine Power Generation Freeze Protection ..... 63

**Construction**

Asphalt Sealant Warming ..... 2  
 Battery Warming ..... 48  
 Chemical and Material Process Heating ..... 19  
 Controlling Multiple Heating Zones ..... 21  
 Compressor Cold Weather Protection ..... 20  
 Creating More Efficient HVAC and Heat Pump Systems ..... 23  
 Emergency De-Icing ..... 49  
 Freeze Protection for Pipes, Residential and Commercial Use ..... 54  
 Heated Hoses for Spray Foam Insulation ..... 27  
 Mid-Temperature Material Management ..... 11  
 Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering ..... 37  
 PVC Pipes - Temporary Maintenance or Emergency De-Icing ..... 61  
 Refrigerant Cylinder Jug Warming ..... 39  
 Roof & Gutter Ice Dam Prevention ..... 62

**Food Processing**

Brewery Lab Flavor Testing ..... 17  
 Catalyst and Stabilizer Viscosity Control ..... 4  
 Chemical and Material Process Heating ..... 19  
 Controlling Multiple Heating Zones ..... 21  
 Cosmetics and Other Liquid Process Heating ..... 22  
 Dry Chemical Processing ..... 24  
 Drum and Pail Viscosity Control ..... 5  
 Dry Chemical Processing ..... 24  
 Emergency De-Icing ..... 49  
 Food Service Equipment Heating ..... 7  
 Food Shortening Melting ..... 6  
 Food Drip-Pan Condensation Prevention ..... 67  
 Freeze Protection for Control Panels ..... 51  
 Freeze Protection for Tanks and Vessels ..... 55  
 Freezer Door De-Icing ..... 58  
 High-Temperature High-Watt Heating ..... 28  
 Honey Warming ..... 8

### Food Processing (continued)

IBC/Tote Tank Warming.....	9
Industrial Packaging of Bags, Boxes, Cases, and Cartons.....	31
Laboratory Round-Bottom Flask Heating.....	32
Localized Heat for Agricultural Applications.....	59
Mid-Temperature Drum/Pail Warming.....	10
Mid-Temperature Material Management.....	11
Overheat Protection for Temperature Sensitive Processes.....	29
Perfume & Flavor Viscosity Control.....	12
Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering.....	37
PVC Pipes - Temporary Temperature Maintenance or Emergency De-Icing.....	61
Steam Pipe Insulation.....	41
Temperature Maintenance - Valves, Pumps, and Other Components.....	42
Wet Laboratory Heating.....	44-45

### Gas Handling

Freeze Protection for Tanks and Vessels.....	55
Gas Handling.....	26
Refrigerant Cylinder Jug Warming.....	39
Protecting Mechanical Devices from Inclement Weather.....	60

### General Manufacturing

Annealing Manufacturing Process.....	15
Battery Warming.....	48
Blown-Film Manufacturing.....	16
Chemical and Material Process Heating.....	19
Controlling Multiple Heating Zones.....	21
Cosmetics and Other Liquid Process Heating.....	22
Drum and Pail Viscosity Control.....	5
Dry Chemical Processing.....	24
Emergency De-Icing.....	49
Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments.....	50
Freeze Protection for Control Panels.....	51
Freeze Protection for Pipes.....	53
Freeze Protection for Tanks and Vessels.....	55
Furniture (Adhesive) Curing.....	25
Gas Handling.....	26
Gas Sample Handling.....	71
Heated Hoses for Spray Foam Insulation.....	27
High-Temperature High-Watt Heating.....	28
Hopper Heating for General Manufacturing.....	30
IBC/Tote Tank Warming.....	9
Industrial Packaging of Bags, Boxes, Cases, and Cartons.....	31
Liquid Caustic Soda Temperature Maintenance.....	33
Mid-Temperature Drum/Pail Warming.....	10
Overheat Protection for Temperature Sensitive Processes.....	29
Perfume & Flavor Viscosity Control.....	12
Petrochemical Viscosity Control.....	13
Plastic Bending and Forming.....	35
Plastic Injection Molding.....	36
Pre-Heating and Post-Heating Metals for Welding, Brazing and Soldering.....	37
Protecting Mechanical Devices from Inclement Weather.....	60
Scientific/Analytical Instrumentation.....	40
Steam Pipe Insulation.....	41
Steam Turbine Power Generation Freeze Protection.....	63
Temperature Maintenance - Valves, Pumps, and Other Components.....	42
Tool/Mold Heating and Debulking.....	75
Vacuum Bake-out.....	43
Vacuum Curing/Debulking Tables.....	76-77

