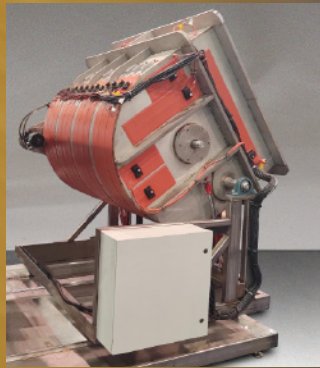


Your Heating Specialist Since 1949

Application Book



BriskHeat®





BriskHeat Corporation has been providing surface heating, insulating, and temperature control solutions to a wide variety of industries since 1949. There are limitless applications for BriskHeat products because of the countless uses 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 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. You will also find many references to key customers, who 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 five major category groups:

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

We appreciate your commitment to BriskHeat heating, insulating, and temperature control solutions and look forward to serving you.

US Worldwide Headquarters

4800 Hilton Corporate Drive
Columbus, Ohio 43232
800-848-7673
614-294-3376
bhtsales1@briskheat.com

Costa Rica

Alajuela City
San Antonio de Alajuela
Province, Costa Rica
(Manufacturing Only)

Vietnam

Long Binh Ward Bien Hoa
Dong Nai Province, Vietnam
(Manufacturing Only)

China

Shenzhen
+86 755-2519-2767
Mianyang/Wuhan/Xiamen
+86 177-2253-9196

Taiwan

Hsinchu
+886 3-667-6778

Europe

France
+49 152 57054916
Germany
+49 151 21666127

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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 a built-in digital temperature controller capable of setpoints up to 140°F. No special wiring or equipment needed as 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 wraparound IBC/tote tank heaters will provide the solution. Optional top insulating covers are available to reduce heat loss, making the heater more energy efficient.



The WEX model of Wraparound Tote Tank/IBC heaters is designed to be used in hazardous areas where ATEX approval is required.

Additional Uses

Wraparound 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

Asphalt/Concrete	Construction
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Types of Users

Design Engineers	Production Managers
Maintenance Managers	



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. Waste Vegetable Oil (WVO) and Straight Vegetable Oil (SVO) 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. Choose from Heavy Duty, Extra-Heavy Duty and Economy models. They are available in a variety of sizes from 5-gallon (19-liter) pail to 55-gallon (208-liter) drum, and even custom sizes. FGDH full coverage drum heaters combine insulation and heat in one easy to install jacket. There are available for wet-area applications too.

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/FGDHW	✓	✓	✓	✓
ATEX Wex	N/A	N/A	N/A	✓



**Ordinary-Location
Model**



**Hazardous-
Area Model**



FGDHW

Industries

Chemical Processing/
Extractions

Energy/Power Generation
Gas & Oil

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 provides 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 involve heating materials in drums located in hazardous-area locations.

Industries

Chemical Processing/Extractions	Gas & Oil
Cosmetics/Personal Care	Life Science/Medical/Pharmaceutical
Food & Beverage Processing	

Types of Users

Facilities Maintenance	Production Managers
Process Engineers	



**Hazardous-
Area Model**

DRUM AND PAIL VISCOSITY CONTROL

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

Application

There are many 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. Heat is required to reduce the viscosity of the materials.

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. DHCS, DHLS, and DPCS series Heavy-Duty heaters feature 2 extra-thick layers of fiberglass reinforced silicone. DHCH and DPCH Extra-Heavy Duty models feature 3 layers (Economy models are also available). They are available in a variety of sizes from 5-gallon (19-liter) pail to 55-gallon (208-liter) drum and even custom sizes. FGDH standard use and FGDHW wet-area full coverage drum heaters combine insulation and heat in one easy to install jacket. Most models include built-in thermostats. Heaters can also be ordered without thermostats for use with more accurate controllers.

BriskHeat's DHI Drum Immersion Heater features an incoloy tubular heating element that is designed to fit through the top of a 55-gallon drum. Its digital controller allows setpoint temperatures up to 167°F (75°C).

Key Features

- Choice of silicone rubber band or full-coverage insulated drum heaters.
- 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.
- Custom heaters can be made to fit other sizes and application requirements.
- Insulators can be used over band heaters for added efficiency



Examples of Materials Stored in Drums

Biodiesel	Fuel Oils
Cooking Oils	Paints/Spray Coatings
Grease	Surfactants & Chemicals
Lubricants	Resins
Motor Oil	Wax

Industries

Agriculture/Farming/Ranching	Food & Beverage Processing
Asphalt/Concrete	Gas & Oil
Chemical Processing/	Manufacturing
Extractions	Pulp & Paper
Composites/Epoxy/Resins	

ENHANCED IBC/TOTE TANK WARMING

A more effective way to warm contents of IBC/tote tanks

Application

Intermediate Bulk Container (IBC) users often need to raise the product temperatures to reduce viscosity or protect the contents from the cold. When they need to do this quickly the large volume of liquid, which could be more than 300 gallons (1136 liters), makes it challenging. Additionally, if the tank is in an extremely cold environment, the additional frigidty causes more difficulties. Raising or maintaining the temperature to the desired level ensures materials are ready for production and easy to dispense. Failure could result in the contents being ruined, production delays, or inability to dispense at all. This may increase production costs or damage to equipment. Replacing ruined materials, waiting for usable product, and damaged equipment could be very expensive and cause serious downtime.



Solution

The combination of BriskHeat's TTI immersion heater and TOTEWI wet-area IBC insulator is an effective IBC/tote tank heating system. Performance tests show that the immersion heater, when coupled with a BriskHeat IBC insulator, heats four times as fast than standard wraparound heaters. The universal-fit TTI immersion heater has 1500 watts for maximum heat, includes a built-in controller, and a plug-and-play design. Additionally, the superalloy incoloy 840 will not corrode and contaminate the product. The TOTEWI insulators fit any IBC with a circumference between 160 in (4060 mm) and 192 in (4880 mm), are easily installed using the built-in straps and buckles, and are extremely durable. Both are suitable for use in wet environments. For faster warming, use the TOTEWI wet-area tote heater with the TTI.



Additional Uses

BriskHeat offers a full line of immersion heaters and cloth insulators suitable for many applications in almost any environment.

Industries

Agriculture/Farming/Ranching	Heavy Industry/Mining
Chemical Processing/ Extractions	Injection Molding/Plastics/ Rapid Prototyping
Energy/Power Generation	Manufacturing
Food & Beverage Processing	Pulp & Paper
Gas & Oil	Water/Wastewater Treatment

Types of Users

Production Engineers	Process Engineers
Facilities Maintenance	Plant Managers



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, which reduces its viscosity and allows 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 BS0 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 environments. The tapes are connected to a temperature controller used to program and monitor heat output. BS0 tapes are an ideal solution for keeping the shortening liquefied and production lines operational.

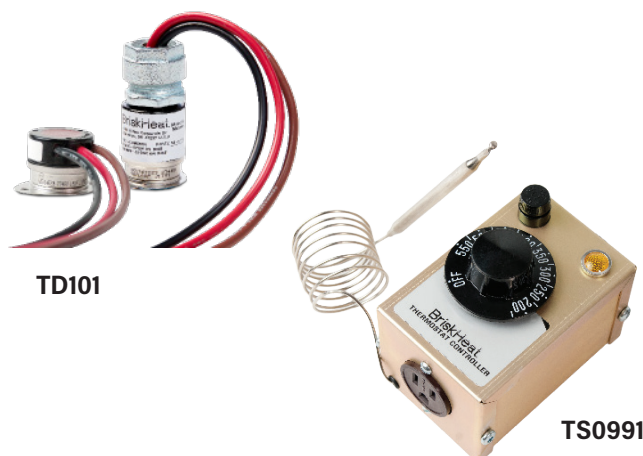
Viscosity control applications, such as melting shortening do not require tight temperature control. TD101 thermostats and TS0991 Bulb and Capillary controllers are low cost options for use with heating tapes and silicone heaters. TC4X Digital temperature controllers can be used in outdoor as well as 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 BS0 tapes.



Industries

Food & Beverage
Processing

Types of Users

Production Managers
Maintenance Managers
Design Engineers

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 and shelving, and chafing dishes 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 correctly, the food can get cold, or 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 (0.186 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/in² (0.47 W/cm²) 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 cutouts, unique lead materials or terminations, or dual wattages or voltages, they are available. Standard products are IP5X; however, they can be special ordered as IP65.

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

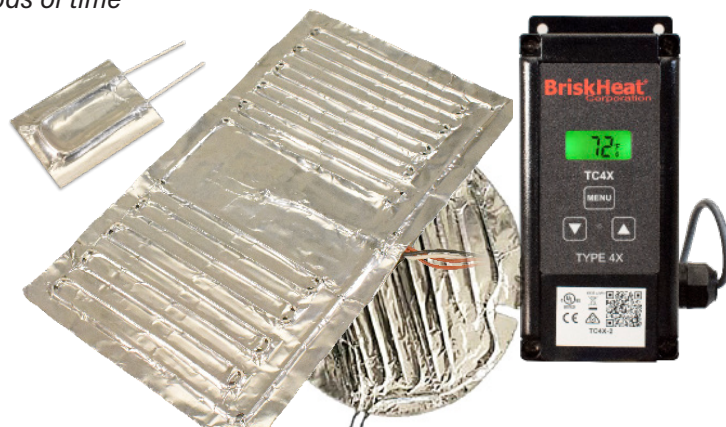
BriskHeat's flexible aluminum foil heaters can also be used as replacement units for malfunctioning original equipment heaters.

Industry

Food & Beverage Processing
Life Science/Medical/Pharmaceutical

Types of Users

Design Engineers	Caterers
Restaurant Managers	Food Delivery Services



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, etc.

Medical Products - To provide heat for items like incubators, blood warmers, invitro fertilization heaters, surgery beds, biofluid warmers, anesthesia heaters, etc.

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

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 dramatic increase in viscosity, making it extremely difficult or even impossible to pump or pour.

To reliquify 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 reliquifying honey. The 4 in (10 cm) wide wraparound 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 durable and long-lasting 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.

Increase energy efficiency by adding a FGD standard duty or FGDIW wet-area full coverage insulating jacket. These have adjustable straps and can be secured over the band heater.

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



Industries

Agricultural/Farming/
Ranching

Food & Beverage
Processing

Types of Users

Beekeepers
Hobbyist Producers
Commercial Producers
Honey Packers &
Bottlers

Small & Large
Farms
Cooks/Bakery
Managers
Food Plant Managers

Similar Applications

Syrup
Wax
Fats & Oils

Catalysts
Greases
Lubricants

Chemicals
Solvents
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 (IBCs) 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 TOTE and TOTEW Wraparound 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 dual-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 Wraparound 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.



- TOTEW Wet-Area heater features moisture-resistant polyester cloth.

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.

Common Materials Used in IBC/Totes

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



Products

Wraparound IBC/Tote Heater
TTH Silicone IBC/Tote Heater

Types of Users

Facilities Maintenance
Process Engineers
Production Managers

Industries

Aerospace/Aviation	Energy/Power Generation	Injection Molding/Plastics
Agriculture/Farming	Food & Beverage/Processing	Rapid Prototyping
Ranching	Gas & Oil	Manufacturing
Asphalt/Concrete	Heavy Industry/Mining	Pulp & Paper
Chemical Processing/Extractions		Wastewater Treatment

IMPROVED FLOW DURING COSMETICS FILLING

Uniform heat makes for uniform filling speeds

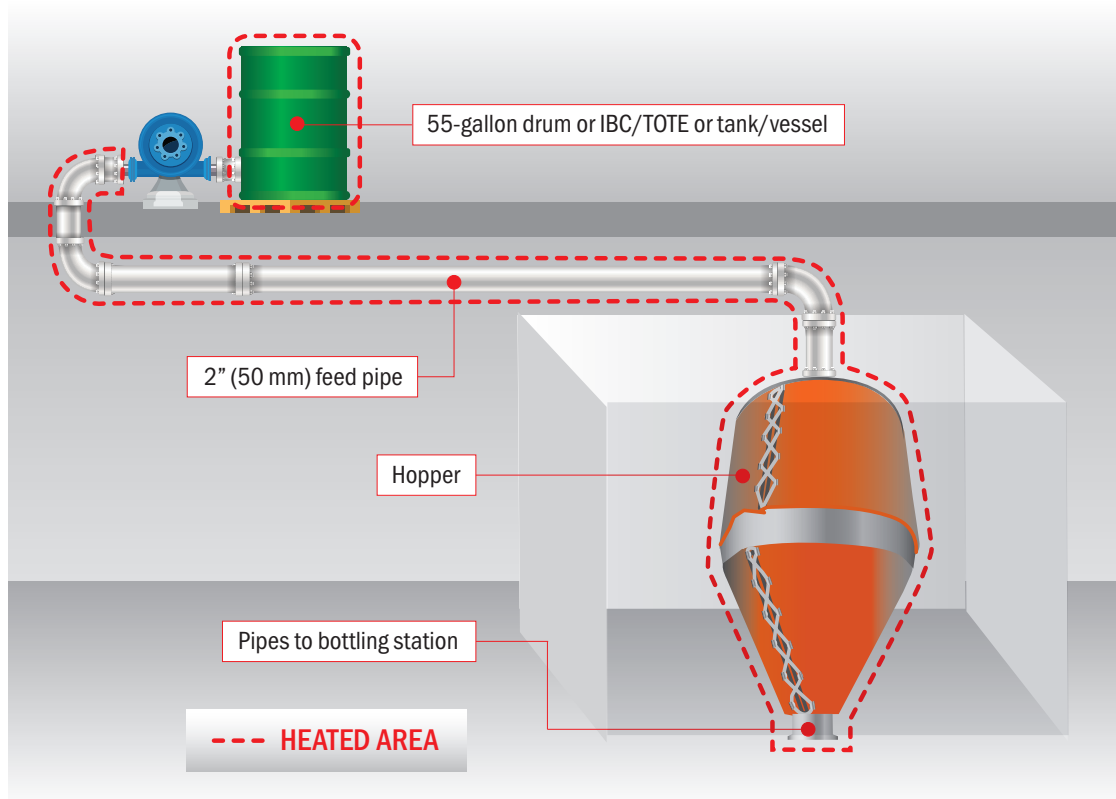
Application

Heat is important in cosmetic manufacturing as it helps make the creams and lotions more homogeneous. Heat is also required to reduce the viscosity of the liquids so bottles can be quickly filled to the proper levels. During the filling of cosmetic creams and lotions, temperatures need to be maintained between 86°F and 104°F (30°C to 40°C) to maximize flow. At the beginning of the filling process, there is often a system of drums/IBCs, transfer pipelines, and hoppers as illustrated below. Heat is needed throughout to maintain consistent flow. The application criteria from the customer indicated there needs to be an option for insulators to make the equipment safe-to-touch, heaters need to be moisture resistant with an IP rating of at least IP54, and heaters must be aesthetically pleasing.



Heaters need to be moisture resistant with an IP rating of at least IP54, and heaters must be aesthetically pleasing.

EXAMPLE OF SYSTEM CONFIGURATION AND WHERE HEAT IS APPLIED:



Solution

BriskHeat was able to offer the customer a choice of two total solutions, one insulated and one uninsulated. Both options provide the heat necessary to decrease filling time and prevent buildup of liquids in the system that could potentially stop production. The solutions are moisture resistant and easy to install. Heaters can be removed for maintenance and then reapplied when the system returns to production. Insulated jackets have the added benefit of reducing energy use. BriskHeat's heating solutions are durable and will provide years of trouble-free operation.

Drum Heaters

Silicone rubber drum heaters include an adjustable temperature controller and have a spring closure of easy on/off installation. Multiple heaters can fit around the drum to add additional heat if drums are more filled. Full coverage drum heaters are available for dry or wet-area installations. Insulated drum heaters are available with single or dual heating zones.

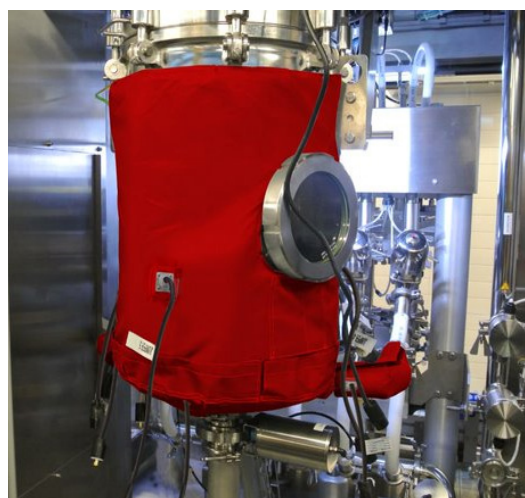
Hopper Heaters

Hoppers can be heated with multiple SRL standard silicone rubber heating pads. These are available with pressure-sensitive adhesive (PSA) to secure them to the surface being heated. For more complete coverage, custom silicone heaters can be designed to fit a contoured shape such as a cone. These can include holes or cutouts for pipes or ports. Likewise, custom cloth heaters with insulation can accommodate most hopper features. Transfer Pipelines need to be heated to prevent clogging.

XtremeFLEX® Silicone Rubber heating tapes can be wrapped around tubes and pipes as small as 1/2 inch. These are available in widths of 1/2, 1, and 2 inches, and some models include thermostats. Custom cloth heaters are available for pipelines; however, Silver-Series 2 insulators are designed to cover pipes and fittings.

Temperature Sensors

Heaters in these solutions need to be controlled. Sometimes this is achieved with built-in thermostats, however, single or multiple zone temperature controllers such as the TC4000 or MPC2 can be added. Custom cloth jackets are often provided with a docking station to add a LYNX® controller.



Industries

Cosmetics/Personal Care	Manufacturing
Life Science/Medical/	
Pharmaceutical	

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 wraparound 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 faster heating and increased energy efficiency, add an FGDI full coverage insulating jacket. These can be used in dry environments, feature 1 inch thick insulation, and hook and loop fastening.

*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

Agriculture/Farming/ Ranching	Composites/Epoxyes/ Resins
Asphalt/Concrete	Food & Beverage Processing
Chemical Processing	Gas & Oil Manufacturing
Injection Molding/Plastics/ Rapid Prototyping	

Types of Users

Facility Maintenance	Process Engineers
Process Engineers	Design Engineers
Production Managers	Contractors
Small & 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 and 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 1 in (2.5 cm) 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

Agriculture/Farming/ Ranching	Construction	Injection Molding/Plastics/
Asphalt/Concrete	Food & Beverage	Rapid Prototyping
Chemical Processes/ Extractions	Processing	Pulp & Paper
	Gas & Oil	Wastewater Treatment

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 55-gallon (208-liter) drums and pumped into production through pipelines. The drums, pipes, and associated valves need to be heated to ensure proper flow and dosage.

Solution

Heat the 55-gallon (208-liter) drums with BriskHeat's FGDH and FGDHW 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.

An alternate solution, SLMCBL mid-temperature 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 can make almost any size and shape jacket, and these are now available in wet-area versions. The LYNX® Temperature Control System, with individual control modules, can link up to 1,024 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 allows BS0 heating tapes to flex and contour to nearly any size object that needs heat.



Optional Accessories

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

Industries

Cosmetics/Personal Care	Manufacturing
Food & Beverage Processing	

Types of Users

Chemical Engineers	Production Managers
Facilities Maintenance Personnel	Quality Directors
Process Engineers	Technical Directors

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.

