

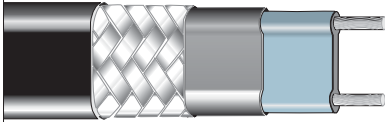
Heating Systems DATASHEET

JUNHO 2013

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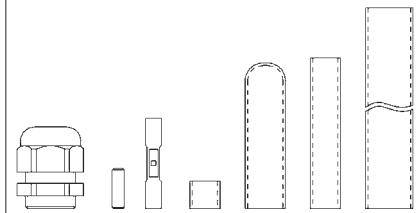
PSBL heating cable



Terminal box



Installation kit



System overview PSBL

Features

- Safe, self- limiting, without overheating while overlapping, thermostat not mandatory
- Easy installation, cutting and terminating on-site, random length possible and use of up-to-date connection technology
- Space-saving, favourable dimensions flexible and easy installation
- Installation also in Ex- area, maximum admissible work-piece temperature of +65°C (power ON).
- Certificate for complete system IEC/EN 60079-30-1 (*CSA, PSBL heating cable)
- Hard environment conditions, junction boxes made of polyester, stainless steel and aluminium
- BARTEC HELOC calculation and design - Software - Free Download

Description

Typical applications are frost protection, maintaining temperature and heat- up in pipes, tanks, vessels or at surfaces. Where impulse lines, measuring lines and thin analysis pipes need to be heated in non-ex areas for process industry and also in explosive atmospheres the BARTEC electric heating system type PSBL offers the optimum solution (Ex II2G Ex e II T5 and Ex II2D Ex tD A21 IP 65 T 95 °C). The heating cable is highly flexible and favourably small dimensioned.

The self-limiting heating cable type PSBL is available with various nominal power ratings from 10 W/m to 30 W/m at 10 °C (maximum admissible work-piece temperature of +65 °C, power ON). The standard outer insulation jacket is made of polyolefin or optionally of a fluorine polymer plastic for special applications which require chemical resistance and mechanical strength.



