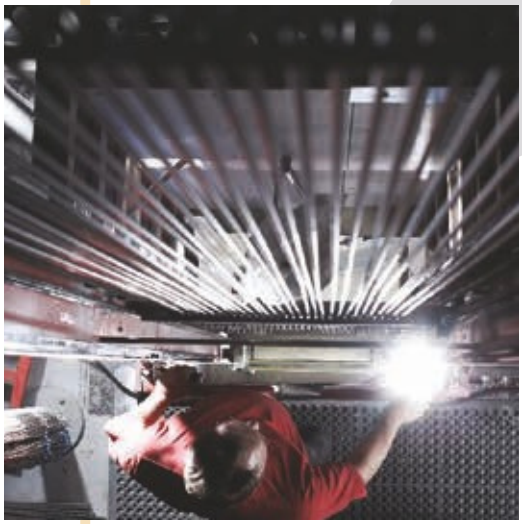
BACKER HEATROD

Projects

Industrial heating processes often demand a level of practical engineering in their design and application in the field.

Our team of application engineers are trained to be able to consult with our customers in solving their process heating challenges and to be able to provide technically and commercially competitive solutions to our customers. Add to this our centre of competence in Sweden and our ability to manufacture and install locally and you have access to a full project delivery team ready to support you.

Heatrod Elements offer design, production and supply of electric heating for the process industry. We provide products meeting all relevant standards and tests, certifying products according to customer specifications. We design, develop and manufactures all types of systems for electrical heating of gases, liquids, vapours and solids. We work closely together with our customers to manufacture systems meeting the most stringent international standards. Our expertise in the field of electrical heating covers the chemical, pharmaceutical, petrol chemical (both onshore and offshore applications), steel, textile, glass, power generation and foodstuff industries. In fact, any application requiring process heating. We supply heating elements, pressure vessels, and control panels/systems, all fully tested and certified to meet the required standards, including Ex-proof.



Amongst other things, we produce:

- Immersion heaters for liquid substances and gases
- Circulation pre-heaters for liquid substances and gases
- Gas pre-heaters for industrial gases such as hydrogen, CO2 and nitrogen
- Air pre-heaters/re-heaters
- Finned tube heaters
- Various industrial heating solutions
- Junction boxes, thermostats, electronic temperature regulators and controllers

One of the basic components of process heating solutions is the tubular heating element.

Our immersion heaters are a popular option for heating fluids. They are used as a heat source in, for example, water heaters, boilers, oil systems and industrial fluid heating.

The heaters consist of tube elements that are soldered or welded to flanges, element heads or nipples. They are combined with thermostats, thermal cut-offs and connection boxes.

Alternatively, immersion heaters may be made from ceramic elements set into protective tubes.

We are capable of calculating, designing and manufacturing electric immersion heaters intended for heating of liquids, gases and air in hazardous Ex zones 1 & 2.

Ex certified immersion heaters may be custom made to client preferred specifications as long the design and construction are based on terms given in current Ex directives.

For Gases and Air

Flow Modules for the Heating of Air and Liquids

Manufactured in materials and dimensions according to customer requirements. Can be built-up easily and mounted as required. Pressure, temperature levels and materials used will depend on the specific project and application. After installation, the equipment is pressure tested according to specification.

For Oil, Water and other Fluids

Heater type: Vat Heater
Rating: Various
Process: Heating Fluids

Application description:
Various applications such as cleaning parts.

Oil, Water and other Fluids

External Heater

With motor, pump and expansion valve. For heating of lubricating oil in gearboxes, e.g. in Arctic areas where additional heating is required. The built-in pump circulates the lubrication oil through the gearbox. The flow heater is equipped with a pump, temperature limiter, and PT100 sensor. ETL approved.

Glycol Heaters

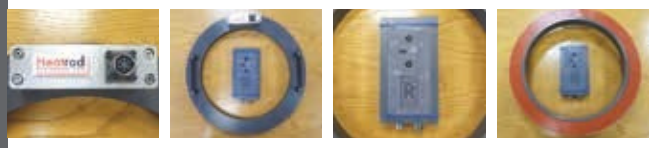
Our glycol heaters are used for pre-heating of cooling water in the cooling/heating system in converters in wind turbines before start-up of the wind turbine. The glycol heaters are delivered in various materials and designs to meet customer requirement.

Process Industry: Aerospace

Aero Engine Interference Fit Heater

Heater type: Foil Heater
Rating: 750w 230v
Process: Interference Fit Heating

Application description:
In conjunction with key customers in this market we have designed and produced a range of special purpose heaters which aim to meet the exacting requirements of the aerospace engine manufacturing industry. Our heaters are able to provide tightly controlled and focussed heat which delivers a prescribed level of expansion for the many interference fit joints which make up a typical turbine engine.