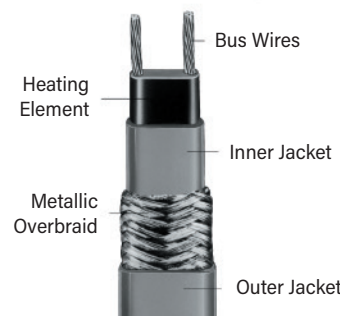
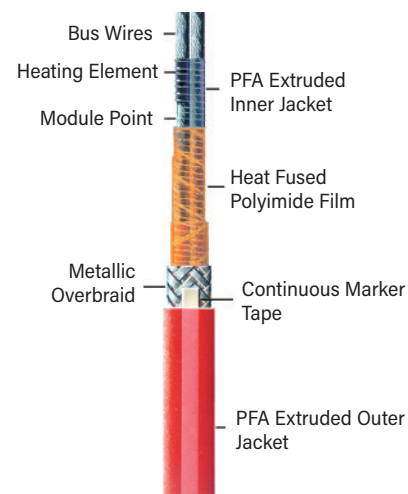
Throughout petrochemical processing plants, there are many chemicals and gases passing through pipelines and stored in tanks. Petroleum-based chemicals often thicken and do not flow well at lower temperatures. If the petrochemicals are not maintained at the desired temperature, viscosity issues cause 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, and can maintain temperatures up to 500°F (260°C). Often referred to as heat trace, constant-wattage heating cable is used for heating long runs of piping systems of up to several hundred ft. BriskHeat's constant-wattage heating cables are suitable for outdoor use and are FM-Approved for hazardous locations.

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. The TB110 series Hazardous-Area bulb & capillary controller includes a 10 ft (3 m) long probe, and can be used outdoors. It is approved for cULus Class I Division 1, ATEX and IECEx hazardous locations. Connection and termination kits are required for installation as well as a junction box. Insulation is always recommended to maximize heat and energy efficiency. Insul-Lock closed cell foam is recommended.

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.



Industries

Chemical Processing/ Extractions	Manufacturing Gas & Oil
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Types of Users

Maintenance	Process Engineers
Production Managers	Design Engineers
Plant Managers	Contractors



STORAGE, WARMING, AND DISPENSING 55-GALLON DRUM LIQUIDS

Improved temperature maintenance for contents of 55-gallon (200–208 liter) drums

Application

55-gallon (200–208 liter) drums are popular industrial storage and dispensing containers. Greases, oils, food ingredients, chemicals, fats, stabilizers & catalysts, and solvents are a few of the common materials that utilize 55-gallon (200–208 liter) drums. These materials often need their temperatures raised to reduce viscosity or protect them from the cold. Often the heat-up needs to be done quickly, which can be difficult depending on the material. Additionally, if the environment is extremely cold, that poses an additional challenge. Achieving the desired temperatures, whether elevated up to 160°F (71°C) or just above freezing, ensures products are ready for use and easy to dispense. If this is not done efficiently, the consequences could include production delays, ruined products, or damage/maintenance costs. Any of these consequences can cause expensive problems, leading to lost production and reduced profits.



Solution

BriskHeat's DHI 55-gallon (200–208 liter) immersion heater provides an effective solution. The DHI is easy-to-install, delivers 1,000 watts for maximum heat, has a built-in digital controller for easy programming, and a 10 ft (3 m) cord and plug for simple plug-and-play operation. Additionally, the superalloy incoloy 840 heater will not corrode or contaminate the product, is grounded, and includes a 180°F (82°C) high-limit cutoff for safety and peace of mind. Incoloy 840 is also approved for use with food ingredients. DHI Immersion heaters can be paired with FDGIW wet-area insulators for even better thermal performance. The FDGIW insulators are easily installed using built-in straps and buckles and are extremely durable. Both are suitable for use in wet or washdown environments.



Alternative Solution

BriskHeat's DHI 55-gallon (200–208 liter) immersion heater can also be coupled with an FGDHW full-coverage drum heater for maximum heat. Similar in construction to the FDGIW insulator, the FGDHW drum heater includes 600 additional watts, which greatly improves heat-up time and process control, especially in extremely cold environments.

Additional Uses

BriskHeat offers a full line of immersion heaters that can be used in most environments for freeze protection, viscosity control, and process heat.

Industries

Agriculture/Farming/ Ranching	Food & Beverage Processing
Chemical Processing/ Extractions	Gas & Oil
Composites/Epoxies/ Resins	Manufacturing
	Pulp & Paper

Types of Users

Facilities Maintenance Plant Managers	Production Engineers
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The background image shows a complex industrial facility, likely a refinery or chemical plant. It features a dense network of large, dark-colored pipes running horizontally and vertically. In the foreground and middle ground, there are various pieces of equipment, including valves with handwheels, pressure gauges mounted on a vertical panel, and structural supports. The entire scene is bathed in a strong red light, which creates a high-contrast, dramatic atmosphere. The lighting highlights the metallic surfaces and the intricate layout of the industrial infrastructure.

PROCESS CONTROL

ANNEALING MANUFACTURING PROCESS

Band Heaters mounted to cylindrical shapes create annealing chambers for small parts

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 regard 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 in (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 is 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 utilized to control heaters rated for 15 amps or less. For larger heaters up to 50 amps or wet-area applications, BriskHeat's TB4000 controllers may be the better choice.

BriskHeat Band Heaters can be used for application temperatures up to 900°F (482°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 in (3 mm) thick and available in sizes as small as 3-1/2 in (89 mm) diameter x 1 in (25 mm) wide, up to 12 in (305 mm) diameter x 2 in (51 mm) wide. For diameters between 1 in (25 mm) to 3 in (76 mm), BriskHeat offers a line of Nozzle Heaters with similar features and benefits.

Products

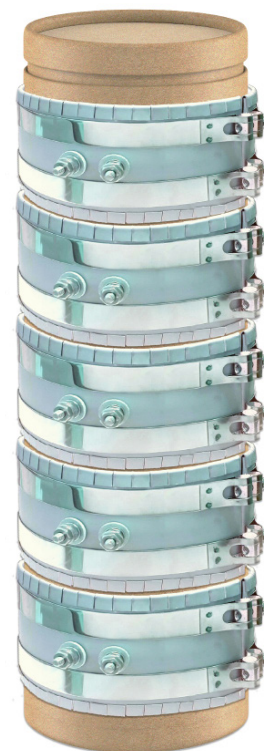
Band Heaters	Custom Cloth Insulators
Nozzle Heaters	SDX, SDC, and TB4000 Controllers

Types of Users

Lab Managers	Scientists
Process Engineers	Chemists
Manufacturing Engineers	

Industries

General Manufacturing
Analytical Instrumentation/Laboratory



BETTER 3D PRINTED PARTS START WITH HEATED BEDS

Application

Additive manufacturing is a process where material is layered upward on a bed to create a 3D model. Manufacturers use 3D printed parts to create prototypes during new product development or in production. Examples of 3D printed parts include complex interlocking assemblies of miniature parts, prosthetic devices, dental molds, and mandrels for irregularly shaped ceramic castings. Precision working parts can be created from a variety of materials including metal powders, thermoplastics, and thermoset polymers. Using the fused deposition modeling (FDM) process, filament polymers are melted, and deposited layer by layer through a hot-end extruder. The same filament can be processed using the selective laser sintering (SLS) where the melted material is smooth when it is deposited on the bed. Some 3D printers process in both methods and include heated beds for better results.

There are four reasons why heating the printer bed are important for producing high quality parts.

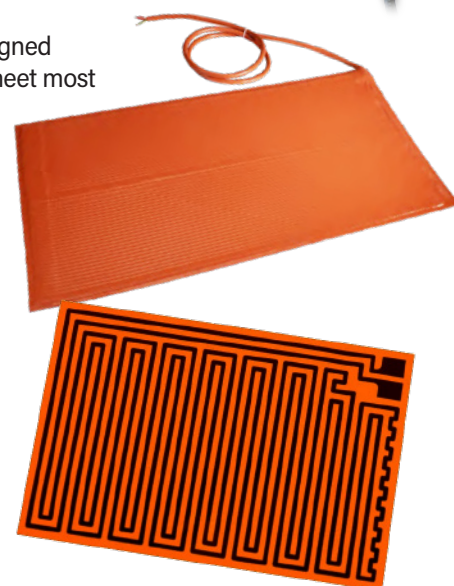
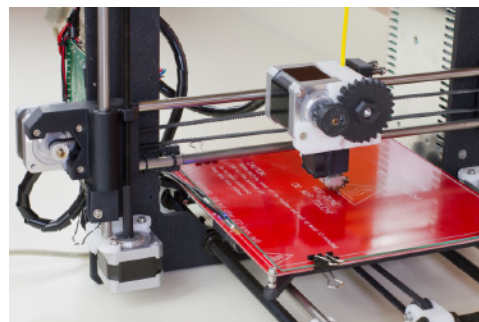
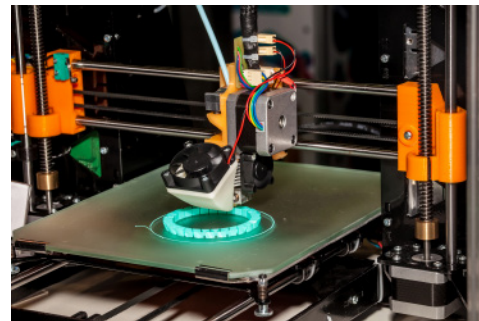
1. Prevents warping of parts – Once resins exit the nozzle and are deposited on the bed, they start to solidify. If the material cools too quickly, it will start to warp causing poor quality parts.
2. More uniform temperatures in the printing area – Uneven temperatures may diminish the strength of the part as warm material is deposited on cold material.
3. Improved adhesion of the first layer – Hot resins are sticky, making them more likely to adhere to a warm plate than a cool one.
4. Easier parts removal – Parts printed on a heated bed will contract as they cool making it easier to remove from the printer bed.

Older or less expensive 3D printers do not include heated printer beds, and can be added. In other cases, the heaters on the beds have failed or do not reach the required temperature.

Solution

BriskHeat offers silicone rubber resistance wire and polyimide etched foil heaters to improve the performance of 3D printers. When replacing a failed heater, dimensions and heating requirements of the original heater should be replicated to obtain an exact replacement. SRW silicone rubber heaters are available in power densities from 1 watt/in² to 5 watts/in², with operating voltages from 12 to 480 AC or DC. They are durable, moisture resistant and can be grounded for safety. BriskHeat etched foil polyimide film heaters are ultra-thin, and have excellent temperature uniformity and thermal response. They can be designed with power densities up to 50 watts/in². Additionally, custom heaters can be constructed to meet most OEM requirements. This includes shapes and sizes, the location of lead wires, built-in temperature sensors, holes/cutouts, and pressure-sensitive adhesive (PSA) to mount the heater in the correct location.

Adding a heater to an existing print bed can be easily accomplished but must also include other accessories. In addition to the heater and temperature sensor, a temperature controller is required. A fixed temperature thermostat can be integrated into the blanket. BriskHeat offers a complete selection of ON/OFF or PID controllers including low-cost analog models such as the TSO, or the digital TTD. For safety, a high-limit cutoff switch may be integrated into the heater or an HL101 High-Limit Controller.



Industries

Injection Molding/Plastics
Rapid Prototyping
Life Science/Medical/Pharmaceutical

Manufacturing
Semiconductor, Flat Panel, &
Photovoltaic/Solar

BLOWN-FILM MANUFACTURING

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

Application

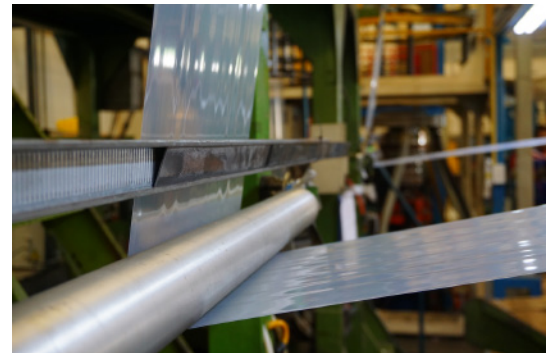
"Blown Film" refers to a broad range of plastic films manufactured for a wide range of uses. Examples of products made from blown film include trash and kitchen bags, plastic wrap, cellophane tape, laminating films, food packaging, agriculture and membrane films, industrial packaging wraps, and much 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 30 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

Injection Molding/Plastics	Manufacturing
Rapid Prototyping	

Types of Users

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



TTD



TC4000

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 inferior 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 Cutoff Controller is used. If a programmed setpoint 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.



HM Lower Hemispherical Heating Mantle



SDX



HL101



HM Metal Housed Heating Mantle



LYNX®

Industries

Analytical Instrumentation/
Laboratory
Chemical Processing/
Extractions

Food & Beverage
Processing

CANNABIS DISTILLATION

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

Application

Extracting and purifying cannabinoids from cannabis plants 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.

The process of purifying and isolating cannabinoids starts with extraction, where milled plant material is processed in a way that removes the cannabinoids. This step may involve a solvent such as ethanol or supercritical carbon dioxide. After extraction, the cannabis oil needs to be further refined to purify and isolate the desired chemicals. A common practice to achieve purification is through distillation. A wiped-film distillation process contains several steps where heat is required to evaporate then condense the chemicals for separation. Processing components that must be heated may 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°C and 100°C (176°F and 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 they 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. Adding a high-temperature limit controller such as the HL101 prevents accidental over-temperature conditions that might damage products.

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.

Industries

Analytical Instrumentation/ Laboratory Chemical Processing/ Extractions	Life Science/Medical/ Pharmaceutical
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CHEMICAL AND MATERIAL PROCESS HEATING

A better way to heat pipes, tanks, and vessels

Application

Facilities that use or process chemicals, gases, 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.

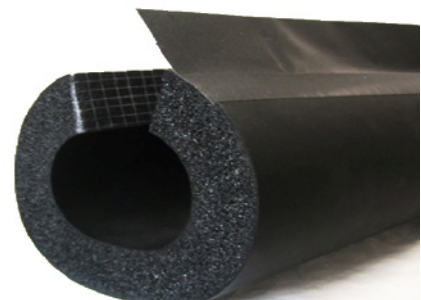
Often the complex nature of these systems, having many twists and turns, makes them difficult to install traditional heat trace cable to protect against the cold. Also, limited access or difficult to reach areas have their own unique challenges. Traditional semi-flexible, self-limiting heat-trace cable 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 preset 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 preterminated 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® foam pipe insulation that is perfect for use with RKP heating tapes.

Note: Standard preset 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 (17 W/m). Custom configurations are available upon request.



Industries

Chemical/Processing/ Extractions	Gas & Oil Gas Handling
Energy/Power Generation	Manufacturing
Food & Beverage Processing	Water/Wastewater Treatment

Types of Users

Facility Maintenance	Design Engineers
Production Managers	Contractors
Process Engineers	Plant Managers

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 shutdown 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 restarting 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, 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.



Industries

Construction

HVAC

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 those temperatures are accurate. If they can not 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 programmed 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 setpoint 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

Chemical Processing/ Extractions	Gas Handling
Composites/Epoxy/ Resins	Injection Molding/Plastics/ Rapid Prototyping
Food & Beverage Processing	Manufacturing
Gas & Oil	Semiconductor, Flat Panel, & Photovoltaic/Solar

Types of Users

Facilities Maintenance	Production
Process Engineers	Managers

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°F to 160°F (66°C 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, pump, valve, hopper, and 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 – Wraparound 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:

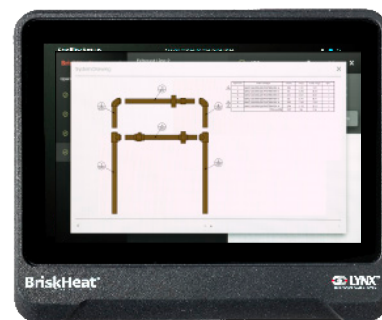
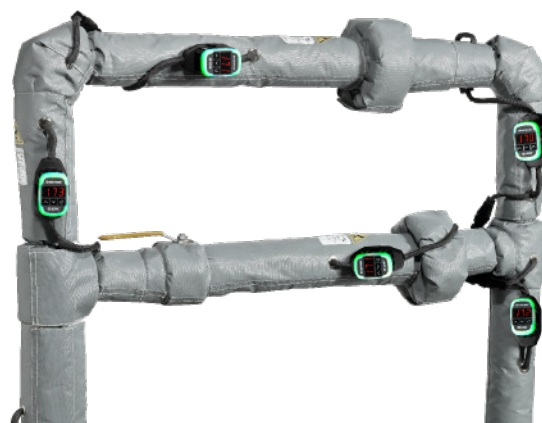
- Accuracy up to 0.25°C (0.45°F) for maximum precision
- Low and high-temperature alarms for safety
- Self diagnostics of heaters and sensors for peace of mind
- USB port for easy data downloads
- Zone locator for easy performance identification
- Idle mode setting for energy savings and improved safety

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.



BSO



Industries

Cosmetics/Personal Care	Life Science/Medical/
Food & Beverage Processing	Pharmaceutical
Manufacturing	

Types of Users

Facility Maintenance	Design Engineers
Production Managers	Plant Managers
Process Engineers	

CREATING MORE EFFICIENT HVAC AND HEAT PUMP SYSTEMS

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

Application

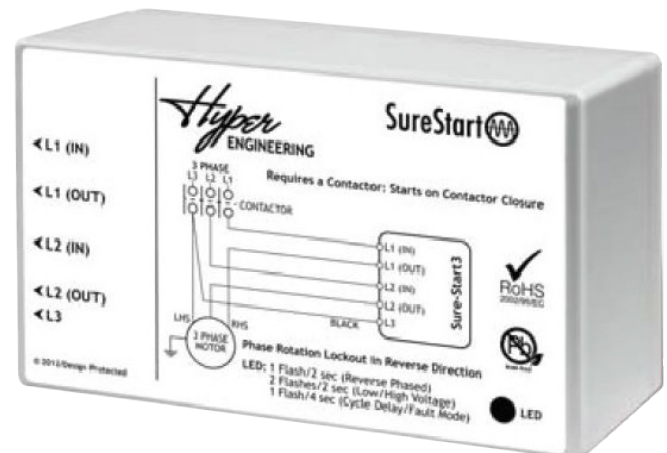
An A/C compressor is one of the most important components of a cooling system. It condenses refrigerant to a gas in order to move it to other parts of the system. Without this component, the A/C system can't work.

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. But when the system is started by a backup 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. This could necessitate the purchase of 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 amps, but with the addition of a soft starter, that number is reduced to 40 amps. 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

Construction HVAC
Consumer/Residential

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, communication 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 setpoint 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	Life Science/Medical/
Asphalt/Concrete	Pharmaceutical
Chemical Processing/	Manufacturing
Extractions	Pulp & Paper
Food & Beverage	
Processing	

Types of Users

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

FAST WAX MELTING FOR CANDLE MAKING

Increase production through faster wax melting and temperature maintenance

Application

Wax is substance that can be melted in 55-gallon (200-208 liter) drums. Wax caps must be removed from beehive frames to allow honey to be spun during harvesting. These can be melted in drums to increase the production yield from each frame. The wax must be filtered out and may be used for other products. An example of this would be the manufacturing of candles using beeswax.

Paraffin candles are made from petroleum-based wax that has a melting temperature of 99°F (37°C). Beeswax is a cleaner burning wax that has a higher melting temperature than paraffin, ranging from 144°F to 147°F (62°C to 64°C).

To melt more efficiently, the wax is mixed 50-50 with oil having a lower melting point for better flame stability. Since the oils have a lower melting point, they can be heated in a drum and used to assist in the melting of the beeswax. Once melted, the oil and wax are mixed for the final product. The wax can be dispensed into jars, molds or blocks for future use. The wax must be efficiently and accurately melted to avoid damaging or destroying the final product.

Solution

BriskHeat's DHI Immersion Drum heater is the ideal solution for heating beeswax. The heater is directly immersed within the drum which allows the heat to immediately be transferred to the product rather than having it absorbed by the container. The heating element inserts into the bung hole on a standard 55-gallon (200-208 liter) drum lid, then threaded into place for quick installation. The DHI delivers 1,000 watts for maximum heat, has a built-in digital controller that can be set up to 167°F (71°C), and a 10 ft (3 m) long cord with standard 3-prong plug for simple plug-and-play operation. It is safe for use on poly or metal drums. The superalloy incoloy 840 heater will not corrode and contaminate the product, is grounded, and includes a 180°F (82°C) high-limit alarm for safety and peace of mind.