**HVAC**

Creating More Efficient HVAC and Heat Pump Systems ..... 23  
 Freeze Protection for Pipes ..... 53  
 Freeze Protection for Pipes, Residential and Commercial Use ..... 54  
 Compressor Cold Weather Protection ..... 20  
 Refrigerant Cylinder Jug Warming ..... 39

**Laboratory, Medical Science, and Analytical Instrumentation**

Brewery Lab Flavor Testing ..... 17  
 Gas Handling ..... 26  
 Gas Sample Handling ..... 71  
 IBC/Tote Tank Warming ..... 9  
 Laboratory Round-Bottom Flask Heating ..... 32  
 Medical Equipment Requiring Surface Heat ..... 34  
 Reaction Chamber Fluid Processing ..... 38  
 Scientific/Analytical Instrumentation ..... 40  
 Temperature Maintenance - Valves, Pumps, and Other Components ..... 42  
 Vacuum Bake-out ..... 43  
 Wet Laboratory Heating ..... 44-45

**Marine**

Battery Warming ..... 48  
 Composite Curing for Marine Use ..... 74  
 Emergency De-Icing ..... 49  
 Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering ..... 37  
 Heated Hoses for Spray Foam Insulation ..... 27  
 Vacuum Curing/Debulking Tables ..... 76-77

**Mining**

Emergency De-Icing ..... 49  
 Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments ..... 56  
 Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments ..... 50  
 Freeze Protection for Control Panels ..... 51  
 Freeze Protection for Pipes ..... 53  
 Freeze Protection for Tanks and Vessels ..... 55  
 Freeze Protection in Class I, Division 1 Industrial Environments ..... 57  
 Hopper Heating for General Manufacturing ..... 30  
 IBC/Tote Warming ..... 9  
 Gas Handling ..... 26  
 Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering ..... 37  
 PVC Pipes - Temporary Temperature Maintenance or Emergency De-Icing ..... 61  
 Steam Turbine Power Generation Freeze Protection ..... 63

**Oil & Gas**

Biodiesel Drum Heating ..... 3  
 Catalyst and Stabilizer Viscosity Control ..... 4  
 Chemical and Material Process Heating ..... 19  
 Controlling Multiple Heating Zones ..... 21  
 Drum and Pail Viscosity Control ..... 5  
 Emergency De-Icing ..... 49  
 Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments ..... 56  
 Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments ..... 50  
 Freeze Protection for Control Panels ..... 51  
 Freeze Protection for Natural Gas Production Wells ..... 52  
 Freeze Protection for Pipes ..... 53



### Oil & Gas (continued)

Freeze Protection for Tanks and Vessels.....	55
Freeze Protection in Class I, Division 1 Industrial Environments.....	57
Gas Handling.....	26
Gas Sample Handling.....	71
High-Temperature High-Watt Heating.....	28
Hopper Heating for General Manufacturing.....	30
IBC/Tote Warming.....	9
Liquid Caustic Soda Temperature Maintenance.....	33
Mid-Temperature Drum/Pail Warming.....	10
Mid-Temperature Material Management.....	11
Petrochemical Viscosity Control.....	13
Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering.....	37
Protecting Mechanical Devices from Inclement Weather.....	60
PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing.....	61
Reaction Chamber Fluid Processing.....	38
Scientific/Analytical Instrumentation.....	40
Steam Pipe Insulation.....	41
Steam Turbine Power Generation Freeze Protection.....	63
Temperature Maintenance - Valves, Pumps, and Other Components.....	63