Aero/Defense Parts Cleaning

Heater type: Over-the-Side VAT
Rating: Heater 45kW 415V
Process: Cleaning Fluid Heating

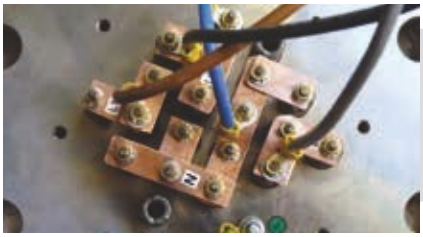
Application description:
This is a standard type of process heater which is design to accurately and efficiently heat up large open tanks of liquids.

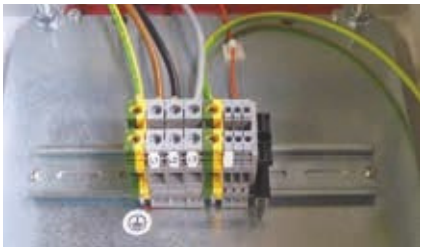
Process Industry: Gas Production

Heater type: Reactor Heater
Rating: 84kW 415v
Process: Gas Production

Application description:

This project includes a pre-heat process for bulk chemicals which are then transferred into a reactor plant. Heatrod provided a large heater installed at the base of the reactor to the heat process.





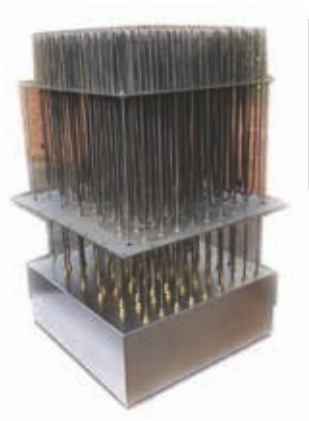
Process Industry: Oil and Gas

Heater type: Flange Immersion
Rating: 30kW 415V
Process: Binary Distillation

Application description:

The Binary Distollation trainer was one of four training skids provided to a college in Qatar as an addition to their state of the art student training facilities. The separation of liquid mixtures and recovery of the components typically involves the distillation process. Distillation and fractionation operations are found throughout the petroleum, petrochemical and numerous other industries. This trainer separates a methanal/water mixture in a see-through, bubble cap tray column. The trainer is equipped with industry-typical process measurement and control devices. The entire trainer is controlled from an Emmersion Delta V distributed control system (DCS).

The main heat input to the distillation column is provided by a re-boiler liquid vessel at the bottom of the column. The bottom product (least volatile feed mixture component) is removed from the re-boiler at operator determined rates to achieve optimum distillation conditions. The heat input into the column is controlled to maintain desired distillate production rates and temperature distribution in the column to a maximum process temperature of 100OC.



Food and Beverage Industry: Tobacco

Heater type: Stab-in Duct Heater
Rating: 90kW 415V
Process: Tobacco Drying

Application description:

This heater was designed specifically to be installed into a drying process. The heating control for this type of application is critical as the ratio of air flow and direct heat applied to the air is key to producing saleable product.

Food and Beverage Industry: Drying

Heater type: Flange Immersion
Rating: 30kW 415V
Process: Drying

Application description:

Food industry.

Process Industry: Chemicals

This image shows an example and application of the following types of heaters:

Heater type:	Gas Feed Heater
Rating:	21kW 415v
Process:	Gas Heating

Heater type:	Oil Heater
Rating:	66kW 415v
Process:	Oil Heating

Application description:

These units were supplied to a chemical manufacturing research and development facility.

The units are installed on a miniplant, which is a small scale chemical plant used to prove and support commercial scale technologies. The purchased units are installed on a Gas to Liquids miniplant which will be scaled up once proven.

Process Industry: Petrochemical

Process Heater for Air and Steam

Manufactured from a special type of stainless steel with standing temperatures exceeding more than 500ºC. The heater is divided into sections. Controlled by PLC regulator monitoring temperatures, flow volume and composition of hot elements.

Flow Heater

Output:	3.5kW
Voltage:	230V
Temperature in:	100C
Temperature out:	1400C
Air flow:	30kg/h
Specific Watt load:	2.2W/cm2
Process:	Air

Heavy Fuel Oil Heater

Output:	0-70kW
Voltage:	3x400V
Degree of protection:	IP54

Process Industry: Paper

Heater type:	Duct Heater
Rating:	330kW 415v
Process:	Drying (Paper Clothing)

Application description:

This duct heater was installed as a refurbishment project into a paper clothing drying machine. Improvements were made to give extra redundancy and the ability to maintain without complete shutdown. The process speed was improved giving 20% increased production.

In the chemical and process industry, as well as in the manufacturing industry and the offshore sector, various media are produced, manufactured, and stored in potentially explosive areas, thereby requiring special explosion proof equipment.

Our explosion proof solutions are manufactured in accordance with ATEX, an EU directive relating to electrical and mechanical equipment for use in potentially explosive areas.