For even better thermal performance, the DHI drum immersion heater can be paired with either a FGDHW Wet-Area or the FGDH Standard Full-Coverage Drum Heater. These add more heating power and insulation to the system. As an alternative, performance tests show that the combination of the DHI immersion heater and FGDHIW insulator heats faster than a standard full-coverage 55-gallon drum heater.

Product Tip: For dispensing the wax into molds or smaller containers, the heater can be positioned close to the pouring spout to prevent clogs. Remove power when the liquid level covers less than 12 in (305 mm) of the heater.

Additional Uses

BriskHeat offers a full line of drum heaters and insulators that can be used in most environments for other types of wax melting, freeze protection, viscosity control, and process heat.



Industries

Agriculture/Ranching/ Farming	Food & Beverage Processing
Consumer/Residential	Manufacturing

Types of Users

Plant Managers Production Engineers Small Business Owners	Beekeepers Home Hobbyists
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FURNITURE ADHESIVE AND RESIN 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 manufacturing and assembly processes often need to be heated in order to cure properly, ensure strength, and maintain structural uniformity. Adhesives are used to bond parts together and may require fixtures to properly align parts, holding them in the correct position while the adhesive cures. Resins may be poured into a mold where it will become a solid surface after curing. Surface heat is sometimes required for quickly curing resins and adhesives in order to increase product quality and speed production. These applications may require a heater that can easily conform to complex geometries of furniture parts. If pressure is required to assure the resin properly fills the mold, the heater must also withstand the applied pressure.

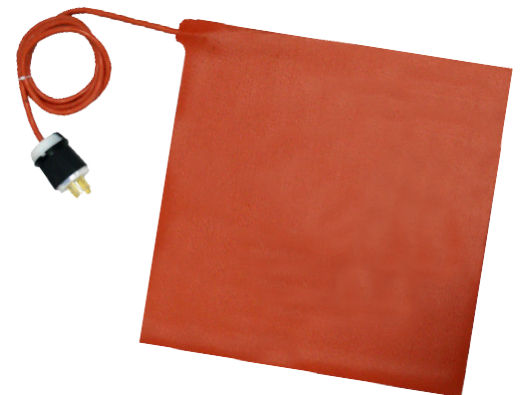


Solution

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 ensures the blanket maintains the specified temperature for the adhesive and/or resin to cure. The heating blanket's smooth surface and extreme flexibility will easily conform to the contours of the furniture but will not leave a pattern on soft surfaces. The uniform heat generated by the heating blankets provides a reliable cure for consistent and repeatable manufacturing. Always use a release film or peel ply between the material being cured and the heater to keep the heater surface free of contamination. Alternately, adhesives can be cured with BriskHeat's hot air gun.



Manufacturers of adhesive and resin materials provide specific information on how their materials are to be cured in order to maximize performance. Resins may require a ramp/soak program to slowly bring the material up to temperature and then maintain that temperature for a specific period of time. BriskHeat's TT tabletop composite curing controller can be used with to control an SR heating blanket. The TT is also included as part of the BRISKAIRSP-1 Hot Air Gun Curing System.



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

Composite/Epoxies/Resins	Manufacturing
Consumer/Residential	Woodworking

Types of Users

Production Workers	Woodworkers
Home Hobbyists	Production Managers
Design Engineers	Repair Technicians



GAS ANALYSIS IN NATURAL GAS MARKET

Midstream gas sampling at Compressor Stations and Natural Gas Processing Plants

Application

In the Natural Gas market, a gas chromatograph is used to determine the total gas composition and BTU value of the gas. This is important to know as natural gas is bought/sold from one company to another, often in Midstream. Analysis is required to ensure the quality of the gas being purchased.

The calibration gases for a gas chromatograph must be kept above their hydrocarbon dewpoint or else it may cause stratification within the gas cylinder and cause erroneous measurements. For Natural Gas, the target is to keep the temperature similar to the temperature as the gas chromatograph oven or 120°F (49°C).

Solution

Gas Cylinder Warmers provide the heat necessary to accomplish this. The easy-to-install, plug-and-play BriskHeat cylinder warmers fit snugly around the cylinder to maintain a warm temperature of the contents. This ensures that the gas can be efficiently warmed, and the mixture remains homogeneous. 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 ensure the quality of the gas sample used for calibration, resulting in accurate measurements. Ordinary and Hazardous-area rated models are available.

In addition to warming gas cylinders, sample gas lines should also be heated to prevent condensation. Self-regulating cable should be wrapped tightly around pipes or tubing to prevent any vapors from condensing in the sample lines. For energy efficiency, Insul-lock foam insulators can be used.

Industries

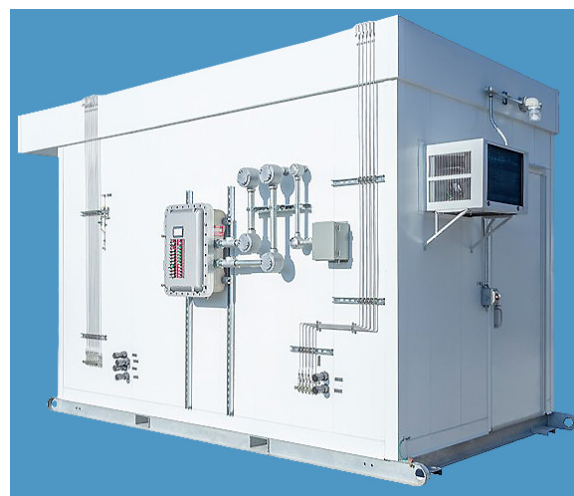
Analytical Instrumentation/Laboratory
Gas Handling
Gas & Oil

Types of Users

Natural Gas Measurement Technicians
Natural Gas Field Technicians
Area/Site Managers – Oversees Facilities like Compressor Stations
Plant Managers at Natural Gas Processing Plants
Engineers at Natural Gas Processing Plants



Analyzer Shelter with Gas Cylinder Warmer in use



Example of an outside of the Analyzer Shelter



**HCW Hazardous-Area
Rated Gas Cylinder Warmer**



**Small Gas Analyzer Enclosure
with Gas Cylinder Warmer in use**

GAS CYLINDER 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 fit snugly around the cylinder to maintain a warm temperature of the contents. This assures 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

Analytical Instrumentation/ Laboratory	Gas Handling
Chemical Processing/ Extractions	Heavy Industry/Mining Manufacturing
Gas & Oil	Semiconductor, Flat Panel, & Photovoltaic/Solar

Types of Users

Facilities Maintenance Process Engineers	Production Managers HVAC Installers/Repair
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Gases Known to Benefit from This Process

SF6	Nitrogen	BCl3	HF
Propane	Oxygen	WF6	

HEAT USED IN ULTRASONIC CLEANING MACHINES

Clean manufactured parts and sterilize instruments

Application

Ultrasonic cleaning is a safe and effective way to clean parts used in industries ranging from Machining and Finishing to Food and Drug manufacturing. Smaller tabletop models can be used for sterilizing medical instruments or cleaning jewelry. Ultrasonic frequencies ranging from 20 to 40 kHz, are converted to mechanical vibration through the transducers in the tank. This creates microscopic bubbles within the cleaning fluid that cleanse parts of contaminants such as machining oils and lubricants, metal chips, dirt, or even microscopic fibers.

When compared with more conventional cleaning methods, ultrasonic cleaning can reduce water consumption, chemical exposure, and chemical waste disposal. It not only ensures hard-to-reach areas are clean, but may save up to 85% of the cleaning time required. Determining the correct process for cleaning parts requires consideration of time, temperature, fluid chemistry, and ultrasonic frequency. Choosing the correct cleaning fluid is essential to the process, and traditional ultrasonic cleaning theory recommends the fluid be heated to approximately 65% of the fluid's boiling point.

Solution

Ultrasonic cleaning machines are manufactured to include a corrosion-resistant stainless steel tank that will contain the cleaning fluid and parts to be cleaned. This tank fits inside a larger tank with an air gap in between to reduce heat transfer. BriskHeat Ceramic Strip Heaters (CST) are attached to the outside of the inner tank to heat the cleaning fluid. Ceramic strip heaters are constructed with a high-temperature, corrosion-resistant stainless steel sheath. The chromium-resistance wire heating element is coiled inside a ceramic core and then surrounded with magnesium oxide. Mounting tabs are incorporated into either end so the heaters can be bolted into place. The direct contact between the cleaning tank and heaters ensures the cleaning fluid maintains the optimal temperature for cleaning. BriskHeat CST heaters are direct replacements for channel heaters made by other manufacturers

Standard heaters are 1.5" wide and 0.38" thick. There are options for terminals or fiberglass lead wires. These can be used in assemblies where the heater will be in contact with surfaces on top and bottom.

Industries

Analytical Instrumentation/Laboratory
Life Science/Medical/Pharmaceutical
Manufacturing

Types of Users

Lab Technicians/Managers	Dental/Medical Offices
Research Scientists	Machinists



**Ceramic
Strip Heaters**

HEATED CONVEYOR SYSTEM FOR CEMENT PROCESSING

Heated conveyors keep materials consistently dry

Application

A cement manufacturer brings raw materials such as limestone and clay to their facility for dry processing into Portland Cement. Crushed limestone and clay are transported to the plant where they can be stored outside for future use or can begin processing on arrival. Material is loaded on a conveyor over 300 ft long for entry into the mill. The dry processing of cement requires removal of water from raw materials prior to grinding and blending. The constituents are blended based on material weight, and moisture content will adversely impact the product quality. Moisture is also a factor in how well the material can be ground.

The customer wishes to heat the walls of the enclosed conveyor system and transfer heat to the material sufficiently to remove moisture. The conveyor speed can be adjusted to increase or decrease heating time depending on the product on the conveyor, as well as weather conditions. The heating system will be located outdoors where temperatures drop to below 0°F (-18°C) in the winter.

Solution

BriskHeat Application Engineers reviewed drawings of the conveyor system to determine surfaces where heaters could be located. The environmental conditions required both heaters and controllers be suitable for outdoor environments. BriskHeat Metal Clad Hopper Heaters were selected for their easy and secure stud-welding installation. These would be applied to three sides of the conveyor. By using identically sized heaters on surfaces subject to the same environmental conditions (east side vs west side), several heaters could be wired in parallel to reduce the number of control zones. Smaller hopper heaters were placed on the underside of the conveyor belt. Several of these were wired together and one thermocouple was placed on the middle heater.

The TC4000 High-Capacity Wet-Area Digital Temperature Controller is available in single and dual-zone models with 24-amp capacity, ideal for this application. Vibration-resistant internal mounts allow the panels to be located on the conveyor frame. Control panels were located almost 100 ft away and easily accessible to the maintenance technician. BriskHeat SRL silicone rubber heaters were used to heat other pieces of ductwork.



Industries

Asphalt/Concrete
Construction
Heavy Industry/Mining

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 mat 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 longer application time, poor mix quality, wasted material and damage within the system.

Solution

Heat the hose with XtremeFLEX® RKP silicone rubber heating tape. These super flexible heating tapes are designed with a built-in preset thermostat that maintains heat output at either 70°F (21°C) or 122°F (50°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 6 ft to 200 ft (1.8 m to 61 m) to meet your needs. If needed, 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 such as BriskHeat's Insul-Lock® closed foam pipe insulation. This solution eliminates downtime and extends the service life of your spray foam equipment.

Protect the drum 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 preset 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

Aerospace/Aviation	Manufacturing
Construction	Transportation
Consumer/Residential	

Types of Users

Production Managers	General Contractors
Design Engineers	Commercial Roofing Contractors
Project Managers	

HIGH-TEMPERATURE HIGH-WATT HEATING

A safe and efficient way to provide extreme temperature 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.

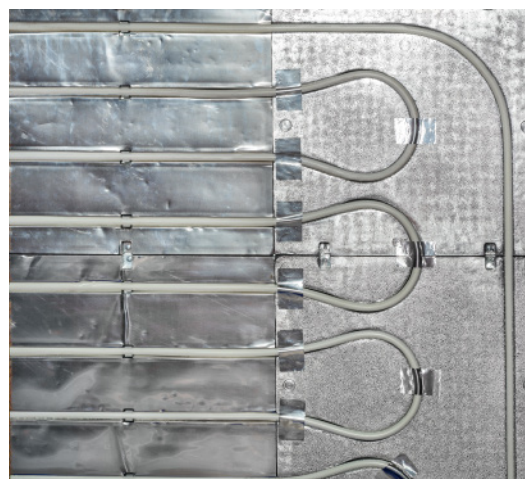
Hazardous Areas - ATEX approved for use in hazardous area locations.

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
	Super-heated steam



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



Industries

Chemical Processing/ Extractions	Gas & Oil
Energy/Power Generation	Injection Molding/ Plastics/Rapid
Food & Beverage Processing	Prototyping Manufacturing

Types of Users

Facilities Maintenance	Process Engineers
Boiler Technicians	Production Management
Quality Engineers	

HOMEBREWING CRAFT MEAD

Uniform heating and insulating dissolves honey crystals

Application

Homebrewing beer and fermenting wine are popular hobbies. In recent years, an increase in commercial meads has piqued the interest in homebrewers. Honey wine, also known as mead, is brewed, and fermented like beer, though at much lower temperatures. There are nearly endless recipes and combinations. Like wine, mead may be dry or sweet depending on the amount of honey, other ingredients used, and even the processing itself. Beer, wine, and mead require heating at some point during the processing. Heat is especially important when making mead, as the honey may need to be decrystallized, but must also be heated to allow for better mixing with the other ingredients. Decrystallizing raw honey, then using heat for processing, requires more exact temperatures to ensure the natural properties are maintained and yeast propagates efficiently.

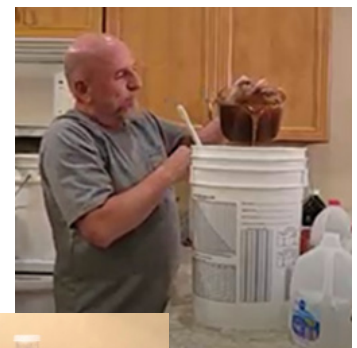
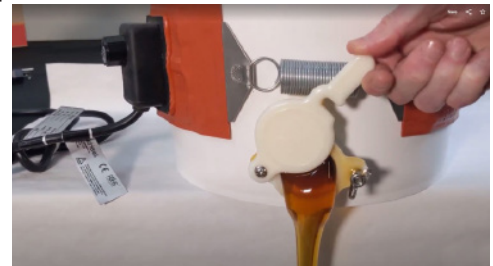
Solution

At room temperature, honey is thick and difficult to mix. Over time, it starts to crystallize and may solidify. The honey must be heated to facilitate dissolving it in the water, tea, or juice. BriskHeat makes silicone band heaters with watt densities of 1.25 and 5.0 watts/in². A DHLS10, high-watt, low temperature model is selected to decrystallized quickly without risking damage to the 5-gallon pail. This was used with an SDC temperature controller and a FGDIW5V Wet-Area Insulator to reduce the honey's viscosity. The SDC was set to 105°F (40°C) to maintain the properties of the raw honey. If the honey is not raw, it can be heated to 120°F (49°C). Without using a temperature controller such as the SDC, adjust the rotary dial to approximately 3/4 full power. The insulator assists the honey to be heated more quickly and efficiently than the heater alone. The honey needs to be stirred to distribute the heat. Two heaters may be used if the bucket is full. After fully decrystallized, the heaters may be turned off for the honey to cool slightly. If the honey will not be used for a few more days, leaving the heat between 90 to 100°F (32 to 38°C) will prevent recrystallization.

Caution: Never apply heat above the level of the fluid.

It is preferable to have heaters around the mixing bucket to maintain the temperature about 90°F (32°C) for adding the yeast. Ambient temperature to slightly heated water is placed in a fermentation bucket and the heater plugged in. Warm honey is added while stirring constantly. Additional water to be added can be heated or cooled to help maintain the temperature. After all spices and fruit are added, the temperature should be checked and adjusted to 85°F to 95°F (29°C to 35°C). Yeast and yeast nutrients can be added and mixed well when the mead is in the correct temperature range. After sealing the bucket and adding an airlock, the bucket can be placed in a dark area for fermentation.

In most cases, further heating is not required as the optimum fermentation temperature for mead is 65°F to 77°F (18°C to 25°C). If the bucket will be placed in a cold basement, a rug, towel, or mat should be under the bucket. The wet-area insulator can be used to keep the brew from becoming too cold and ceasing fermentation.



Industries

Agriculture/Farming
Consumer/Residential
Food & Beverage Processing

Types of Users

Beekeepers
Hobbyists/Homebrewers
Meadery Operators

HOPPER HEATING FOR GENERAL MANUFACTURING

A durable and effective way to heat manufacturing hoppers

Application

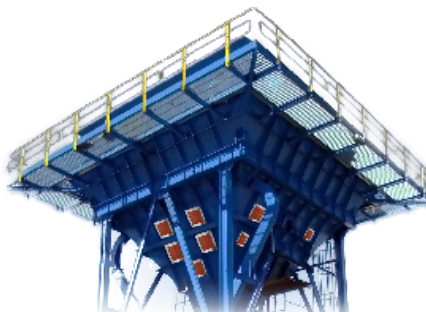
Manufacturing facilities often use hoppers to collect all different types of materials. These hoppers come in all shapes and sizes and can be found indoors and outdoors. Typically they have large openings at the top where materials are loaded and much smaller openings at the bottom to dispense the contents as needed. General manufacturing hoppers are often used as material storage areas or a preheating 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 an 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 volt 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.



TB4000



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

Agriculture/Farming/Ranching
Asphalt/Concrete
Chemical Processing/
Extractions
Heavy Industry/Mining

Injection Molding/
Plastics/ Rapid
Prototyping
General Manufacturing
Paper & Pulp

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 chips, candy, medical devices, vegetables, pet food, grains, condiments, capsules & pills, nuts, 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, and 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). They can be manufactured with built-in thermocouples for precise temperature control. The outer sheath is 304 stainless steel with options for 316 and incoloy. Materials are suitable for use in food production environments, and most 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. Right angle leads with flexible stainless steel conduit is a popular configuration.

Additional Uses

BriskHeat cartridge heaters have watt-density capabilities up to 300 W/in² (46.5 W/cm²), standard diameters up to 1 in (2.5 cm) and lengths up to 3 ft (0.9 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

Food & Beverage Processing	Pulp & Paper/Packaging
Injection Molding/Plastics/	Manufacturing
Rapid Prototyping	

Types of Users

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

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. Equalize the temperature of the liquid in the flask

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 around the lower half of the flask for 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. The heating mantle's housing is designed 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 polycoated 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

Analytical Instrumentation/ Laboratory	Cosmetics/Personal Care
Chemical Processing/ Extractions	Food & Beverage Processing
	Life Science/Medical/ Pharmaceutical

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/in² (0.39 W/cm²) 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.



TC4X



Industries

Chemical Processing/ Extractions Gas & Oil	Manufacturing Paper & Pulp Water/Wastewater Treatment
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Types of Users

Facilities Maintenance Personnel	Process Engineers Production Managers
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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 instruments
- 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 subprocesses. The result is even heat distribution, accurately shaped heaters that can be as small as 0.5 in (13 mm) square, as thin as 0.0045 in (0.11 mm), and whatever shape is required. Additionally, because of the automated manufacturing process, large quantities of heaters are extremely affordable.

BriskHeat's SDX Digital PID Temperature Controller adds precise temperature control for the most sensitive applications. High amp draw heaters sometimes require a temperature controller designed for higher amp ratings. For applications when the power will be 15-50 amps, BriskHeat's TB4000 or TC4000 are the correct controllers. Both of these can be designed to operate more than one heater.

Additional Applications

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



Etched Foil Heaters



SDX

Industries

Analytical Instrumentation/Laboratory
Life Science/Medical/Pharmaceutical
Manufacturing

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° 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 a 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 standalone temperature controller. The HL101 does not control the heating temperature, but rather ensures the temperature does not exceed a defined setpoint. 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

Analytical Instrumentation/Laboratory
Chemical Processing/Extractions
Cosmetics/Personal Care
Food & Beverage Processing
Life Science/Medical/Pharmaceutical
Manufacturing

Types of Users

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

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 thermoformability. 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 provide 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.