### Petrochemicals/Chemical Processing

Biodiesel Drum Heating.....	3
Catalyst and Stabilizer Viscosity Control.....	4
Chemical and Material Process Heating.....	19
Controlling Multiple Heating Zones.....	21
Drum and Pail Viscosity Control.....	5
Dry Chemical Processing.....	24
Emergency De-Icing.....	49
Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments.....	56
Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments.....	50
Freeze Protection for Control Panels.....	51
Freeze Protection for Pipes.....	53
Freeze Protection for Tanks and Vessels.....	55
Freeze Protection in Class I, Division 1 Industrial Environments.....	57
Gas Handling.....	26
Gas Sample Handling.....	71
High-Temperature High-Watt Heating.....	28
Hopper Heating for General Manufacturing.....	30
IBC/Tote Tank Warming.....	9
Laboratory Round-Bottom Flask Heating.....	32
Liquid Caustic Soda Temperature Maintenance.....	33
Mid-Temperature Drum/Pail Warming.....	10
Mid-Temperature Material Management.....	11
Petrochemical Viscosity Control.....	13
Protecting Mechanical Devices from Inclement Weather.....	60
PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing.....	61
Reaction Chamber Fluid Processing.....	38
Scientific/Analytical Instrumentation.....	40
Steam Pipe Insulation.....	41
Steam Turbine Power Generation Freeze Protection.....	63
Temperature Maintenance - Valves, Pumps, and Other Components.....	63
Wet Laboratory Heating.....	44-45

**Plastic/Injection Molding**

Blown-Film Manufacturing..... 16  
 Chemical and Material Process Heating..... 19  
 Controlling Multiple Heating Zones..... 21  
 Drum and Pail Viscosity Control ..... 5  
 High-Temperature High-Watt Heating ..... 28  
 Hopper Heating for General Manufacturing ..... 30  
 IBC/Tote Tank Warming..... 9  
 Industrial Packaging of Bags, Boxes, Cases and Cartons..... 31  
 Mid-Temperature Drum/Pail Warming..... 10  
 Mid-Temperature Material Management ..... 11  
 Plastic Bending and Forming ..... 35  
 Plastic Injection Molding..... 36  
 PVC Pipes - Temporary Temperature Maintenance or Emergency De-Icing ..... 61

**Power Generation**

Battery Warming ..... 48  
 Chemical and Material Process Heating..... 19  
 Emergency De-Icing..... 49  
 Fly Ash Hopper Heating for Power Generation..... 68  
 Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments ..... 50  
 Freeze Protection for Control Panels..... 51  
 Freeze Protection for Pipes ..... 53  
 Freeze Protection for Natural Gas Production Wells ..... 52  
 Gas Line Heating for Solar Cell Production ..... 70  
 Gas Sample Handling ..... 71  
 High-Temperature High-Watt Heating ..... 28  
 IBC/Tote Tank Warming..... 9  
 Mid-Temperature Material Management ..... 11  
 Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering ..... 37  
 PVC Pipes - Temporary Temperature Maintenance or Emergency De-Icing ..... 61  
 Steam Pipe Insulation..... 41  
 Steam Turbine Power Generation Freeze Protection ..... 63  
 Wind Power Turbine Blade Repair..... 78

**Pulp & Paper/Packaging**

Blown-Film Manufacturing..... 16  
 Chemical and Material Process Heating..... 19  
 Drum and Pail Viscosity Control..... 5  
 Dry Chemical Processing..... 24  
 Emergency De-Icing..... 49  
 Freeze Protection for Control Panels..... 51  
 Freeze Protection for Pipes ..... 53  
 Freeze Protection for Tanks and Vessels..... 55  
 Gas Handling ..... 26  
 Hopper Heating for General Manufacturing ..... 30  
 IBC/Tote Tank Warming..... 9  
 Industrial Packaging of Bags, Boxes, Cases and Cartons..... 31  
 Liquid Caustic Soda Temperature Maintenance ..... 33  
 Mid-Temperature Material Management ..... 11  
 PVC Pipes - Temporary Temperature Maintenance or Emergency De-Icing ..... 61  
 Roof & Gutter Ice Dam Prevention ..... 62  
 Steam Pipe Insulation..... 41  
 Steam Turbine Power Generation Freeze Protection ..... 63  
 Temperature Maintenance - Valves, Pumps and Other Components..... 42  
 Wet Laboratory Heating ..... 44-45

**Semiconductor, Flat Panel, LCD, LED, and Photovoltaic/Solar**

Controlling Multiple Heating Zones..... 21  
 Deposition and Etch Processes..... 66  
 Gas Delivery System Heating..... 69  
 Gas Handling..... 26  
 Gas Line Heating for Solar Cell Production..... 70  
 Scientific/Analytical Instrumentation..... 40