Explosion protection

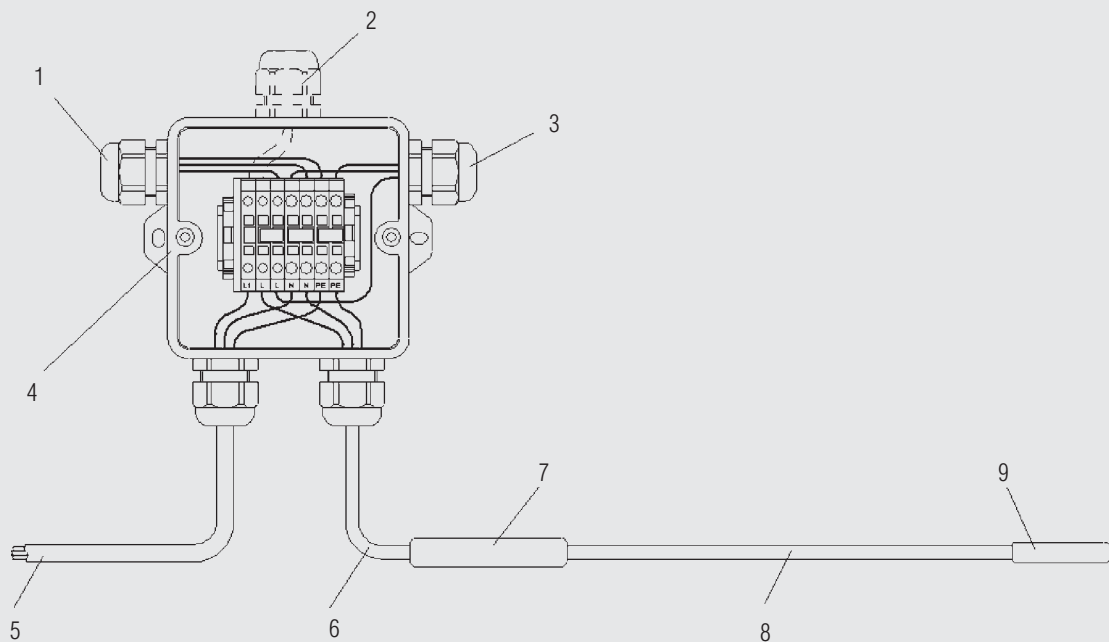
Certification

KEMA 08 ATEX 0112
CSA 1862457
IECEx KEM 09.0085

System overview

- Self-limiting parallel heating cable type PSBL (AC 110 to 120 V, AC 208 to 254 V)
- Heat shrink technology and silicone cold-applied technology for connection and terminating (ambient temperature -55 °C up to +55 °C, IP 65)
- Junction box made of polyester, stainless steel and aluminium
- Option: mechanical or electronic control systems
- Direct connection of the heating cable into a junction box with heat shrink technology and silicone cold applied technology in Ex areas
- Flexible connection by using a cold lead into the junction box (indirect) made of heat shrink technology
- Splice connection set made of heat shrink technology

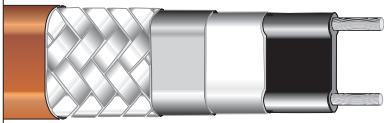
PSBL heating circuit system diagram (typical example; not Ex)



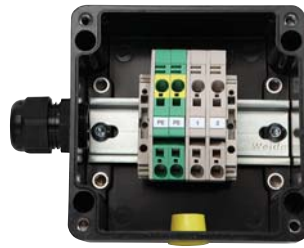
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| 1 Heating circuit 2 (optional) | 4 Terminal box 88 x 88 x 53 mm | 7 Flexible connection (shrink-fit technology) |
| 2 Mini thermostat (optional) | 5 Supply voltage | 8 Heating cable |
| 3 Heating circuit 3 (optional) | 6 Hose line | 9 Terminal (shrink-fit hose) |



PSB heating cable



Junction box



Installation kit



System overview PSB

Features

- Simple project planning
- BARTEC HELOC calculation and design
- Software - Free Download
- Safe, self-limiting, without overheating while overlapping, thermostat not mandatory
- Easy installation, cutting and terminating on-site, random length possible and use of up-to-date connection technology
- Installation also in Ex-area, maximum admissible work-piece temperature of +65 °C (power ON) and +85 °C (power OFF, cumulative 1000 h)
- Certificate for complete system IEC/EN 60079-30-1 and CSA C22.2 No.130-3
- Hard environment conditions, junction boxes made of polyester, stainless steel and aluminium

Description

Typical applications are frost protection, maintaining temperature and heat-up in pipes, tanks, vessels or at surfaces in non-ex areas and in explosive atmospheres for process industry. The BARTEC electric trace heating system type PSB offers the optimum solution for requirements following II2G Ex e II T5, T6 und II2D Ex tD A21 IP 65 T 95 °C, T 80 °C.

The self-limiting heating cable type PSB is available with various nominal power ratings from 10 W/m to 33 W/m at 10 °C (maximum admissible work-piece temperature of +65 °C, power ON and +85 °C power OFF, cumulative 1000 h). The standard outer insulation jacket is made of polyolefin or optionally of a fluorine polymer plastic for special applications which require chemical resistance and mechanical strength. Dependant on the cut-in temperature and respectively the cut-in current and the supplied voltages a maximum heating circuit length about 200 m is possible.