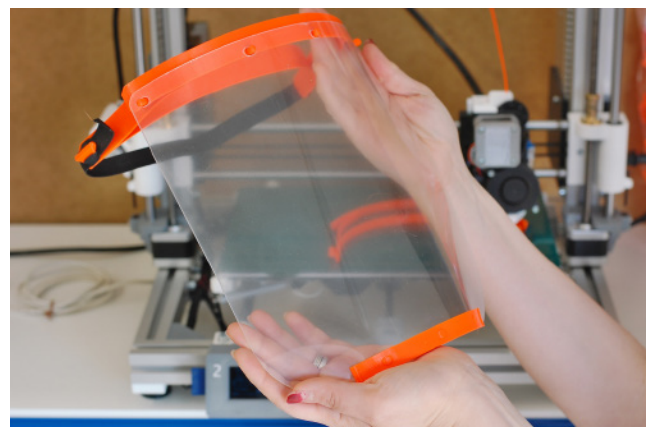
Optional Accessories

- TP0 Temperature Controller - Time percentage control varies the proportion (length) of time the heater is in the "on" or "off" heating mode.
- SDC Temperature Controller - Programmable digital temperature controller controls heat output in F° or C°.
- AAT2180 - High temperature aluminum adhesive tape.



Industries	
Consumer/Residential Injection Molding/Plastics/ Rapid Prototyping	Manufacturing

Types of Users	
Makers Hobbyists Business/Shop Owners	Shop Managers Inventors Engineers Students



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 a leak occurs. If the temperatures are not maintained across the entire surface, the process loses efficiency which could lead to costly downtime.

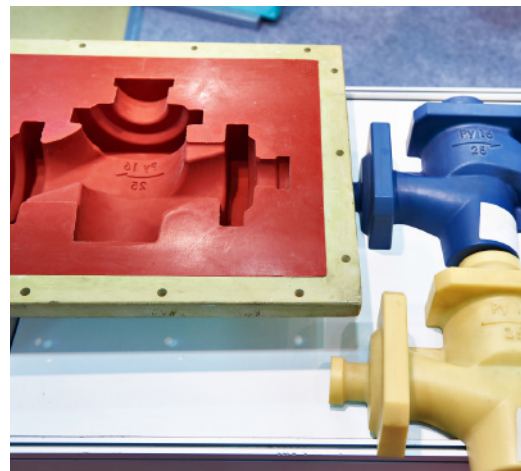
Solution

BriskHeat's mica band heaters wrap firmly around the nozzle barrel to provide the necessary heat to efficiently melt the pellets. Heaters 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/in² (6 W/cm²) and reach temperatures up to 900°F (482°C). Galvanized or optional stainless steel sheaths are moisture and corrosion resistant, have low-profile 0.125 in (3 mm) designs, and are constructed with evenly-wound nickel/chromium resistance wire for uniform heat distribution.

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 30 amps per zone or BH-610 for up to 40 amps.

Other Applications

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



TTD



Band & Nozzle Heaters



BH-610

Types of Users

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

Industry

Injection Molding/Plastics/ Rapid Prototyping	Manufacturing
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PREHEATING 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 governing bodies such as ASME, API, ASM, NAVSEA, and proprietary entities, have codes that require preheating and post-heating many metals when welding, brazing, or soldering.

BriskHeat assisted with a preheating application for a submarine manufacturer who was 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 3,048 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 1,400°F (760°C). They have a high-watt density of 13.1 W/in² (2.0 W/cm²) which ensures a rapid thermal response and even distribution of heat. BWH fiberglass heating tapes are 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 meet the requirement with IP65 and IP66 enclosures. Heater, power, and temperature sensors 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 BS0 silicone heating tapes or SRL silicone heating blankets are an effective solution.



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

Aerospace/Aviation	Heavy Industry/Mining
Construction	Manufacturing
Food & Beverage	Transportation
Processing	Wastewater Treatment
Gas Handling	

Types of Users

Welding Technicians
Production Managers
Design Engineers
Fabricators & Builders

REACTION CHAMBER FLUID PROCESSING

Fluid temperature uniformity within laboratory, research, and manufacturing operations

Application

A reaction chamber requires gases or liquids be maintained at an elevated temperature to facilitate processing. The size and unusual shape does 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 requires 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-sized 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.

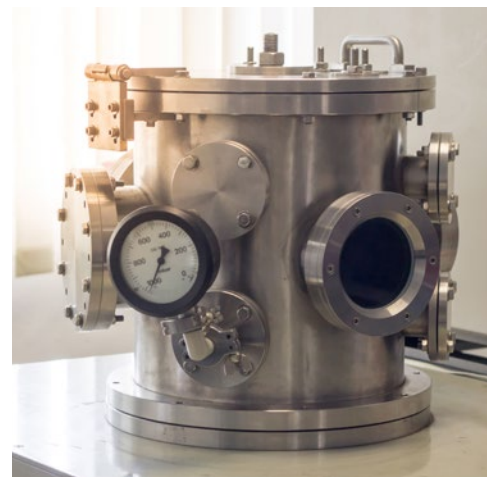
BriskHeat's TB4000 family of high amperage temperature controllers are ideal for use on a single chamber with heaters up to 50 amps. In addition to controlling a single zone of heat, the TB4000 may be ordered with a high-limit switch or with two control zones of up to 50 amps each. This controller can be used in wet areas or where temperatures are subzero 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/in² (46.5 W/cm²), 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, diecasting and medical devices.



Products

Cartridge Heaters	MPC2 Temperature
Custom Cloth Heaters	Control Panel
TB4000 Controller	

Types of Users

Lab Managers	Scientists
Process Engineers	Chemists

Industries

Analytical Instrumentation/Laboratory
Chemical Processing/Extractions
Life Science/Medical/Pharmaceutical
High Vacuum

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 gases 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 preheating 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

Construction	Gas Handling
Consumer/Residential	HVAC

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 1,100°F (593°C) and maintaining very tight tolerances. Custom cloth heating jackets can be made using low particulate materials to meet cleanroom 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. HTCE heating cords are grounded heating elements that can be wrapped around objects as small as 1/8 in diameter. The durability and flexibility of XtremeFLEX heating tapes and cords allows them to twist, turn, bend, and wraparound many objects; even those with diameters as small as a pencil. In addition, some cloth tapes have high temperature capabilities up to 1,400°F (760°C) and watt densities up to 13.1 W/in² (0.020 W/mm²). 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.



HTCE

MPC2



Products

Custom Cloth Heaters
MPC2 Control Panel

XtremeFLEX® Heating
Tapes & Cords

Types of Users

Professors
Students
Lab Managers
Scientists

Chemists
Process Engineers
Project Managers

Industries

Agriculture
Analytical Instrumentation/
Laboratory
Chemical Processing/
Extractions
Life Science/Medical/
Pharmaceutical

Semiconductor, Flat
Panel, & Photovoltaic/
Solar
Water/Wastewater
Treatment

STEAM INJECTION FOR ENHANCED OIL RECOVERY

Mineral insulated cable keeps superheated steam hot

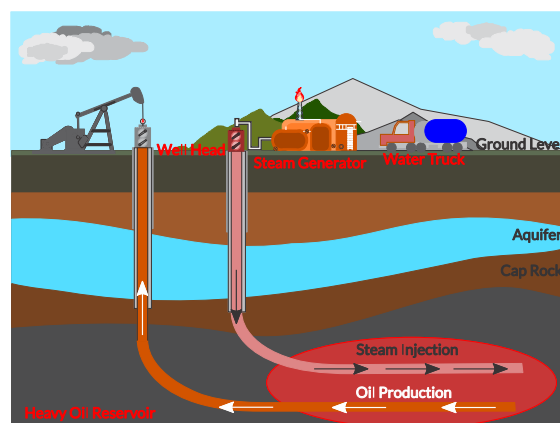
Application

Oil companies drill and pump wells to bring up crude oil that flows easily through the piping. The potential for peak production occurs early in the well's life cycle and will decrease over time. An enhanced oil recovery (EOR) method may be used to thermally stimulate the remaining reserves. Cyclical Steam Stimulation, utilizes steam injection to decrease oil viscosity, and melt paraffins and asphaltenes to effectively extract remaining oil reservoirs. This method enhances oil recovery, and requires super-heated steam which must be 572°F to 644°F (300°C to 340°C) for injection. Energy-efficient steam generators produce super-heated steam which must retain its temperature as it moves from the generators to the injection locations. A decrease in temperature will occur in the steam transmission pipes even if they are insulated. If this happens, the cyclical steam stimulation will not be as effective, leading to extreme inefficiency and avoidable loss of revenue.

Solution

Mineral Insulated (MI) Heating Cable can be used for applications requiring temperatures up to 1,832°F (1,000°C). Sheath materials can be 321 stainless steel, Alloy 800/825 or Inconel 600, making the heater waterproof with a high resistance to corrosion. The cable can be bent to fit almost any shaped object requiring heat such as the pipes, tees, elbows, and valves on this steam injection system.

Custom engineered cloth insulators manufactured with beta cloth and high-temperature fiberglass lock in the heat from the cable to maximize efficiency. They are rated for temperatures up to 900°F (482°C). Additionally, they feature high-temp hook and loop closures for repeated installation and removal. An MPC2 Multi-Point Temperature Control Panel will effectively control the heating cables' temperatures. This controller allows the operator to see the current and setpoint temperatures of each heating zone and has excellent accuracy. MPC2 controllers can simultaneously control multiple zones and interface with a process control system when required.



Industries

Chemical Processing/Extractions
Energy/Power Generation
Gas & Oil

Types of Users

Facility Planners	Station Managers
Industrial/Process Engineers	Piping Contractors



MI Mineral Insulated Heating Cable



MPC2 Temperature Control Panel

STEAM PIPE INSULATION

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

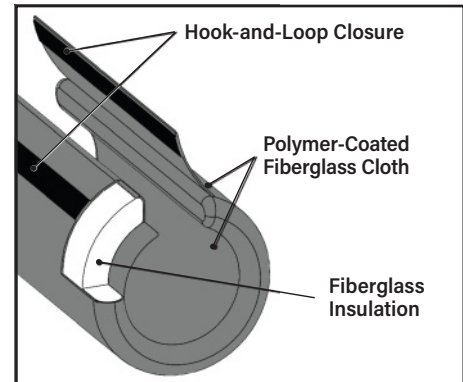
Application

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, food preservation, 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 2 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 2 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 drawstrings that tighten the insulators around pipes to maximize efficiency. Straight pieces are available in popular lengths and there are cut-to-length straight sections.

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 1,800°F (982°C) maximum exposure temperatures.



Industries

Analytical Instrumentation/Laboratory	Gas Handling
Chemical Processing/Extractions	Manufacturing
Energy/Power Generation	Pulp & Paper
Food & Beverage Processing	Water/Wastewater Treatment
Gas & Oil	

Types of Users

Facilities Maintenance	Production & Plant Managers
Process Engineers	

SUPERHEATED STEAM FOR FOOD PRESERVATION

Steam drying increases harvest yields

Application

Harvested food preservation has become more important as climate change has impacted the global food supply. Countries capable of producing more are encouraged to do so by consumer demand. Often they lack the equipment and resources to quickly harvest and move their agricultural products to market. Once harvested, moisture within the product may begin to degrade that will result in post-harvest losses. To overcome this problem, superheated steam drying (SSD) is employed to preserve the harvest.

SSD uses steam at temperatures ranging from 572°F to 932°F (300°C to 500°C). The steam can quickly transfer energy for drying and still maintain temperatures high enough to prevent condensation. Super-heated steam is like hot air drying, but superheated steam dries faster, resulting in healthier products, increased production rates, and decreased harvest loss.

There is one component in the system that must be addressed to ensure success. Superheated steam must be transported from the boiler to a drying oven, and elevated temperature must be maintained. A decrease in steam temperature as it travels through the piping means less heat will be used for drying, resulting in higher steam production requirements and reduced efficiency. In extreme cases where steam temperature is not maintained, steam can condense and ruin the harvested food.

Solutions

BriskHeat's XtremeFLEX® heavy insulating heating tapes coupled with high-temp insulation solve the heat-loss problem. The tapes are constructed with fiberglass or Samox® material that can be operated at temperatures as high as 1,400°F (760°C). They are extremely flexible to easily wraparound pipes and have durable multi-stranded heating wire. The IP5X rating means they can be used in dusty environments. Insulated cloth tapes on the recycle line adds extra efficiency to the system.

Custom engineered cloth insulators manufactured with beta cloth and high-temperature ceramic wool lock in the heat from the tape to maximize efficiency. They are rated for temperatures up to 900°F (482°C). Additionally, they feature high-temp hook and loop closures for repeated installation and removal. An MPC2 Multi-Point Temperature Control Panel will effectively control the heating tapes' temperatures. This controller allows the operator to see the current and setpoint temperatures of each heating zone and has excellent accuracy. MPC2 controllers can simultaneously control multiple zones and interface with a process control system when required.

Alternative Solution

An alternative solution is a system composed of high-temperature custom engineered heating jackets with an integrated LYNX® Temperature Control System. Separate control modules can be programmed individually at each jacket or controlled on a LYNX® Operator Interface. Accuracy is high, programming is easy, and LYNX® is also capable of interfacing with a process control system.



Products

BIHE, BWH, & BWH-D Insulated Tape
Custom Cloth Insulators

LYNX Control System
MPC2 Multipoint Control Panel

Industries

Agriculture/Farming
Food & Beverage Processing

Types of Users

Facility Planners
Industrial/Process Engineers
Maintenance Managers
Piping Contractors

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 freestanding, 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 prewired 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 1,112°F or 600°C.

Other common manufacturing items that LYNX® may help heat:

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



Industries

Analytical Instrumentation/ Laboratory	Food & Beverage Processing
Chemical Processing/ Extractions	Gas & Oil
	Gas Handling
	Manufacturing

USING A SOFT STARTER WITH A SOLAR ENERGY SYSTEM

Solar Energy Systems and backup generators provide power when standard AC power is not available



Application

Solar panel energy systems are becoming increasingly popular to power homes, RVs, boats and more. There are also a huge number of aftermarket kits containing the basic components: solar panels, charge controllers, batteries, and inverters. These kits are rated based on the wattage that can be supplied by the panels and the amp hours that can be stored in the battery bank.

There are special considerations for refrigerators and air conditioners. Both appliances have compressors with motors that must start to operate. They are rated by not only wattage, but also Locked Rotor Amps (LRA). LRA is the amount of current required for the motor to start rotation and can be several times greater than the typical load rating. For example, a 15,000 Btu RV air conditioner may have an average requirement of 1500 watts during operation and needs 3500 watts during start-up! This additional energy is referred as inrush current. Inrush current causes wear to the battery bank, can cause a fault on the inverter, stress on the motor, and generates heat that will decrease the life expectancy of the system. Sizing a system to meet inrush current results in a system that is physically larger and more expensive than the alternative.

Solution

A SureStart Soft Starter is a device to lower the inrush current by up to 70% while still allowing the compressor to start. Rather than an instantaneous load being drawn from the battery bank through the inverter, the demand rises slowly, eliminating damage that could be caused by the inrush. Installation is simple. Follow the instructions to wire the Soft Starter between the run capacitor and compressor motor.

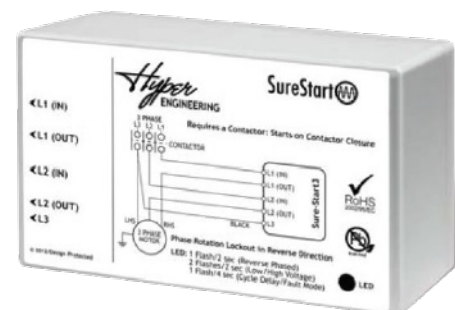
BriskHeat has single and 3-phase models available for voltages between 110 and 460 VAC. These can handle motor sizes up to 20 horsepower.



Alternate Application

In addition to use on recreational vehicles, soft starters can be used with home solar power systems, air conditioning units, and backup power generators. Industrial applications include fan starters used in air scrubbers and dust collectors. Motors used in conveyor systems also benefit from using a soft starter during start up.

SureStart Soft Starters



Industries

Construction

HVAC

Consumer/Residential

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 gases, 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 components 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 1,832°F (1,000°C) and a 76.2 W/ft (250 W/m) watt density.

Products

Cloth Heating Jackets	Mineral Insulating Cable
LYNX Temperature Control System	MPC2 PID Control Panel

Types of Users

Lab Managers	Scientists
Process Engineers	Project Managers

Industries

Analytical Instrumentation/ Laboratory	High Vacuum Manufacturing
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VACUUM DRYING PLANT-BASED MATERIAL

Vacuum dryer with heating blankets preserves product quality while reducing processing time

Application

Plant structures are made of cells such as cellulose and chloroplasts. They may also contain up to 95% water which is vital to plant growth. When part of a plant is cut from its base or root system, flowers, seeds, leaves, and fruit start to lose their freshness almost immediately. Preservation techniques may be used maintain desired flavor, vitamin and mineral content, color, and chemical properties.

Cannabis that was once harvested can no longer produce cannabinoids, and potency starts to decrease. The moisture content is about 75% and must be reduced to 10-15% for smooth, even burning. Traditional air drying in dark, temperature and humidity controlled drying rooms preserves color, taste, and potency, but this process may take 7 to 15 days. Drying with higher heat reduces the processing time but sacrifices color, taste, and some potency. Commercial producers need a process that will dry the buds in less time while still preserving the desired properties.

Solution

An engineering and design company developed a machine to vacuum dry and decontaminate plant-based materials (biomass). Cannabis flowers can be processed in less than 4 hours, preserving color, aroma, and potency. Recently harvested biomass is trimmed and placed in the vacuum chamber. Once sealed, the sub atmospheric vacuum pressure starts to vaporize water contained in the biomass. When most of the water has been extracted and the biomass is dehydrated, the temperature inside the vacuum chamber can reach freezing. This is known as vacuum freeze drying and processing can take weeks. Surface heating is required to prevent the material from freezing thereby resulting in drastically reduced processing time.

BriskHeat SRL-ADJ silicone heating blankets are used around the exterior of the vacuum chamber to aid in the evaporation of liquid and prevent the material from freezing. Heaters are designed with pressure-sensitive adhesive to provide for better heat transfer around the partial circumference and sidewalls of the vacuum chamber. The low temperature heats gently, preserving the quality of the biomass. These heaters also accept frozen material for processing.

According to the company president, the vacuum dryer can be used to process many other biomass products, including coffee and vanilla beans. The combination of vacuum and heat means more production in less space. BriskHeat silicone rubber heating blankets help end-users produce high-quality, market-ready products made from biomass in less time. For processes requiring more exact processing temperatures, BriskHeat recommends standard SRL, SRP, or SRW silicone blankets with separate temperature controllers such as the TB4000 or TC4000.



Industries

Agriculture/Farming/Ranching
Cannabis
Food & Beverage Processing
Life Science/Medical/Pharmaceutical

Products

SRL-ADJ Heating Blankets
SRL/SRP/SRW Heating
Blankets TB4000/TC4000

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 1,400°F (760°C) and watt densities up to 13.1 W/in² (2.0 W/cm²). 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 12,000 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.

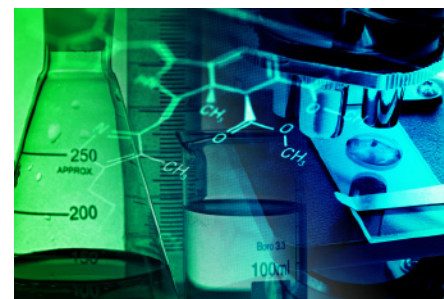
Silicone Rubber Beaker Heaters (GBH) are moisture and chemical-resistant heaters that fit precisely around Griffin and standard beakers. They are capable of providing an even distribution of heat around the surface of the beaker. Silicone beaker heaters can safely reach temperatures up to 450°F (232°C). Standard sizes range from 250 ml to 1,000 ml. Custom sizes are available upon request.