**Water/Wastewater Treatment**

Chemical and Material Process Heating..... 19  
 Emergency De-Icing..... 49  
 Freeze Protection and Viscosity Control for Tanks and Vessels in Hazardous Environments..... 56  
 Freeze Protection and Warming Bulk Materials in ATEX Hazloc Environments..... 50  
 Freeze Protection for Control Panels..... 51  
 Freeze Protection for Pipes..... 53  
 Freeze-Protection in Class I, Division 1 Industrial Environments..... 57  
 Hopper Heating for General Manufacturing..... 30  
 IBC/TOTE Tank Warming..... 9  
 Liquid Caustic Soda Temperature Maintenance..... 33  
 Mid-Temperature Material Management..... 11  
 Pre-Heating and Post-Heating Metals for Welding, Brazing, and Soldering..... 37  
 PVC Pipes – Temporary Temperature Maintenance or Emergency De-Icing..... 61  
 Roof & Gutter Ice Dam Prevention..... 62  
 Steam Pipe Insulation..... 41  
 Waste Water Treatment Freeze Protection..... 64

**Agricultural Trough Heating (page 47)**

Dairy Farmers of America (DFA)  
GEA Farm Technologies  
SMB Manufacturing, Inc.

**Annealing Manufacturing Process (page 15)**

Deringer Ney  
NAC Carbon  
Protolabs

**Asphalt Sealant Warming (page 2)**

Asphalt Materials, Inc.  
SealMaster  
Suit-Kote Corporation

**Battery Warming (page 48)**

Andruil  
Tesla  
Zero Motorcycles

**Biodiesel Drum Heating (page 3)**

Biolube, Inc.  
Fryer To Fuel, Inc.  
South East Biodiesel

**Blown-Film Manufacturing (page 16)**

Del Monte Foods  
Mono Layer Blown Film  
Spangler Candy

**Brewery Lab Flavor Testing (page 17)**

Columbus Brewing Company  
Barley's Brewing  
Land Grant Brewing

**Cannabis Distillation (page 18)**

High Velocity Evaporators  
Hydroponic Solutions  
Pope Scientific

**Catalyst and Stabilizer Viscosity Control (page 4)**

BASF SE  
DuPont  
General Electric (GE)

**Chemical and Material Process Heating (page 19)**

Bonded Chemical  
BASF  
The Dow Chemical Company

**Composite Curing for Aviation Use (page 73)**

Lufthansa Technik AG  
Northrop Grumman Corporation  
The Boeing Company

**Composite Curing for Marine Use (page 74)**

Marine Concepts  
Sage Marine  
Vicem Yachts

**Compressor Cold Weather Protection (page 20)**

Atlas Butler  
American HVACR, LLC.  
Metro Heating and Cooling

**Controlling Multiple Heating Zones (page 21)**

Medivators  
RL Industries  
Western Allied Mechanical

**Cosmetics and Other Liquid Process Heating (page 22)**

Classic Cosmetics, Inc.  
Estee Lauder  
West Coast Cosmetics

**Creating More-Efficient HVAC and Heat Pump  
Systems (page 23)**

LA Solar Group  
Lowe Electrical Supply  
Tank Doctor Aquatic Systems

**Drum and Pail Viscosity Control (page 5)**

Corning, Inc.  
Procter & Gamble Company  
The Dow Chemical Company

**Dry Chemical Processing (page 24)**

Let Pulverizer  
Nutrien  
Powell Co.

**Emergency De-Icing (page 49)**

Diamond Quality Manufacturing  
Eastman Chemical Company  
Procter & Gamble Company

**Deposition and Etch Processes (page 66)**

Applied Materials, Inc.  
Foxconn Technology Group  
Texas Instruments

**Fly Ash Hopper Heating for Power Generation (page 68)**

ChinaCoal Pingshuo Group, Ltd.  
Diamond Power International  
Duke Energy

**Food Drip Pan Condensation Prevention (page 67)**

ConAgra Foods, Inc.  
Farmlands Foods  
Tyson Foods, Inc.