We produce electric heating solutions for solid and liquid substances as well as for gases, and these may be supplied complete with control cabinets. Among other things, we produce:

- Immersion heaters for liquid substances and gases
- Circulation pre-heaters for liquid substances and gases
- Gas pre-heaters for industrial gases such as hydrogen, CO2 and nitrogen
- Air pre-heaters/re-heaters
- Finned tube heaters
- Various industrial heating solutions
- Junction boxes, thermostats, electronic temperature regulators and controllers for duct heaters

The term of “explosive atmosphere” is defined as a mix of inflammable substances - in the form of gases, vapour, mist or dust - which may lead to fire spreading to the un-burnt mix following ignition. Atmospheric conditions are normally defined as -20°C to +40°C, pressure 0.8 - 1.1 bar. We produce equipment for ATEX areas, with different temperature and pressure on the media and for all temperature classes.

BASIC COMPONENT: Ex e II Heating Element

One of the basic components of explosion proof equipment is the tubular heating element. This heating element comprises a nickel chrome resistance thread surrounded by a metal cap and insulated with compact magnesium oxide. These elements can be bent to achieve optimum utilisation.

The standard sizes of the elements are Ø 8.5mm, Ø 10.2mm, Ø 12.7mm and Ø 16mm.

Cover material: AISI 304/316/321/310, SMO254, Incoloy 800/825, Inconel 600, titanium and copper. Other materials on agreement.

We have developed the heating element with enhanced safety, Ex e II, in accordance with EN 60079-0 and EN 60079-7. This element forms a basis for equipment with enhanced safety; this means that special rules have been implemented with regard to the design (in order to create an opportunity for enhanced safety) in order to prevent high surface temperatures as well as sparks in the inner or outer electrical parts. These Ex e II elements can be built into a junction box with a minimum degree of protection of IP54 fitted with Ex e terminals.

Pressure proof thermostats and thermo elements fitted in a junction box are used for maximum temperature protection and control. All coupling units in the junction box must be of pressure proof design.

Backer Process Heating designs, develops and manufactures all types of systems for electrical heating of gases, liquids, vapours and solids. We work closely together with our customers to manufacture systems meeting the most stringent international standards. Our expertise in the field of electrical heating covers the chemical, pharmaceutical, petrol chemical (both onshore and offshore applications), steel, textile, glass, power generation and foodstuff industries. In fact, any application requiring process heating. We supply heating elements, pressure vessels, and control panels/systems, all fully tested and certified to meet the required standards, including Ex-proof.

STANDARDS AND APPROVALS:

Industrial Projects - Examples and Applications

Backer Heatrod offer electrical heating solutions for the process and chemical industry.

See some examples below, if the solution you require is not shown, please contact us.

For Gases and Air

Duct Heaters for Air Handling Units

Duct heaters for ventilation heating (35oC) are manufactured from stainless steel with stainless steel heating elements. The ducts are equipped with perforated plates to optimise the air distribution. An anti-condensation heating element is installed in the terminal box to prevent condensation when the heating elements are not operating. A double overheating protection and, if necessary, a fire thermostat are mounted.

Nitrogen Heater

Output:	720kW
Voltage:	3x400V
Degree of protection:	IP66
Ex ed IIC T1	

For Gases and Air

Air Duct Heater

Output:	200kW
Voltage:	3x440V
Temperature out:	max. 250oC
Minimum air speed:	2m/sec.
Degree of protection:	IP54

High Voltage Heater for Heating of Process Air in Spray-Drying Plants

In 3 groups, with special flanges, tested at 75kV impulse voltage and 10kV Megger.

Output: 2.4MW - 3x800kW Voltage: 3x10.6kW
Temperature out: 340oC
Air flow: 70.000 kg/h
Material: Stainless Steel, AISI 304 Duct: (HxWxL) 2 x 2 x 4.2m
Insulation: 300mm Skamol

Backer Heatrod are based in Manchester and have been manufacturing electric heating elements and associated equipment for over 50 years.

This level of experience has allowed the business to develop into industrial products and projects whilst still retaining a base manufacturing capability for heating elements. To guide you in our level of expertise we have produced brochures which introduce you to the three main aspects of our industrial business: **Elements, Industrial** and **Projects**.

ELEMENTS

In our Elements brochure you will find reference to all the different types of electric heating elements we produce both in our Manchester factory and in our group companies around the world.

This ranges from the traditional tubular heating elements which remains the most common and versatile form of electric heating available through to more specialist technologies such as flexible film elements.

INDUSTRIAL

Heating is nothing without control and our range of industrial products are engineered not only to provide our customers with the complete heating and control package but also to provide the relevant components in order to build and maintain their own heating applications.

Our application engineering team are available to provide support in selecting the right combination of components through to complete design and manufacturing services.

Heatrod produce engineered solutions for the process industry both in house and also in partnership with group companies depending on the expertise required. All of these businesses, which form part of the Swedish Backer Group have proven experience with a broad range of environments. Applications range from extreme offshore and marine solutions through pilot and scale up process manufacture plants which require hazardous area IECEx and ATEX certificated heating solutions.

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Industrial/ Projects · Energy/ Environment · Advanced technology · Commercial equipment · Home appliance · Transportation · HVAC

BACKER HEATROD

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