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 benchtop 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 benchtop 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 1,112°F (600°C), features a highly visible alarm, degrees "C" or "F" programming, choice or 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 & Cords	SDC and SDX Temperature Controllers
Heating Mantles	LYNX® Temperature Controller
Beaker Heaters	TC4X Digital Controller
Cloth Heating Jackets	HL101 High Limit

Industries

Analytical Instrumentation/Laboratory	Manufacturing
Chemical Processing/Extractions	Pulp & Paper
Food & Beverage Processing	

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 underside 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 through 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	Insul-EZ Foam Insulation
TD101N	

Industries

Agriculture/Farming Ranching	Consumer/Residential
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Types of Users

Farmers Ranchers Kennel Owners	Park Maintenance Personnel
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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).

Lithium batteries have a higher charge density (i.e., longer life) compared to other batteries. Ambient temperatures impact both charging and discharging of batteries. Not only are these batteries used in electric vehicles, but may also serve as power supplies to electronic equipment in remote areas.

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.

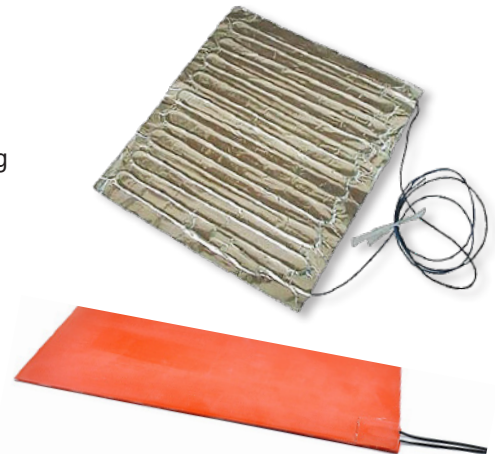
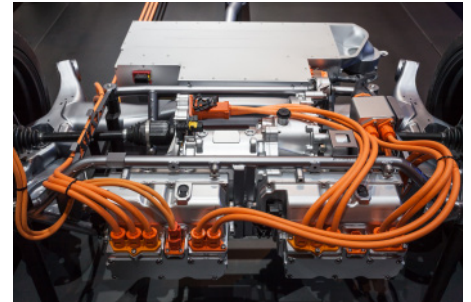
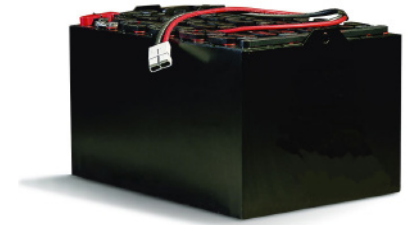
As an example, in remote areas of the country, surveillance equipment is used as part of security systems for military bases, storage facilities, or other remote work areas. Lithium batteries are used for backup power and need to be reliable. Buildings housing equipment are typically not heated, but 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 cutouts. 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, but these can be ordered for applications requiring IP65 ratings for dusty or wet-area use.



Types of Users

Facilities Maintenance	Design Engineers
Security Personnel	Production Managers

Industries

Energy/Power Generation	Transportation
Manufacturing	

BULK MATERIALS WARMING AND FREEZE PROTECTION IN ATEX HAZLOC ENVIRONMENTS

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

Application

Various liquids, gases, 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 are 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 a clear window for easy temperature monitoring, a DIN rail terminal block for easy and reliable electrical connections, a 25 amp high operating capacity, and a temperature range up to 200°C.



Industries

Asphalt/Concrete	Manufacturing
Chemical Processing	Semiconductor, Flat Panel, & Photovoltaic/Solar
Energy/Power Generation	Water/Wastewater Treatment
Gas & Oil	
Heavy Industry/Mining	

Types of Users

Facilities Maintenance	Production Managers
Process Engineers	



CLASS I, DIVISION 1 INDUSTRIAL ENVIRONMENTS FREEZE PROTECTION

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 gases, 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.

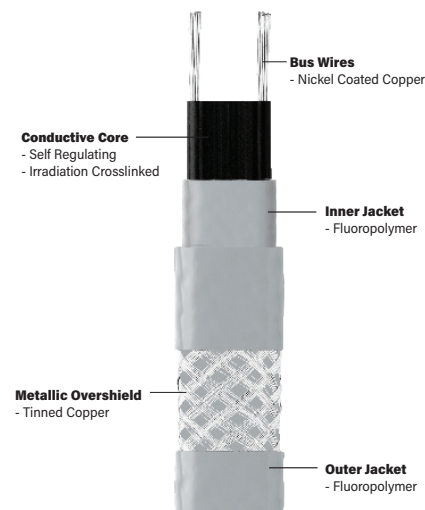
Liquids and gases at these locations are stored in tanks or transported through pipes, and the pipes and tanks often need freeze protection. Because of the high possibility that a spark or high temperature could result in an explosion, products used as protection from the cold must carry Class I, Division 1 approvals from accredited third-party service companies such as Factory Mutual (FM) or Canadian Standards Association (CSA). If these liquids and gases 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. It is approved for Class 1, Division I and ATEX hazardous areas.

To complete the system, BriskHeat also offers several insulation options to improve thermal efficiency. BriskHeat's Silver Series 2 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® and Insul-EZ insulators are preformed elastomeric foam systems that can be installed on most pipe and vessel systems.



Types of Users

Drilling Managers	Automation Foremen
Fracking Technicians	Automation Technicians

Industries

Chemical Processing/Extractions	Gas & Oil
Energy/Power Generation	Water/Wastewater
Heavy Industry/Mining	Treatment
Manufacturing	

CONTROL PANELS FREEZE PROTECTION

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

Application

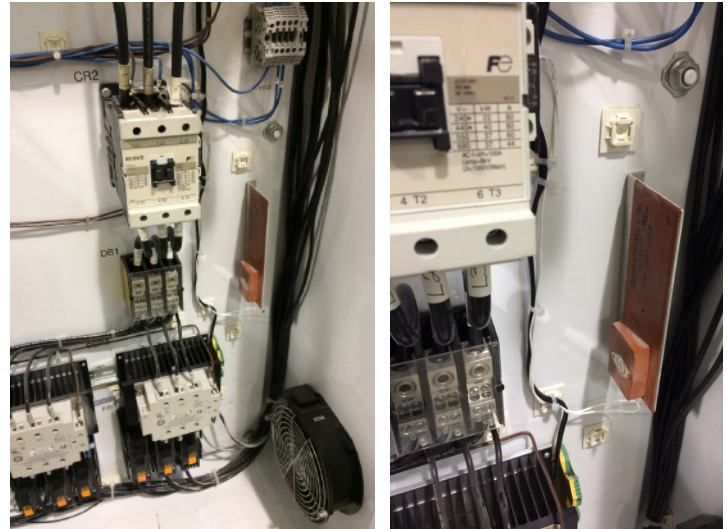
Electronic components inside control panels and monitoring devices need protected from cold temperatures. Control panels are often located outdoors, and if exposed to subfreezing temperatures, components could fail to operate properly and potentially become permanently damaged.

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 predrilled 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.

The addition of a panel heater to a control panel such as the MPC2 series, provides more flexibility. Internal panel heaters also prevent condensation.

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	Gas & Oil
Chemical Processing	Heavy Industry/Mining
Energy/Power Generation	Manufacturing
Food & Beverage Processing	Water/Wastewater Treatment
Types of Users	
Process Engineers	Maintenance Managers
Production Managers	Facilities Maintenance



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 and MSTAT silicone rubber heating tapes are the perfect tools 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 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 or MSTAT 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). MSTAT tape heats to a maximum temperature of 160°F (71°C) and should be used for de-icing PVC pipes. Both 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

XtremeFLEX® silicone rubber heating tapes with thermostat control 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. When higher temperatures can damage equipment, MSTAT is recommended.



Industries

Aerospace/Aviation	Energy/Power Generation	Pulp & Paper
Agriculture/Farming/Ranching	Food Processing	Transportation
Asphalt/Concrete	Heavy Industry/Mining	Water/Wastewater
Chemical Processing	Gas & Oil	Treatment
Construction	Manufacturing	

Types of Users

Facilities Maintenance Personnel	Process Engineers Production Managers
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FRACKING SYSTEM LIQUID FREEZE PROTECTION

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

Application

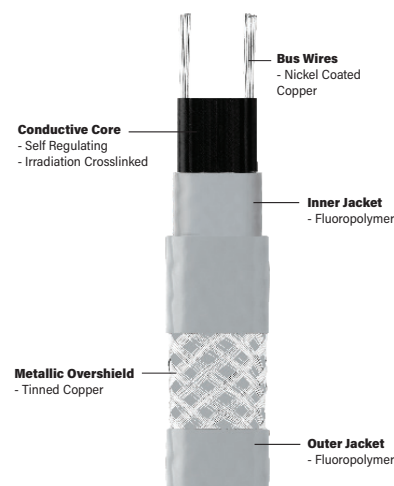
Natural gas fracking is a drilling process that injects millions of gallons of fracking fluid (a mixture of water, sand, and chemicals) deep into horizontal wells at high pressure to break-up shale and rock to release natural gas. In 2017 the U.S. produced over 30 trillion cubic feet of natural gas. 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 freshwater 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 ft³ 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 2 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. End of circuit LED monitor light kits are a popular accessory. Viewed from a distance, the bright LED provides peace of mind the system is operating as intended.



Industries

Energy/Power Generation	Gas & Oil Gas Handling
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Types of Users

Automation Foremen Automation Technicians	Drilling Managers Fracking Technicians
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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, biparting doors, overhead doors, vertical lift doors, and more.

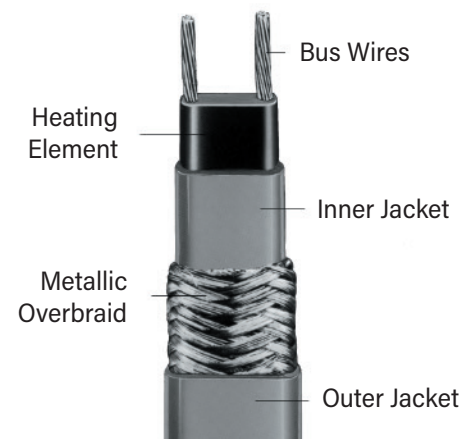
Solution

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 semiflexible 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 TC4X. Use of a controller with self-regulating cable saves energy and can extend cable life.

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 & Beverage Processing	Cold Storage
Life Science/Medical/	Equipment Supply
Pharmaceutical	Restaurant/Food
Manufacturing	Service

Types of Users

Design Engineers	Production Managers
Maintenance Managers	

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 grapevines 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, but 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. 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® 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°F to 10°F (-13°C to -12°C) temperature rise. Early results from the first winter after installation showed a 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® Pipe Insulation

Industries

Agriculture
Food & Beverage Processing

OBJECTS WITH UNIQUE SHAPES AND SIZES FREEZE PROTECTION

An easy way to protect devices against extreme cold

Application

Manufacturing and industrial environments often include objects with unique shapes and sizes that need protection from cold weather. Items can be standalone or a component in a system. Examples of such items include transmitters (pressure, level, flow, etc.), pumps (direct lift, displacement, gravity, etc.), gauges, actuators, valves, and regulators. The unique shapes and sizes may make them difficult/challenging to shield when designing freeze protection products to protect them. If these items freeze and malfunction, that could lead to extended downtime and costly repairs.

Solution

BriskHeat's WinterShield™ Freeze Protection Heated Pockets will protect most of these items. They are highly durable hood-type covers that surround the objects with pockets of warm air to allow them to continue operating, even in the coldest environments. When installed around the object they are protecting, they are held in place with hook and lace closings, making them easy to remove and reinstall. They come in two sizes. The standard size is 6 x 6 x 7 in (152 x 152 x 186 mm) high and the large size is 14 x 20 x 26 in (360 x 510 x 660 mm) high. Any object that has dimensions within these parameters is a candidate and the flexible cloth construction provides versatility with fitting. The hook and lace closing also enables maneuverability to fit and cinch close around obstructions like pipes, hoses, and stands/bases. They are suitable for use outdoors and have plug-and-play designs which include built-in 45°F (7°C) controlling thermostats, 16 ft (5 m) cords, and grounded plugs (120V). They come standard in 120 or 240 VAC.

Additional Uses

BriskHeat's WinterShield™ Freeze Protection Heated Pockets also provide the versatility to be used for other hard-to-protect objects. If the items fit within the dimensions of the heaters, and even sometimes slightly larger due to the cloth's flexibility, they will be protected. Custom designs can be provided upon request.



Industries

Chemical Processing/ Extractions	Gas Handling
Energy/Power Generation	Water/Wastewater Treatment
Gas & Oil	

PIPE FREEZE PROTECTION

A simple and easy way to protect pipe systems from freezing

Application

Pipe systems designed to transport crude oil, 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 (66°C). Higher temperature self-regulating heating cable can reach 250°F (121°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 washdown environments.

Another solution is BriskHeat's XtremeFLEX® 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® 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® 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. Preterminated 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	
Agriculture	Gas Handling
Asphalt/Concrete	Heavy Industry/Mining
Chemical Processing/Extraction	HVAC
Consumer/Residential	Manufacturing
Energy/Power Generation	Pulp & Paper
Gas & Oil	Wastewater Treatment

Types of Users	
Facilities Maintenance Personnel	Process Engineers
	Production Managers

POWER PLANT FREEZE PROTECTION FOR OUTDOORS

Heat protects gases and liquids from freezing in pipes

Application

DTE Energy Corporation in Michigan has a natural gas-fired power plant in Carson City that provides power for over 850,000 homes. It has a series of gas-pipe systems that need to be protected from the harsh Michigan winters. Natural gas contains water vapor in addition to gaseous hydrocarbons. These can condensate when the gas is exposed to cold temperatures. Without heat and insulation, gas in outdoor piping will easily condense resulting in liquid within the piping and flow control components. Cold condensed gas can lead to flow and measurement issues, corrosion, and leaks. The negative consequences can be significant.



Solution

DTE Energy chose BriskHeat's Self-Regulating Heating Cable and Silver-Series 2 Removable Cloth Insulators to protect their gas from condensing in their pipe system.

BriskHeat self-regulating heating cable was the ideal solution for this application because it regulates itself to deliver more heat as the conditions get colder and it economically provides hundreds of feet of condensation and freeze protection on one circuit.

BriskHeat has power connection kits, end terminations, splice kits, and junction boxes required to complete a heat trace system. Monitor Light kits provide the benefit of seeing a heat trace system is energized from a distance. The JHE-LG-GET Monitor Light Kits features a bright green or red LED providing 360° visibility at a rating of 10 lumens. Increase the efficiency of any freeze protection system by adding Silver-Series 2 Insulators, or BriskHeat custom cloth insulators.

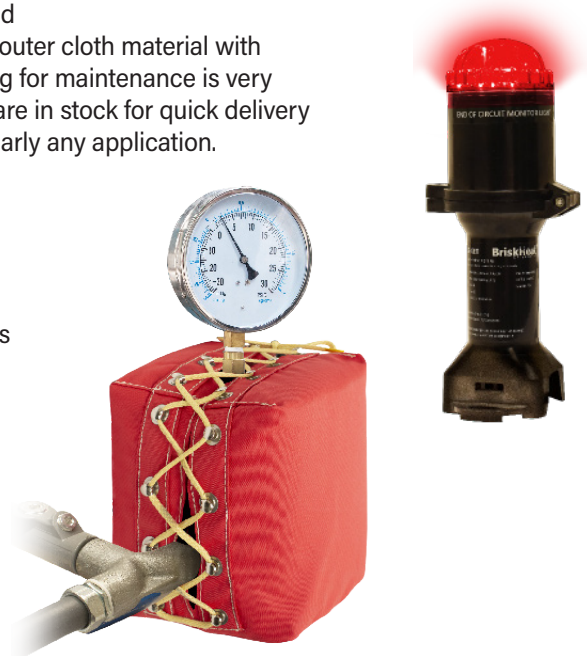


To enhance the energy-efficiency of the system, DTE requested Silver-Series 2 Cloth Insulators be installed over the heating cable. They are removable and reusable, suitable for use outdoors, and constructed of ultra-durable PTFE outer cloth material with energy-efficient 1 in (25 mm) thick fiberglass insulation. Access to the piping for maintenance is very simple. As an added bonus, the most common insulator sizes and shapes are in stock for quick delivery and BriskHeat is able to design customs for most shapes and sizes to fit nearly any application.

Individual flow control or measurement components may be mounted remotely from the pipe run and connected with tubing. Examples include gas manifolds, pressure switches, or transmitters. Some components, such as actuated valves, may need to be heated even if there are not gases or liquids flowing through the piping. BriskHeat's Wintershield can encompass these components to provide a heated environment to prevent freezing.

Industries

Energy/Power Generation	Gas Handling
Gas & Oil	Manufacturing



PROTECTING MECHANICAL DEVICES FROM THE INCLEMENT WEATHER

Eliminate performance issues resulting from wintry conditions

Application

Manufacturer's 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. The heaters are extremely versatile with customization of lengths, widths, diameters, and complex features. They are designed to fit tightly around the valves and actuators to maximize heat transfer. Jackets are easily installed and held in place using built-in hook & loop, boot hook & lace, or any other preferred attachment/closure method.

Another solution is standard Wintershield™ heated pockets which are designed with lace fasteners to heat devices mounted to piping or other components. The absence of a form-fitting requirement adds to their affordability. They are plug-and-play with built-in insulation, controlling thermostats, 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

Chemical Processing	Gas Handling
Extractions	Heavy Industry/Mining
Construction	Manufacturing
Gas & Oil	Water/Wastewater Treatment

PVC PIPES - TEMPORARY TEMPERATURE MAINTENANCE OR EMERGENCY DE-ICING

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

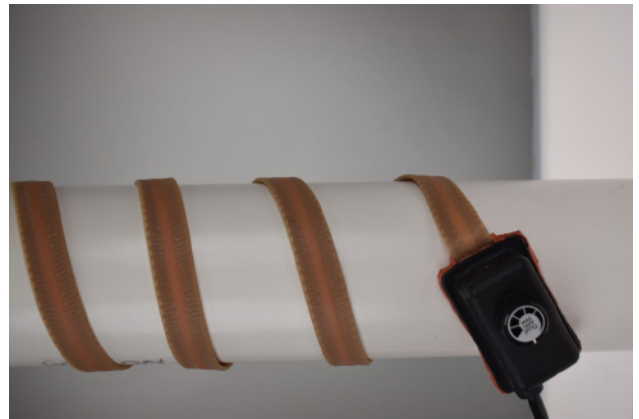
Application

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 XtremeFLEX® 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 maximum 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 de-ice, thaw, or to reduce viscosity and improve flow. This may include outdoor watering troughs for livestock, rain barrels, or sewage lines. Additionally, they can be used in various process control applications where moderate, mid-temperature, and consistent surface heat is needed.



Industries

Agriculture/Farming/ Ranching	Food & Beverage Processing
Asphalt/Concrete	Gas & Oil
Chemical Processing/ Extractions	Gas Handling
Construction	Heavy Industry/Mining
Energy/Power Generation	Manufacturing
	Pulp & Paper
	Water/Wastewater Treatment

Types of Users

Facilities Maintenance Personnel	Process Engineers Production Managers
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RESIDENTIAL AND COMMERCIAL PIPES FREEZE PROTECTION

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 when pipes are in exterior walls. It is especially common with 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

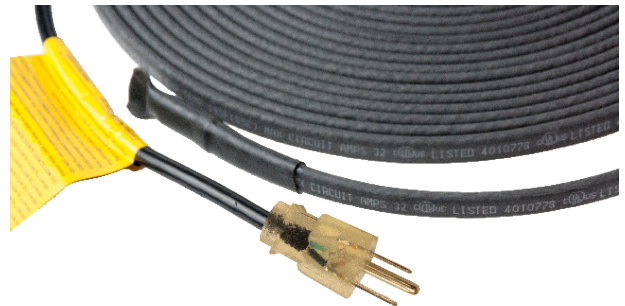
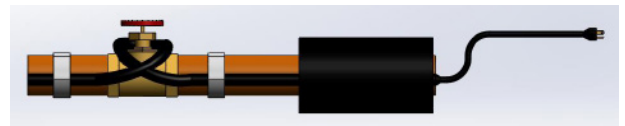
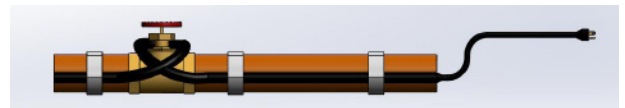
SpeedTrace self-regulating heating cable is the perfect solution to protect pipes from freezing. Its plug-and-play design comes pre-assembled with a grounded 3-prong plug for easy installation. The cable is flexible enough to fit around pipes and valves and approved for indoor/outdoor use. Self-regulating cable is specifically designed for freeze protection because it automatically adjusts the heat output based upon air conditions and never exceeds 150°F (66°C). It is completely safe for use with all types of pipe, tube, and filtration systems and available in several lengths up to 150 ft (45.7 m).