**Food Service Equipment Heating (page 7)**

Carlisle Food Service  
Pro-Quip  
Wasserstrom

**Food Shortening Melting (page 6)**

Bimbo Bakeries USA  
Mars, Inc.  
Nestle Purina PetCare Company

**Freeze Protection and Viscosity Control for Tanks and  
Vessels in Hazardous Environments (page 56)**

Air Liquide Advanced Material  
FW Murphy Production  
Scientific Dust Collectors

**Freeze Protection and Warming Bulk Materials in  
ATEX Hazloc Environments (page 50)**

Formosa Plastics  
Nutro, Inc.  
Solvay

**Freeze Protection for Control Panels (page 51)**

AC Controls  
Control Systems Corporation of Triad  
Ennovation Controls, LLC

**Freeze Protection for Natural Gas Production Wells  
(page 52)**

Koch Nitrogen  
Oilfield Instrument  
Stillwater Mining

**Freeze Protection for Pipes (page 53)**

ConocoPhillips  
Merck Manufacturing  
Sun Chemical

**Freeze Protection for Pipes, Residential and  
Commercial Use (page 54)**

Desert Hills Electrical, Inc.  
Hagemeyer NA  
Residential Exteriors, Inc.

**Freeze Protection for Tanks and Vessels (page 55)**

Chevron Corporation  
Hamilton Tanks  
Pratt & Whitney

**Freeze Protection in Class I, Division 1 Industrial  
Environments (page 57)**

Hydrocarbon Energy  
Kemira Chemical  
PSG Petro

**Freezer Door De-Icing (page 58)**

Old Mill Insulation  
Refrigeration Systems, Inc.  
Thermal Equipment Company

**Furniture Adhesive Curing (page 25)**

Commercial Furniture Group  
Irwin Seating  
MTS Seating

**Gas Delivery System Heating (page 69)**

Air Liquide  
Applied Materials, Inc.  
Entegris

**Gas Handling (page 26)**

Airgas  
Columbia Gas  
Praxair, Inc.

**Gas Line Heating for Solar Cell Production (page 70)**

Acciona Solar Power, Inc.  
Apollo Solar LLC  
Linear Technology Corporation

**Gas Sample Heating (page 71)**

California Analytical Instruments  
Cherokee M&C  
Praxair

**Heated Hoses for Spray Foam Insulation (page 27)**

Gale Insulation  
Insulation Plus  
Superior Insulation

**High-Temperature High-Watt Heating (page 28)**

BASF Corporation  
Eastman Chemical  
Exxon Mobile

**Honey Warming (page 8)**

Blue Sky Honey  
Ebee Honey  
Ohio Beekeepers

**Hopper Heating for General Manufacturing (page 30)**

Babcock & Wilcox  
Dustex LLC  
U.S. Steel Corporation

**IBC/Tote Tank Warming (page 9)**

Anheuser-Busch Companies, Inc.  
Georgia-Pacific Corporation  
Kraft Foods

**Industrial Packaging of Bags, Boxes, Cases, and  
Cartons (page 31)**

ABB  
Mars, Inc.  
Pepsico

**Laboratory Round Bottom Flask Heating (page 32)**

Columbus Brewing Company  
University of Michigan  
Worcester Polytechnic Institute

**Liquid Caustic Soda Temperature Maintenance (page 33)**

Envirogreen Chemicals LLC  
JCI Jones Chemical, Inc.  
Vineland Syrup, Inc.

**Localized Heat for Agricultural Applications (page 59)**

Delfino Winery  
Heart and Hands Vineyard  
Navarro Vineyards

**Medical Equipment Requiring Surface Heat (page 34)**

Batelle  
Labcorp  
Riverside Hospital

**Mid-Temperature Drum/Pail Warming (page 10)**

Corning  
Dupont  
Graco

**Mid-Temperature Material Management (page 11)**

3M  
Covanta  
Ruth Hunt Candy

**Overheat Protection for Temperature Sensitive  
Processes (page 29)**

Ashland Chemical  
Dicon Fiberoptics Inc.  
The Dow Chemical Company

**Perfume & Flavor Viscosity Control (page 12)**

Imperial Flavors Beverage Company  
Mondelēz International  
The Perfumery

**Petrochemical Viscosity Control (page 13)**

Allegheny Petroleum Products  
Shell Oil Chemical Company  
Total Petrochemical USA, Inc.

**Plastic Bending and Forming (page 35)**

General Rubber & Plastic  
Neon Sign  
Piedmont Plastics

**Plastic Injection Molding (page 36)**

Amcor Rigid Plastics  
Plastic Products Co.  
R & B Plastics Machinery LLC

**Pre-Heating and Post-Heating Metals for Welding,  
Brazing, and Soldering (page 37)**

Airgas  
Allied Fabricating  
Fortin Ironworks

**Protecting Mechanical Devices from the Inclement  
Weather (page 60)**

Natgasoline  
Orange County Water District  
Tate & Lyle

**PVC Pipes – Temporary Temperature Maintenance or  
Emergency De-Icing. (page 61)**

Brookhaven National Laboratory  
Kansas City Southern Railroad  
University of Colorado

**Reaction Chamber Fluid Processing (page 38)**

Clarke Solutions  
Lockheed Marting  
PRIMA WRAP

**Refrigerant Cylinder Jug Warming (page 39)**

EP HVAC U.S., Inc.  
Linde Industrial Gases  
United Refrigeration, Inc.

**Roof & Gutter Ice Dam Prevention (page 62)**

Ice Dam Company  
MH Electric Company  
Residential Exteriors, Inc.

**Scientific/Analytical Instrumentation (page 40)**

Biospherix, Ltd.  
PIKE Technologies  
Purdue University

**Steam Pipe Insulation (page 41)**

GoJo  
Hagemayer  
Liquid Systems

**Steam Turbine Power Generation Freeze Protection  
(page 63)**

AEP  
Al Paso Electric  
Duke Energy

**Temperature Maintenance – Valves, Pumps, and  
Other Components (page 42)**

Huntington Vacuum Products  
Kemin Industries  
Tate & Lyle

**Tool/Mold Heating and Hot Debulking (page 75)**

Air National Guard  
Lockheed Martin Aeronautical  
The Boeing Company

**Vacuum Bake-Out (page 43)**

Abbott Labs  
Brookhaven National Laboratory  
Lawrence Livermore National Laboratory

**Vacuum Curing/Debulking Tables (page 76-77)**

Heatron  
Lockheed Martin Aeronautical  
Specialized Bike

**Waste Water Treatment Freeze Protection (page 64)**

Courtice Water Pollution Control Plant  
National Waterworks  
Pride Environmental & Construction, Inc.

**Wet Laboratory Heating (pages 44-45)**

Bayer AG  
Cornell University  
Sandia National Laboratories

**Wind Power Turbine Blade Repair (page 78)**

Clipper Wind Power  
Siemens Wind Power  
Vestas Wind Systems A/S



Drum and Pail Heaters



Silicone Heating Blankets



IBC/Tote Tank Heaters



TC4X



TC4000



BH-510



SDC



TB110 Hazardous Area



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HL101 Limiter



TD101X

TD101N



MPC2 Multi-Point





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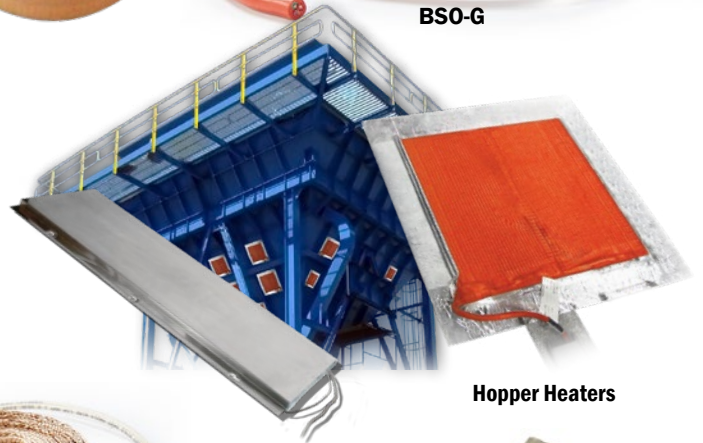
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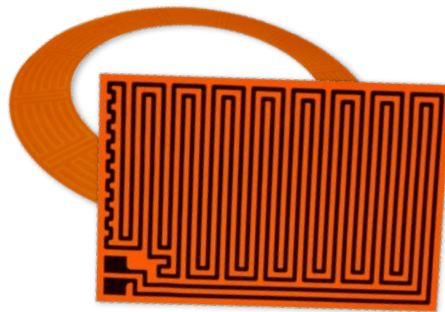
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