For added protection, insulate pipes with BriskHeat's Insul-Lock® 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-Lock® 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. It can be used to melt snow and ice from roofs and gutters.



Industries

Agriculture/Farming/
Ranching
Construction

Consumer/Residential
HVAC

Types of Users

Contractors
Facility Managers

Homeowners
Maintenance 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 rooftop 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 cable which is included in Roof & Gutter De-icing Kits, 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 make 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).

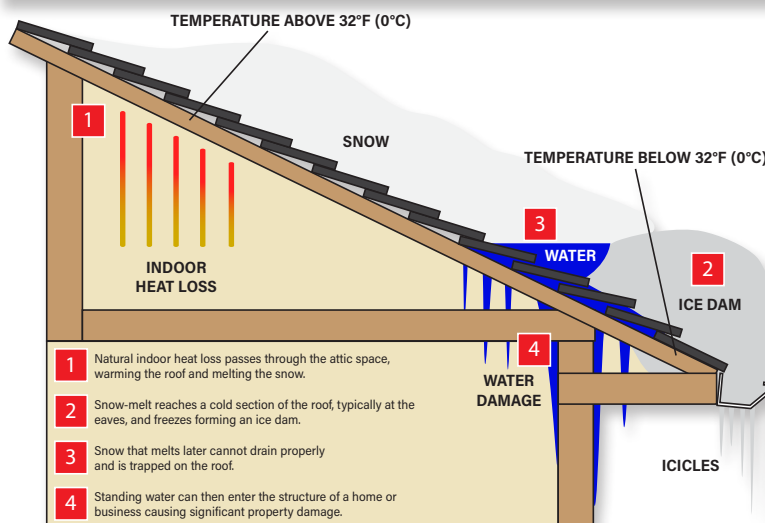


Industries	
Agriculture/Farming/ Ranching	HVAC
Construction	Water/Wastewater Treatment
Consumer/Residential	

Types of Users	
Facility Managers	Homeowners
Maintenance Managers	Contractors

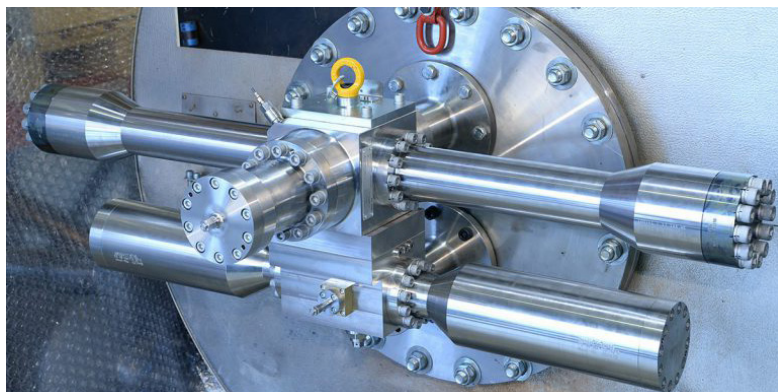
Associated Products
SpeedTrace & SpeedTrace Extreme Roof Clips
Downspout Brackets
RTV Sealant
Thermo-Cube

What is an Ice Dam?



SHOCK PULSE GENERATORS FREEZE PROTECTION

Effective cold-weather shields for hard-to-protect objects



Application

Freeze protection is often required for devices with many unique shapes and sizes. A good example of this is essential protection for shock pulse generators (SPGs). SPGs are used to clean industrial boilers. They pulse-out a high-pressure oxygen and methane mix to prevent fouling issues such as blockages, pressure differentials, and reduced heat transfers. Their geometry is complex, composed of multiple combustion chambers and dosing tanks. SPGs are often exposed to weather conditions, which in the winter can cause the systems to freeze and fail. If the systems fail, this could lead to reduced production, higher maintenance costs, and lower power generation, which all lead to lower profits. Shock pulse generators are found at waste to energy plants, industrial boilers for biomass and various fuels, sludge incineration plants, coking plants, hazardous-waste incineration plants (including chemical plants), coal-fired power plants, and cement plants.

Solution

BriskHeat's wet-area custom cloth heaters are the perfect solution to wraparound and shield SPGs from cold weather, keep the SPG temperatures above freezing, and prevent production problems. They can be designed to form-fit an SPG system to maximize efficiency and are durable enough to operate in almost all weather conditions. These heaters are installed using built-in hook and loop closures, so they can repeatedly be installed and removed, reducing maintenance time. The heaters can be single or multiple zones, and each zone can be independently controlled and monitored from a centrally located control panel such as BriskHeat's MPC2 Multi-point PID panel. An alternative control option is a built-in 45°F (7°C) controlling thermostat, eliminating the control panel expense if temperature adjustability and monitoring is not required. Both control options may include built-in, high-limit temperature cutoffs for safety and peace of mind.

Additional Uses

BriskHeat's wet-area custom cloth heaters can also protect uniquely-shaped objects such as pumps, transmitters, actuators, valves, and gauges. BriskHeat's Wintershield™, is standard wet-area cloth product that is designed to fit around many of these devices, surrounding them with warm pockets of air.



Industries

Chemical Processing/Extractions	Manufacturing
Energy/Power Generation	Water/Wastewater Treatment
Gas & Oil	

Types of Users

Boiler Operators	Facilities Maintenance
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TANKS AND VESSELS FREEZE PROTECTION

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.

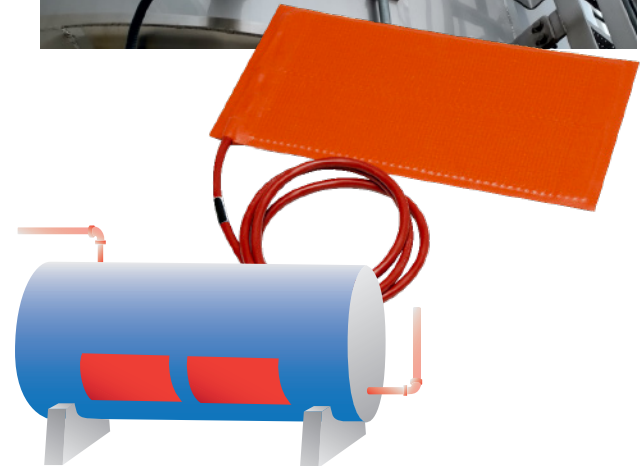
Solutions

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 preset 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 predetermined setpoint. 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 predetermined setpoint.

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 simply 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.



Installation example



TD101N

Types of Users

Facilities Maintenance Personnel	Process Engineers Production Managers
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Industries

Agriculture	Gas & Oil
Asphalt/Concrete	Manufacturing
Chemical Processing/ Extractions	Paper & Pulp
Food & Beverage Processing	Water/Wastewater Treatment

TANKS AND VESSELS FREEZE PROTECTION 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 gases 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 built-in, pressure-sensitive adhesive (PSA). 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.

The TB110 series Hazardous-Area Bulb & Capillary temperature controller can be used with the SRX heater to set the temperature required by your process. It can be used for applications up to 650°F (343°C).

Insulation is always recommended to maximize heat and energy efficiency. BriskHeat's Silver-Series 2 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. For applications with temperatures less than 220°F (104°C), Insul-EZ adhesive-backed insulation sheets can be used on flat or large diameter surfaces to reduce heat loss.

Additional Uses

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



Industries

Chemical Processing/
Extractions
Energy/Power Generation
Gas & Oil

Heavy Industry/Mining
Manufacturing
Water/Wastewater
Treatment

Types of Users

Facilities Maintenance
Production Managers

Plant Managers
Process Engineers

TURRET BUOY ANTI-ICING SYSTEM

SRL silicone rubber heating blankets provide energy-efficient solution for oil transport

Application

Large turret buoys are used in shallow and deep-water environments for loading and unloading fluids between tankers and storage facilities on the shore. An existing buoy off the coast of Saint John, New Brunswick on the Bay of Fundy is exposed to temperatures as low as -32°C (-25°F). Ice forming on the outside of the buoy limited use and created safety concerns. Monobuoy was awarded a contract to install their TU-1200 buoy, a 12-meter catenary anchor-leg mooring (CALM) as a replacement. This buoy is capable of servicing tankers up to 400,000 dead-weight tons (DWT) and pump up to 75,000 barrels per hour (BPH) of liquids such as crude oil, refined oils, or other fluids. The customer required the buoy have heaters to prevent ice from forming on the exterior surfaces, and required a 30-year life expectancy.

Solution

BriskHeat® was asked to supply surface heating for the buoy with a surface area of 350 m^2 ($3,767\text{ ft}^2$). Engineers recommended the total heat requirement to be just over 350 kW based on the temperature extreme and wind speed. Insulating the interior surface of the heaters mounted to the cold exterior walls could result in condensation, so no insulation would be installed. Additional heat loss was considered as part of the solution offered. This "lost heat" helped to warm the inside of the buoy creating a more comfortable environment for personnel during use.

BriskHeat's SRL Silicone Rubber Heating Blankets were selected as they are designed to be used on metal surfaces and have a watt density of 0.39 w/cm^2 (2.5 w/in^2). They have 20 mil fiberglass material on each side of the heating element as reinforcement to the silicone sheets. SRL blankets are moisture and chemical resistant to protect from condensation or in the event of leaks. These features provide the extra durability required to meet the end-users service life needs. The SRL-ADJ version includes a built-in temperature controller with thermostat to adjust the heaters if necessary.

Ease of installation and replacement was another requirement of the solution. Each heater included peel-and-stick, pressure-sensitive adhesive which is available on most BriskHeat® silicone heaters. For easy access to wiring, junction boxes were used to create heating zones with multiple heaters controlled with a single sensor.



First tanker using the TU-1200 in Eastern Canada



Older ice-covered buoy



Dive room showing custom SRL-ADJ heating blanket with built-in control



SRL-ADJ heating blanket with built-in control

Industries

Gas & Oil

Transportation

WASTEWATER 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 build-up. SLCBL self-regulating heating cable is approved for use in hazardous area locations.

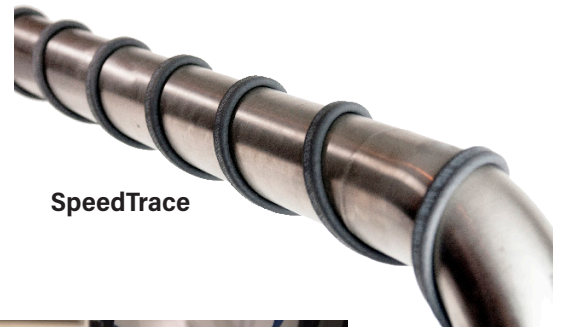
For energy efficiency and a longer product life, use Insul-Lock® foam pipe insulation to wraparound pipes and heater assemblies where self-regulating cable is installed. The insulation helps to lock heat in where it is needed to ensure an efficient and reliable freeze protection system.

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 predrilled 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, doorframe applications, and more.



SpeedTrace



Industry

Water/Wastewater Treatment

Types of Users

Design Engineers
Plant Managers

Maintenance Managers

A close-up photograph of a wooden surface, likely a ceiling or wall, showing significant condensation. Numerous water droplets of varying sizes are visible on the wood grain. The background is blurred, showing what appears to be a blue circular object and some vertical structural elements.

CONDENSATION PREVENTION

CONDENSATE EVAPORATOR PANS FOR DISPLAY COOLERS

Prevent slip hazards by evaporating cooler condensate

Application

Grandpa's Cheese Barn, located in Ashland, Ohio, is a fourth-generation family-owned business. They originally sold only country hams and bacon but have expanded to add Ohio-made Colby, Swiss, Baby Swiss, and other cheeses. Additionally, they offer a variety of meats, spreads, dips, and ice cream. The two-story retail store includes more than a dozen individual coolers and display cases. Tour buses often stop for shopping, or even lunch, so preventing condensate is very important.

From small corner convenience stores to large retail grocers, refrigeration and freezer display cases are commonly used to maintain food quality. Condensation is a common by-product of any cooling application. It is formed when warm moist air meets the cooler coils, hinges, glass, or other components of the display case. Without a drain line or operational evaporation pan, the condensate can pool and create dangerous slip hazards on the surrounding floors.

Solution

Condensate evaporator pans are often integrated into display cases, walk-in coolers, freezers, and other HVAC equipment to eliminate condensation. The pans can also be added when there is no place to connect drain lines, or used temporarily to defrost freezers.

BriskHeat® sells two types of Evapoway™ condensate evaporator pans that are NSF Approved, indicating they have met guidelines for food safety. The original Evapoway™ Electric Condensate Evaporator Pan includes a traditional element that can reliably supply high wattage suitable for non-low flashpoint refrigerants. The positive thermal coefficient (PTC) electric condensate evaporator pan takes advantage of new technology that can reliably supply wattage at a lower level suitable for low flashpoint refrigerants. Once condensate water is introduced to the heating element, wattage will be provided at the nominal value as the resistance is self-regulated to a lower value with the lower sheath temperature.

Features of the Evapoway™ include:

- Multiple voltage and power ratings up to 3000 watts
- Pan capacity up to 21 quarts (20 liters)
- Dissipation rates up to 24 gallons per day
- Replaceable heating elements
- cURus approved to USA and Canadian standards



Industries

Consumer Food & Beverage Processing

Types of Users

Convenience Store Owners Maintenance Managers
Grocery Store Managers Facility Managers

CONDENSATE EVAPORATOR PANS FOR HVAC UNITS

Eliminate air conditioner condensate where no drain line is available

Application

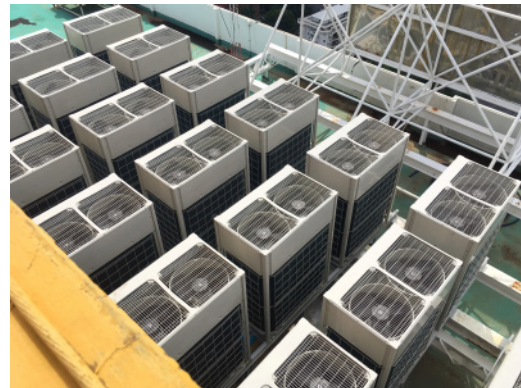
Well-designed HVAC (heating, ventilation, and air conditioning) systems include one or more condensate drain pans. Air conditioning units are designed to take warm air from inside a building and make it cooler. Warm humid air entering the system has moisture that will be removed as part of the heat transfer process. During operation, evaporator coils in the air conditioner become cold and absorb heat from the air, making it cooler. Condensate forms on the coils as the cool, dry air exits the system returns to the home or office. A condensate pan is located under the coils to catch condensate as it falls. Air conditioners may also have an automatic defrost cycle to intermittently heat the coils, preventing the condensate from forming ice.

Standard drain pans have a hole in a low point of the pan to allow water to escape. These must be in readily accessible areas where they can be inspected. If the drain in the pan becomes clogged or if there is damage to the pan, water does not drain as intended. Instead, it can cause damage to roofs, floors, walls, or personal property. Standard drain pans cannot be used on indoor units without access to plumbing, or portable units where permanent drain connections are not possible. Because drain pans are required, a solution must be utilized for systems where plumbing/drains are not available.

Solution

BriskHeat's Evapoway™ Electric Condensate Evaporator Pans are designed to be used on systems where permanent drain lines from a pan may not be practical. When condensate from air conditioner evaporator coils fall into an Evapoway™ pan, it does not drain, but is evaporated by a heating element in the pan. The original Evapoway™ pan features high-wattage tubular heating elements available up to 3000 watts. It has high-limit safety, float switch operation, and should be used in non-lowpoint refrigeration applications. The PTC-style condensate pan takes advantage of new positive thermal coefficient technology that can reliably supply wattage at a lower level suitable for low flashpoint refrigerants. Once condensate water is introduced to the heating element, wattage will be provided at the nominal value as the resistance is self-regulated to a lower value resulting in a lower sheath temperature.

A variety of sizes are available as replacements in older equipment. Different heating elements are available to match the voltage and evaporation rate required for a system. The evaporators are durable and reliable because they are made from the highest quality components, including NSF certified pans constructed of 22-gauge stainless steel. This product line has successfully passed rigorous testing and is UL recognized in the United States and Canada.



Industries

HVAC
Construction

Types of Users

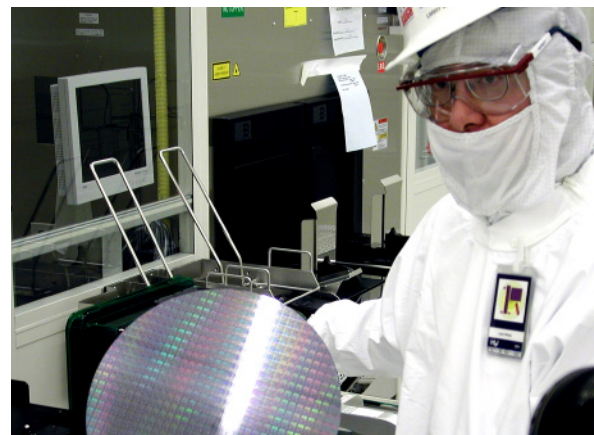
HVAC Technicians
Facilities Managers
Maintenance Technicians

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.



LYNX® OI

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.

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

Types of Users

Tool Manager in Fabs and Foundries
Tool Designer/Engineer

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 a hazardous waste, and must be collected so that they cannot 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.

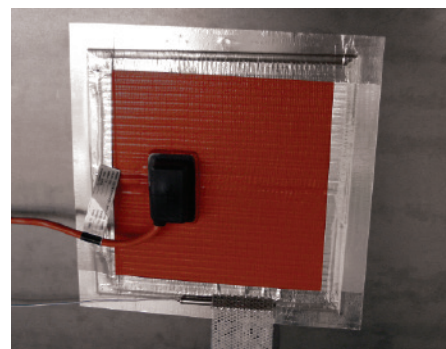
Solutions

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. Aluminum foil heaters are a low-temperature, economical-heating option. Metal clad heaters are available for higher-temperature systems requiring up to 1,000°F (538°C). Metal clad heaters meet all IEEE standards.

Heaters should be arranged symmetrically around the hopper with a temperature sensor under each heater for control. The TB4000, TC4000, or MPC2 temperature controllers are options for controlling multiple heaters arranged around the hopper.

Additional Uses

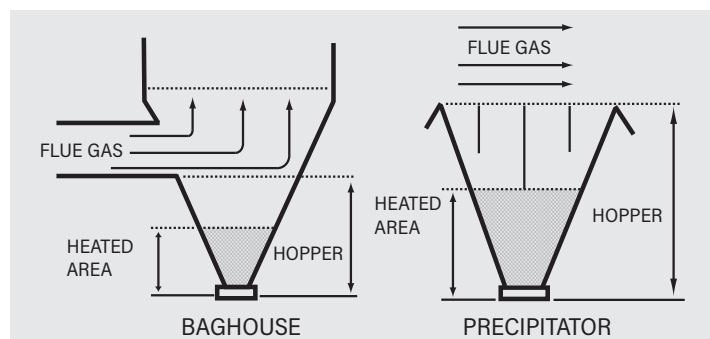
Metal-clad and silicone rubber heaters can also be used on most any tank or vessel to prevent condensation or protect against freezing.



Silicone Rubber Hopper Heater



Metal-Clad Hopper Heater



TC4000

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.

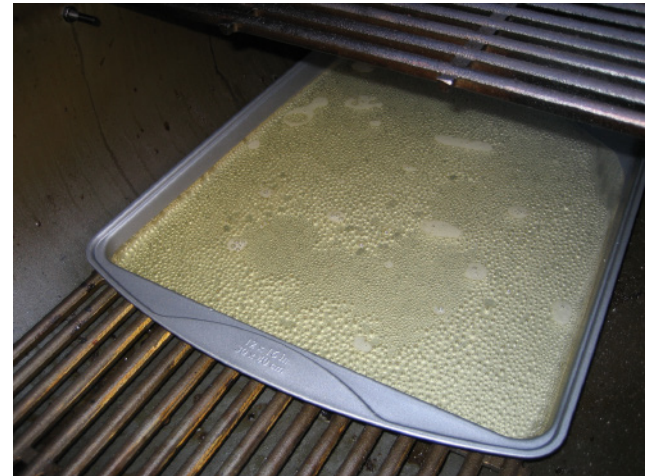
Solution

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 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 washdown environments.

Additional Uses

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



TC4X

Products

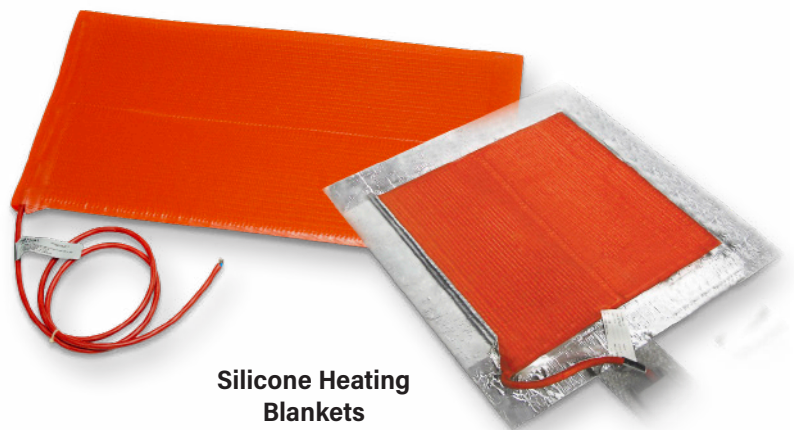
SRL/SRP Silicone Heaters
TC4X Temperature Controller
Aluminum Adhesive Tape

Industries

Food & Beverage Processing

Types of Users

Facilities Maintenance Personnel
Process Engineers
Production Managers



Silicone Heating Blankets

GAS CONDENSATION PREVENTION

Application

Many industries use gases for everything from fuel to manufacturing of fiber optic cable. Different gases require different types of heat for condensation prevention or process heating. Natural gas is a mixture of water and hydrocarbon liquids that are present in gaseous components that are in the natural gas supplied to end users. Gases from landfills or reclaimed from other processes may have contaminants in suspension that would be undesirable should the gas condense. The temperature, moisture content, and pressure of the gas will have an impact on the formation of condensate. Gas condensate may not be present when temperatures are warmer; however, condensate can form inside industrial facilities during winter when pipes are in cooler or unheated areas. Condensates increase maintenance costs in fuel gas transmission lines by corroding pipes, and clogging components. In addition to damaging the system, condensate can cause errors in flow measurement, variation in properties of the fuel, and particulates may prevent valves for fully closing.

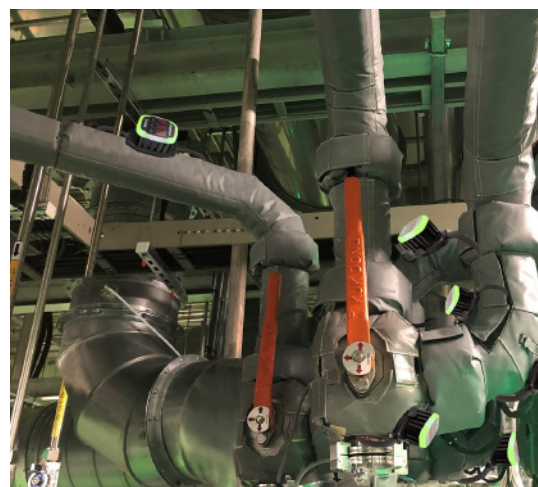
Gas handling systems need to deliver high-quality gases with consistent physical properties while minimizing environmental impact. End users need to protect their gas piping by using heat and insulation to prevent condensation.

Solution

BriskHeat offers several solutions for heating piping and components both indoors and outdoors. Gases used for sensitive processes may require heating systems which not only prevent condensation, but may require more sophisticated heating and control systems. These can hold the gas to a more specific temperature to react for a specific process. BriskHeat's team of account executives and application engineers can assist with everything from simple heating systems for fuel gases to thermal simulations required for process heating solutions.

Custom cloth heating jackets with integrated LYNX® temperature control modules provide excellent temperature uniformity required for process gas heating applications. They are often used for high vacuum systems, flat panel, and fiberoptic cable manufacturing. Our custom design optimizes heat transfer by providing jackets that fit snugly around pipes, valve, pumps, and other components. BriskHeat offers several lines of cloth jackets to meet your needs.

For simple condensation of gases in unheated areas or those close to exterior walls, self-regulating heating tapes and insulators are the most economical way to prevent condensate from fowling your system.



Thermal Simulation & Analysis



Industries

Chemical Processing/Extractions	Manufacturing
Energy/Power Generation	Semiconductor, Flat Panel,
Gas & Oil	Photovoltaic/Solar
Gas Handling	

Types of Users

Process Engineers
Piping Contractors
Facility Maintenance Personnel

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 shutdowns and downtime 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 shutdown or extended downtime.

Solutions

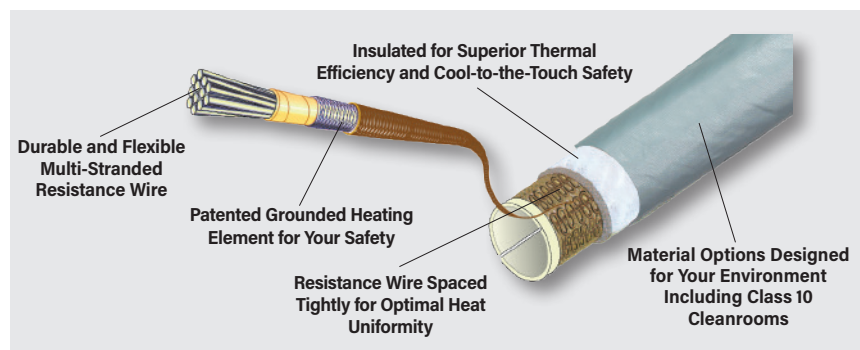
Custom cloth heaters provide the necessary heat for diameters as small as 1/4 inch (6 mm) while the LYNX® controller maintains the required temperature (and tolerance). The heaters are all connected and each heater is individually controlled to maximize efficiency and uniformity. All heaters are made 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 & unique geometries
- Abatements
- Valves
- Tanks, drums, cylinders, & vessels
- Laboratory & analytical equipment
- Vacuum bake-out
- Emission testing
- Fluid delivery systems
- Gas lines
- Exhaust lines
- Forelines



Industries

Analytical Instrumentation/Laboratory
Gas Handling
Semiconductor, Flat Panel, Photovoltaic/
Solar
High Vacuum

Types of Users

Tool Designers/Engineers
Tool Owners
Fab Managers
Facility Maintenance 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 gases 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, setpoint, 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. They are also used in the manufacturing of fiber optic cable.

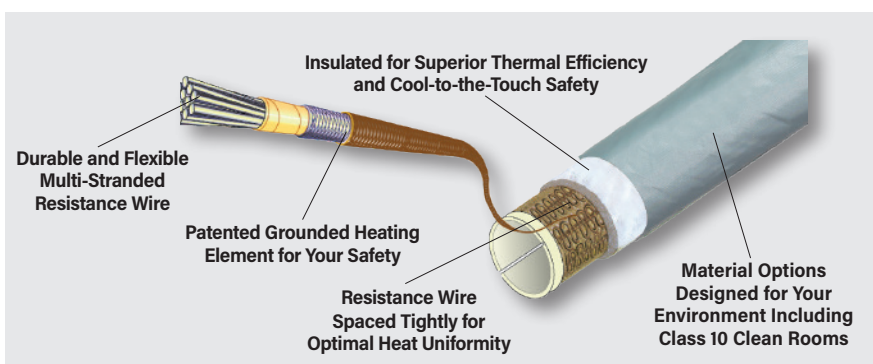


Industries

Energy/Power Generation	Semiconductor
Gas Handling	Flat Panel, Photovoltaic/ Solar
High Vacuum	

Types of Users

Tool Designers	Tool Owners
Facilities Maintenance	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 and 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 260°C (500°F) in the analyzer. Production versions of their system include a BriskHeat foil heater as small as 1.2 in x 1.5 in (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, and clog or damage sensing lines.



Hot/wet gas analysis requires the gas sample be maintained above the dewpoint 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 302°F (150°C). 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

Analytical Instrumentation
and Laboratory
Chemical Processing/
Extractions
Energy/Power Generation

Gas & Oil
Gas Handling
Life Science/Medical/
Pharmaceutical
Manufacturing

STEAM TURBINE POWER GENERATION CONDENSATION PREVENTION

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 due to condensation of steam and impulse air. One example of this can be found at an El Paso Electric Company steam turbine power-generation plant where keeping systems operational during the cold season is critical. 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. 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, preset 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 preterminated 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 Silver Series 2 configurable and removable cloth insulators that are perfect for use with RKP heating tapes. Custom cloth heating jackets are designed to provide freeze protection by combining heater and insulation in an easy to install and remove design. BriskHeat's XtremeFLEX® HSAT heats up to 425°F to prevent condensation of steam lines. A thermostat is included for easy plug and play installation.

Note: Standard preset 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 (17 W/m). Custom configurations are available upon request.



Industries

Chemical Processing/Extractions	Gas Handling
Energy/Power Generation	Heavy Industry/Mining
Gas & Oil	Water/Wastewater Treatment

Types of Users

Facilities Maintenance Personnel	Process Engineers
	Production Managers



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 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 oftentimes 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 ACR³ 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 touchscreen user interface that allows for quick and easy ramp/soak programming. The ACR³ 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 1,100°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.

Applications

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



Products

ACR 3 Hot Bonders	Composite Curing
Radome Heaters	Heat Blankets

Industries

Aerospace/ Aviation Aviation OEMs	Composite/Epoxies/ Resins
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Types of Users

Composite Repair Technicians Vocational School Instructors	Engineers/Designers of Repair Techniques/ Processes Production Personnel
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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 single piece hulls for their most demanding boat designs. During manufacturing, adhesives may be used to seal windows or assemble other composite structures. Also, damage to hulls requires repair using fibers and resins that must be cured while under vacuum. These structures require only localized heat.

Solution

The portable ACR³ hot bonder and heating blankets provide a cost-effective tool for curing and repairing composite materials with precision and efficiency. The ACR³ 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 ACR³ hot bonder, custom-sized heating blankets, insulators, and a power booster box (for large cure applications). The ACR³ 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 (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). 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 processes 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.
- Reusable insulating blankets for increased energy efficiency.



ACR³ Hot Bonder

Products

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

Industries

Composites/Epoxies/Resins	Manufacturing Transportation
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Types of Users

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

LIGHTWEIGHT BRICK PANEL COMPOSITE CURING

Application

Brick homes are desirable for many reasons including low maintenance, energy efficiency, fire and weather resistance, and sound resistance. Brick homes are also generally more expensive than conventionally sided homes, but tend to retain their value better. The disadvantages of using brick are cost of materials, durability of mortar, and the expense of construction. New home builders and buyers are looking for alternate materials and construction methods to obtain the advantages of building with brick while minimizing the disadvantages.

Qora® claddings from Arcitell® are composite panels with both the look and feel of stone. At the heart of Arcitell® products are composite sheets they manufacture by mixing a phenolic resin, sand, and other proprietary compounds. The mixture is poured over fiberglass material with peel ply applied to both sides of the sheet. Belden Brick Company wished to create a new product that would have the advantages of brick while minimizing the disadvantages.

Solution

Belden Brick Company is working with Arcitell® to create a product known as RBP which is made from real brick and the same composite panel backing used to make Qora®. Standard bricks are cut to reduce the overall weight of each brick. Bricks are placed in a form with space allowing for sand (mortar) to fit in between. The composite panel is then laid on top. A BriskHeat VT10000 vacuum table with additional top heat is used to process the materials. Vacuum from the built-in pump applies the force needed to debulk the composite material as it molds around the back of the bricks. Heat applied uniformly from the top and bottom of the table cures the composite material. The resulting product has the advantages of real brick but is lighter in weight and requires no mortar for installation.

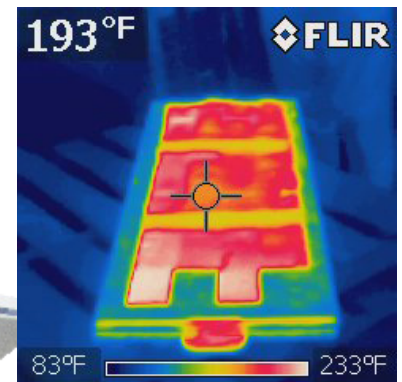
BriskHeat's VT10000 Vacuum/Debulking table is capable of processing RBP panels in batches for fast production. Cure cycles can be at constant temperatures or programmed for ramp/soak. It can process materials up to 400°F (204°C). Data logging with up to 16 sensors can be used to monitor temperatures at different bed locations.



Robert Belden prototyping a RBP panel on BriskHeat's VT10000.



Real Brick Panel with composite backing (photo courtesy of Belden Brick Company)



Thermal scan showing temperature uniformity of panel removed from vacuum table.



VT10000 Vacuum Table

Industries

Composite/Epoxies/Resin
Construction Material
Consumer/Residential
Manufacturing

Types of Users

Industrial Engineers
Production Personnel
Manufacturing Engineers
Composite Repair Technicians

RESIN PANEL MANUFACTURING SOLUTIONS

Consistent results in molding resin materials

Application

Arcitell® was formed in 2017 to commercialize a new technology for cladding materials to be used in the residential construction industry. The result is Qora® Cladding, a lightweight, energy efficient, fire-resistant, and easy to install product. Qora®, manufactured from a phenolic resin, has the look and feel of real stone. Heat is required to prepare the resin for mixing, to mold and cure the panels into the finished product, even to manufacture the foam cores used for insulation.

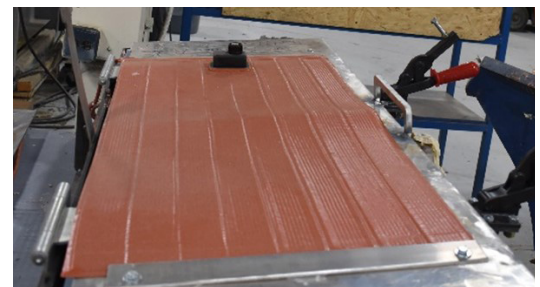
The Qora® cladding is made by placing a composite sheet in a heavy silicone mold which is profiled to appear like stone. After removing the peel ply, the foam core is pressed into the sheet. A second composite sheet is placed over top. Heat and pressure is applied to the top and bottom of the mold to form and cure the panels. Corner pieces provide unique challenges as pressure is required from more than two sides.

Solution

BriskHeat products are used for several purposes. Their manufacturing process starts with heating the resin. Drums of phenolic resin are delivered then stored in a cooler until needed. BriskHeat FGDH full coverage drum heaters are applied when the resin will be needed for production. A drum mixer is used during heating to aid in establishing a uniform material temperature. Once the resin reaches the proper viscosity, then sand and other proprietary compounds are added. Resin is poured over a layer of fiberglass reinforcement to form composite sheets which are sandwiched between peel ply and rolled for future use.

Phenolic resin is also used to make foam cores. BriskHeat SRL-ADJ silicone heating blankets with adjustable controls are used to heat the top and bottom of a clamshell designed mold for curing the foam. The bottom of the mold will provide the same contour to the foam as the finished Qora® panel. Cores add strength to the panels and the insulating properties make the cladding more energy efficient.

Arcitell® engineered a "V" shaped fixture that is heated with adjustable thermostat silicone heaters. Flat panels and corner pieces are designed to interlock, leaving it indistinguishable from real stone and mortar. After cooling, the pieces are painted and oven dried.



Industries

Composites/Epoxies/Resins
Construction
Manufacturing

TOOL/MOLD HEATING AND HOT DEBULKING

An efficient way to heat tool molds prior to working with prepreg 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 prepreg is used to identify cloth materials that are prepregnated or presaturated 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 prepreg 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 prepreg 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 1,100°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. For lower temperature applications, use SR heating blankets.

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

Aerospace/Aviation	Manufacturing
Composites/Epoxyes/ Resins	Transportation
Injection Molding/Plastics	

Types of Users

Engineers	Production Managers
Fabricators	Technicians

Products

ACR 3 Hot Bonder	SR Composite Curing Blankets
FGH and SXH Composite Curing Blankets	Vacuum Bagging Materials

VACUUM CURING/DEBULKING TABLES

Accelerating product research & design and composite part repair



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.

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 downloaded 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.

Industries

Aerospace/Aviation
Composites/Epoxies/Resins
Manufacturing
Transportation

Types of Users

Research & Development Engineers
Composite Repair Technicians
Design Engineers
Maintenance Managers
Manufacturers
Operation Managers

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 ACR³ 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 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 up to 480 VAC 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/Epoxy/Resin Curing
Energy/Power Generation
Wind Power Industry

Types of Users

Turbine Blade	Operations Managers
Manufacturers	Maintenance Managers
Design Engineers	

3M Company	Entegris	Oak Ridge National Laboratory
ABB Group	ExxonMobil	OMEGA Engineering
AeroWindTech	Facebook	Praxair
Agilent Technologies	First Solar	Procter & Gamble Company
Air Liquide	Foxconn Technology Group	PSG Petro Service Gmbh & Co. KG
Air Products	Frito-Lay	SAES Pure Gas
Airbus Group SE	General Dynamics	Saint-Gobain PPL Corp.
Amtcor Rigid Packaging	Goodrich Corporation	Samsung
Apple	Global Foundries	San'an Semiconductor Tech Co.
Arcitel	Grainger	San Fu Gas and Chemical
Argonne National Lab	HKC	Sandia National Labs
Ashland, Inc.	Holtek	Sharp Corporation
ASM	Honeywell International, Inc.	Shell Chemicals
Babcock & Wilcox	Hotfoil	SpaceX (Space Exploration Technologies Corporation)
Bayer AG	Huali Microelectronics (HLMC)	Specialized Bicycle Co.
Belden Brick Co.	IBM	ST MicroElectronics
BP Global	Ichor Systems	Summit Research
Brookhaven National Laboratory	Innolux Corporation	Texas Instruments
Canadian Energy Services	Kurt J. Lesker	The BOC Group
China Aircraft Services (CASL), Ltd.	Lawrence Livermore National Lab	The Boeing Company
China Star Optoelectronics (CSOT)	Lockheed Martin Aeronautics	The Hershey Company
Clipper Wind Energy	Lufthansa Technik	Thermo Fischer Scientific
Cole-Palmer	Matheson Gas	Tokyo Electron Ltd. (TEL)
ConocoPhillips Company	McMaster-Carr	Taiwan Semiconductor Manufacturing Co. (TSMC)
Covanta Renewable Energy	Micron Technology, Inc.	Tesla Motors
Cryogenic Specialty Mfg.	Mitsubishi Heavy Industries, Ltd.	Tucson Electric Power
DTE Energy	Monobuoy	Tyson Foods, Inc.
Dow Chemical Company	Morton Salt	United Airlines, Inc.
Duke Energy	NASA	WinCo Foods
DuPont	Naval Surface Warfare	Xian Jiande Information Tech.
Eastman Chemical Company	Nestlé Purina	Universities around the world
EADS (Eurocopter)	Nor-Cal Products	...and thousands more within in a wide range of industries.
Ebara	North Sails	
	Northrop Grumman Corporation	

Aerospace/Aviation

Bird strikes, rock damage, and stress fractures are common causes of aircraft damage. BriskHeat's composite curing solutions, such as hot bonders and silicone rubber heating blankets allow for fast and easy repairs to aircraft composite pieces. Using the easily transportable ACR® series hot bonders and a properly sized silicone rubber heating blanket, these repairs can be made on-site without removing or shipping pieces out. This reduces AOG time. Radome curing blankets are available for all aircraft models. BriskHeat can also help with moisture detection in elevators and other aircraft components. Using BriskHeat NDT kits, end users can perform these tests without damaging the component being tested. Freeze protection products such as heating cable and insulators are utilized in airport hangers. Wet-area cloth heaters are used to maintain the accuracy of temperature-sensitive instruments.



- 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

Agriculture/Farming/Ranching

Agriculture and ranching are two examples of industries concerned with freeze protection. BriskHeat's self-regulating heating cable and silicone rubber heating blankets easily prevent freezing of waterlines, tanks, and troughs used for irrigation and livestock watering. These can also be used to increase crop yields and extend growing seasons by heating soil or providing heat for seed germination. And BriskHeat has a full line of wet-area/outdoor-rated cloth heating blankets too. Harvesting and bottling honey is faster and easier when container heaters are used to reduce viscosity. Apiaries are capable of higher production when honey is extracted using heaters on the spinning equipment. Ranchers can use safe, low-temperature heaters to provide warmth in areas inhabited by newborns.



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

Analytical Instrumentation/Laboratory

BriskHeat's laboratory and heating products can heat everything from small analytical instruments to large gas chambers. Our off-the-shelf heating solutions provide energy efficiency, rapid heat-up time, high-temperature capabilities, and temperature control to meet the needs of each application. Heaters are used for evaporating liquids in samples, promoting chemical reactions, distillation, and sterilization. Common BriskHeat solutions include heating tapes, heating cords, mantle heaters, beaker heaters, heating blankets, temperature controllers, and a high-limit cutoff controller. There is even a hard-sided mantle with built-in stir bar.



- 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

Asphalt/Concrete

Asphalt or bitumen is a thick petroleum-based product mixed with aggregate such as stone. Manufacturers must maintain their asphalt's working temperatures between 200°F to 300°F (90°C to 150°C) to ensure thorough mixing. Constant-wattage heating cable for pipes and silicone rubber heating blankets for vessels help asphalt manufacturers maintain the required heating level. Concrete manufacturers often use products called admixtures and water as parts of their mixing process. These products may be stored in 55-gallon drums or IBC/tote tanks and must stay warm to ensure proper setting of the material. BriskHeat's full line of drum heaters and IBC/tote tank heaters are used to maintain the temperature. Immersion heaters can preheat mixing water to offset cold temperatures of concrete stored outdoors in winter.

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



Chemical Processing/Extractions

Chemical Processing companies must often lower the viscosity of chemicals such as polymers and resins to enhance flow efficiency. Common products to solve viscosity issues include BriskHeat's heating cable, IBC/tote tank heaters, drum heaters, and silicone rubber container heaters. Constant-wattage heating cable is especially popular to keep chemicals at elevated temperatures, sometimes several hundred degrees, while flowing through pipes. Heating tapes, insulators, and mantle heaters are utilized in distillation and extraction processes to refine natural herbal products used in liquid preparations. Silicone rubber heating blankets are often installed on speed dryers and hoppers to dry and dispense bulk solid chemicals. They are also used around mixing chambers to maintain chemical reactions or provide for more homogeneous mixing.

- 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



Composites/Epoxies/Resins

Composite panels may consist of prepreg sheets, trimmed to fit in forms, but may also be layers of fiberglass, cloth, and resin. Easily heat and compress composite parts in one step with BriskHeat's vacuum/debulking table. Its single set-up greatly reduces overall time and cost associated with traditional debulking and autoclave curing of composite materials. Vacuum is used to remove gases escaping from the material and ensure the materials conform to the desired shape. The ramp/soak temperature controller is used to follow the heating cycle programmed by the operator for curing the material. Heated tables are used in both prototyping and manufacturing. BriskHeat's ACR® and silicone rubber blankets are perfect for curing adhesives required to bond parts together in assembly applications. And blankets are highly flexible to accommodate unique shapes.

- Albany Safran Company
- Arcitel
- CR Composite Resources
- Lockheed Martin
- Milwaukee Composites
- Specialized Bicycle



Construction

Freeze protection can be an area of concern in the Construction Industry. Easily prevent water lines and tanks from freezing with BriskHeat's self-regulating heating cable and silicone rubber heating blankets. Self-regulating heating cable can be used to melt snow and ice on structures. Heaters can be used to warm batteries on heavy construction machinery as well as containers of caulk, putty, and spray foam for easier use. Improve weld quality with BriskHeat heaters to preheat pipes prior to welding. And Insul-Lock[®] foam insulators reduce heat loss and save energy.

- 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

Consumer/Residential

BriskHeat offers roof and gutter heating cable kits that can be installed to prevent snow and ice build-up on homes, garages, barns, and other structures. Home hobbyists use BriskHeat heaters for everything from home brewing to melting wax for candles. Heating tapes prevent exterior water pipes and rain barrels from freezing. Insul-Lock[®] foam insulators are designed for safety as well as energy efficiency. Flat panels can be cut to fit around ductwork. Pipe insulators fit securely around pipes, with special shapes to insulate tees and elbows.

- Alene Candles
- Hope Candle Company
- Pearson Candy Company
- The Beeman



Cosmetics/Personal Care

Process heating and viscosity control are especially important to the cosmetic and personal care industries. BriskHeat provides silicone rubber and custom cloth heaters to ensure proper melting, emulsifying, blending, and container filling of creams and lotions. Heating tapes and insulators are used to heat inter-connecting piping to reduce or maintain low viscosity as fluids are transported between processing machines. Other heaters are used to remove moisture from powders. These systems can be easily controlled with BriskHeat's multi-zone temperature control equipment. Laboratory heaters such as Griffin beaker heaters, round-bottom flasks, and other mantle heaters, are used by our customers during the product development phase or for quality monitoring.

- Ask Cosmetics
- Bradford Soap Works
- Estée Lauder
- Paramount Cosmetics
- Prisha Cosmetics
- Royale Cosmetics



Energy/Power Generation

BriskHeat heaters maintain steam temperature and pressure required to drive the turbine in Cogeneration Power Plants. Condensation is a concern for waste-to-energy and coal-burning generators that use hopper systems to capture fly ash during the burning process. BriskHeat offers a full line of both metal-clad and silicone rubber heaters which both solve the condensation issue and meet all regulatory requirements. Mineral Insulated (MI) cable, capable of heating temperatures up to 1,832°F (1,000°C) can heat steam in methanereformation to produce hydrogen. Compressor soft starters are used in residential solar power systems to prevent current overload. As demand increases for battery or fuel cell powered vehicles, BriskHeat's products will be part of the solution.

- 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)

Food & Beverage Processing

Food Processing companies need to prevent condensation, so food preparation areas are not contaminated. BriskHeat's silicone rubber heating tapes and blankets will create temperature equilibrium, thus eliminating condensation. In applications where ingredients must be heated to reduce viscosity, BriskHeat's IBC/tote tank heaters, drum heaters, heating cable, and silicone rubber heating blankets can be utilized. These can also be used to melt shortening, wax, chocolate, and similar ingredients. BriskHeat's high-temperature heaters produce steam for food preservation, sterilization, and pasteurization. Aluminum foil heaters are perfect for restaurants to keep food hot until ready to be served. Condensate pans evaporate water caused by condensation in coolers and display cases.

- 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



Gas Handling

Gas Handling/Processing companies use gas cylinders to store and dispense many types of gas. BriskHeat's gas cylinder warmers are used by consumers to increase the cylinders' temperature and maintain the proper gas pressure. This allows a much higher percentage of the gases to dispense. Both general-purpose and hazardous-area rated warmers are available. Custom cloth heating jackets prevent gases from condensing. This prevents corrosion that can clog nozzles, contaminate processes, and change gas properties. Heaters are often utilized in outdoor equipment for gas analysis. They can also be used to control vaporization of liquid fuels such as propane, butane, and natural gas.

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



Gas & Oil

Secondary oil recovery requires heated steam to extract thicker deposits or deeper reserves. Mineral Insulating (MI) cable is a perfect high-temperature, outdoor heating solution used in the Oil & Gas industry. Oil companies often require freeze protection for their pipelines containing oil and other liquid by products. To protect these lines, they use BriskHeat's self-regulating heating cable. It is easy-to-install, extremely rugged, has long circuit lengths up to 660 ft (201 m) and is rated for use in hazardous areas. They may use silicone rubber blankets and custom cloth heating jackets on vessels for viscosity control. Heating tapes and cables are also used to prevent condensation in gas lines.

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



Heavy Industry/Mining

Heavy industry is characterized as manufacturing operations requiring large machines. Often these operations are related to metal processing, foundries, mining, or other enterprises that are classified as hazardous environments. BriskHeat hazardous-area blankets, cables, and controllers can be used in the harshest environments where dust and combustible gases may be present. Heaters are used to keep batteries warm for quick starting of machines. Self-regulating cable is often used for freeze protection and viscosity reduction of process fluids and lubricating oils. High-temperature heaters mounted to conveyor systems are used for removing moisture from ore. Outdoor controllers are built rugged to resist vibration.

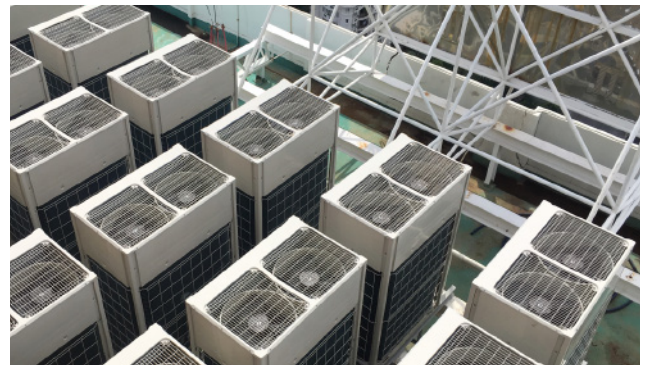
- Apex Silver Mines Corporation
- Eagle-Picher Company
- Hazen Research, Inc.
- Kennecott Utah Copper
- Kiewit Mining Group
- Newmont Mining Corporation
- Northwest Mine Supply
- Round Mountain Gold
- Texas Precious Metals



HVAC

HVAC contractors and technicians routinely need BriskHeat products to complete daily tasks. Examples include jug warming to keep refrigerant warm during servicing, compressor soft starters to reduce inrush current, water heater elements for replacements, and blankets for emergency de-icing. Crankcase heaters are used on compressors, heat pumps, and chillers to prevent condensation. Additionally, BriskHeat offers condensate evaporation pans that are perfect for roof mounted air conditioning units or other areas where drain lines are not available. Insul-Lock® foam insulators can be used on hot water pipes and ductwork to reduce heat loss and save money.

- 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



Injection Molding/Plastics/Rapid Prototyping

Many injection molding operations melt plastic pellets into a liquid before injecting them into plastic-forming molds. BriskHeat's band and cartridge heaters are a popular choice in this application. They have very high-watt densities, high-temperature capabilities, exceptional heat transfer, and can be made in hundreds of sizes and configurations to meet unique requirements. 3D printers allow for rapid prototyping of parts from various polymers supplied as ground pellets or continuous filaments. Not only do the deposition nozzles require heat, but many of the materials require heated printer beds to produce quality parts. BriskHeat's etched foil or silicone rubber heaters can replace OEM heaters or add heat to older machines.

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



Life Science/Medical/Pharmaceutical

BriskHeat etched foil heaters are used in incubators for maintaining body temperature and growing petridish samples. They are used in medical equipment for operations such as heating fluids, processing samples, and sterilizing instruments. BriskHeat lab equipment heaters such as flask heaters, beaker heaters, and cords have allowed for research and development of critical preparations such as medicines and vaccines. Hard-sided mantle heaters with magnetic stirrers provide for more homogeneous preparations. Silicone heaters and temperature controllers are used for small batch pharmaceutical manufacturing. Our HL101 High-limit cutoff adds safety to heating operations.

- Argon Medical Devices
- ATG Pharma
- Cantel
- Gilead
- Integrity Medical Devices
- Medivators
- Pharmacann



Manufacturing

BriskHeat's products are used for a wide variety of applications in both light and heavy manufacturing companies. Immersion heaters can be inserted into tote tanks, drums, and other containers for freeze protection or heating of contents. Surface heaters are used on vessels and hoppers to reduce the viscosity of lubrications, heat metal surfaces for annealing or welding preparation, facilitate chemical reactions, dry solids, distill liquids and so much more. Our insulators are used by companies to reduce energy costs and provide more consistent results on manufactured products. BriskHeat's wide variety of product offerings allow us to customize a solution to specific surface heating application needs.

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



Paper & Pulp Mills

Paper & Pulp and Packaging manufacturers often use enzymes and glue that are stored in IBC/tote tank containers. BriskHeat's IBC/ tote tank heaters can help maintain the proper temperature so they can be effectively pumped to the plant location for use. Drum and immersion heaters are used to heat fluids stored in unheated areas up to the required use temperatures. Heating tapes and jackets can help to reduce moisture in fuel and process gases to dry paper. Many packaging applications require heat to complete the process, and cartridge heaters are a popular choice. They are used to heat-seal plastics around the product.

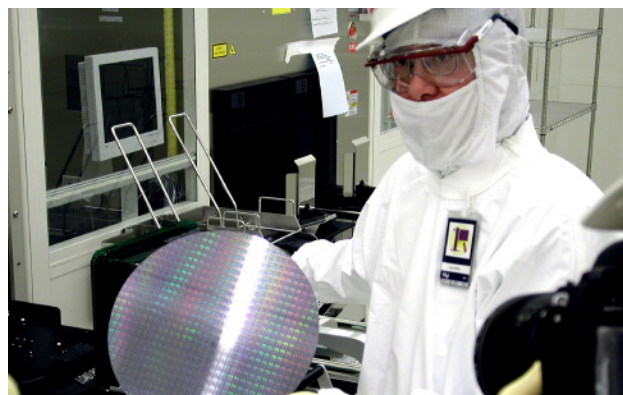
- Clearwater Paper Corporation
- Dotmar Engineering Plastics Products
- Evergreen Packaging
- Georgia-Pacific Corporation
- Great Northern Paper Company
- International Paper Company
- Kimberly-Clark Corporation
- Procter & Gamble (P & G) Co.
- Scott Paper Company
- Wausau Paper Corporation
- Weyerhaeuser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



Semiconductor, Flat Panel, & Photovoltaic/Solar

Semiconductor, Flat Panel, and Photovoltaic/Solar companies use custom cloth heating systems on gas delivery, foreline, and exhaust pipelines to prevent condensation which could cause clogging. BriskHeat cloth heating jackets are designed to provide precise heat and insulation, are easy to install and remove, and have exceptional longevity and durability. They meet SEMI S2 standards and can be used in Class 10 and Class 100 Cleanrooms. When used with a LYNX[®] temperature control system, maintenance costs are decreased, and production is increased through superior temperature uniformity.

- 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)



Transportation

BriskHeat's ACR[®] hot bonder paired with flexible silicone rubber blankets are used during the manufacturing of boats, transit vehicles, cars, and aviation equipment. Blankets cure adhesives used to seal windows in boats. They are also ideal for repairing cracks in fiberglass and resin parts utilized in various vehicles. Container heaters are capable of slowly heating epoxies and resins stored at lower temperatures. Vacuum curing and debulking tables are used to make prototype parts, in production manufacturing, and to repair damaged pieces. Resistance wire heaters can prevent ice from forming on rail tracks under bridges.

- Bell Helicopter
- Embraer Aircraft
- SpaceX
- The Boeing Company
- Tesla
- Zero Motorcycles



Water/Wastewater Treatment

Wastewater is a by-product of many industrial processes such as refining, gas conditioning, sewage treatment, food processing, and more. 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. Dehydration or dewatering of the sludge removes most of the mechanical water which is further processed and returned to the environment. Heaters can be used to evaporate water to decrease the volume to be treated. Waste liquids can be used as fuels for incineration of solids. Nozzle heaters and heating tapes reduce liquid viscosity for more effective heating and Silver Series 2 Insulators are easily installed and removed, and suitable for outdoor use. Plants producing sustainable fuels such as landfill or biogases use heat to prevent condensation after the water is removed for treatment.

- 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.



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Silicone Heating Blankets



IBC/Tote Tank Heaters



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TC4000



BH-510



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Hazardous
Area



SDX
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TD101X



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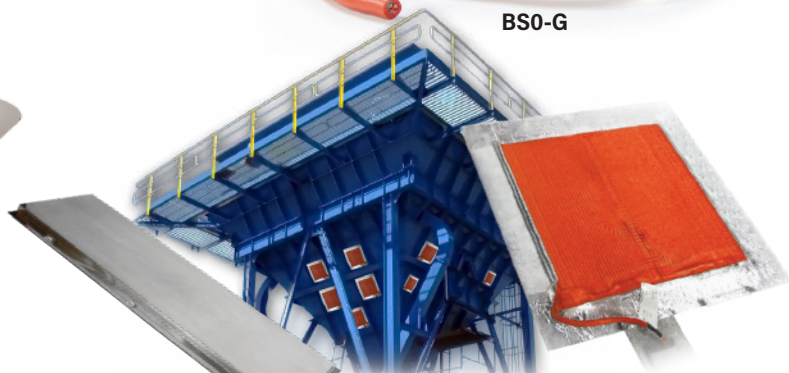
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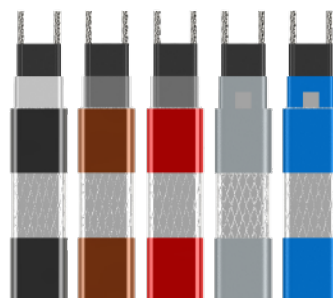
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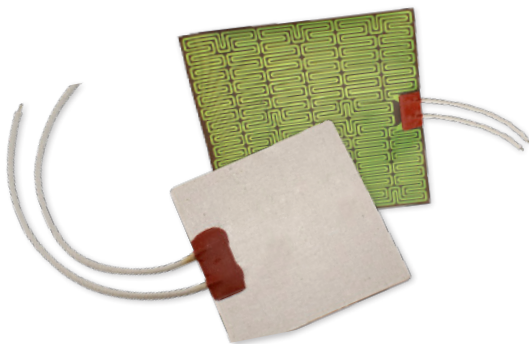
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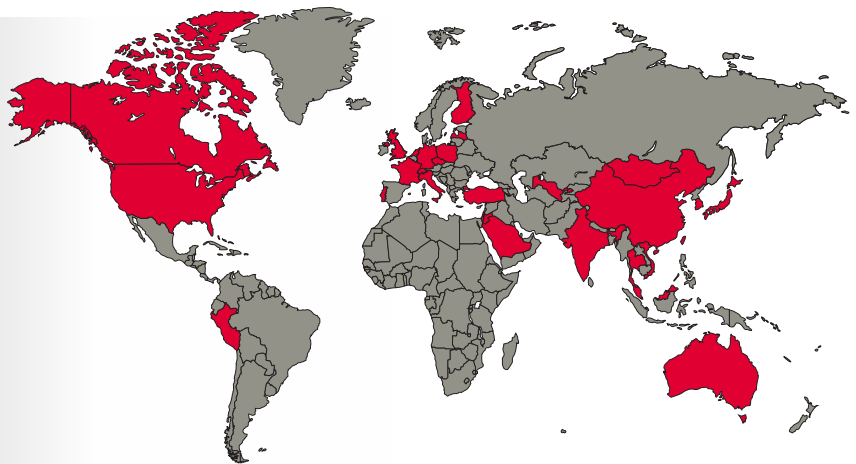
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