Explosion protection

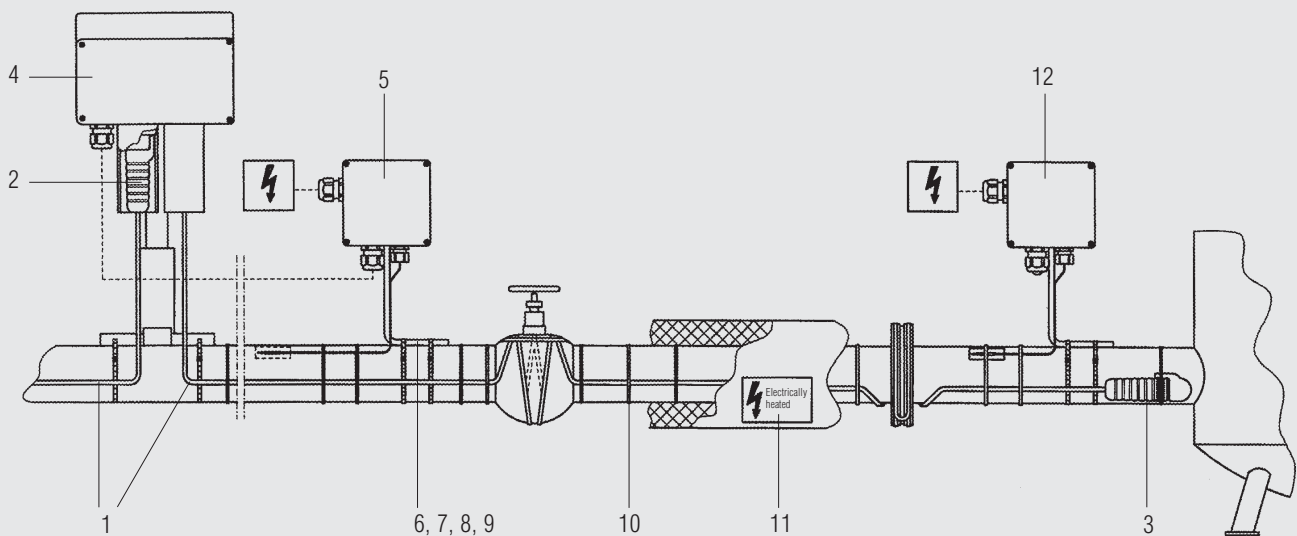
Certification

KEMA 08 ATEX 0111
CSA 1862457
IECEx KEM 09.0084

System overview

- Self-limiting parallel heating cable type PSB (AC 110 to 120 V, AC 208 to 254 V)
- Heat shrink technology or silicone cold applied technology or plug & socket for type PLEXO connection and terminating (ambient temperature -55 °C up to +55 °C, IP 65)
- Junction box made of polyester, stainless steel and aluminium
- Option: mechanical or electronic control systems

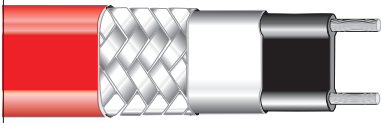
PSB heating circuit in an Ex-area, system PLEXO-P (typical example)



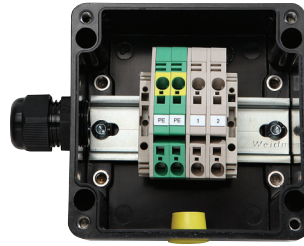
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| 1 Parallel circuit PSB heating cable | 5 BSTW Safety temperature monitor | 9 Buckles for fixing strap |
| 2 PLEXO-P direct plug and socket connection | 6 Mounting bracket | 10 Self adhesive glass fibre fixing tape |
| 3 PLEXO-P remote end termination | 7 Mounting plate | 11 "Electrically Heated" caution label |
| 4 Ex e junction box | 8 Fixing strap for mounting bracket | 12 BSTW thermostat as an extra alarm (optional) |



Heating cable HSB



Junction box



Installation kit



System overview HSB

Features

- Simple project planning
- BARTEC HELOC calculation and design
- Software - Free Download
- Safe, self-limiting, without overheating while overlapping, thermostat not mandatory
- Easy installation, cutting and terminating on-site, random length possible and use of up-to-date connection technology
- Installation also in Ex-area, maximum admissible work-piece temperatures of +120 °C (power ON) and +190 °C (power OFF)
- Certificate for complete system IEC/EN 60079-30-1 and CSA C22.2 No.130-3
- Hard environment conditions, junction boxes made of polyester, stainless steel and aluminium available

Description

Typical applications are frost protection, maintaining temperature and heat-up in pipes, tanks, vessels or at surfaces in non-ex areas and in explosive atmospheres for process industry. The BARTEC electric trace heating system type HSB offers the optimum solution for requirements following Ex II 2G Ex e II 200 °C (T2), T3, T4 and Ex II 2D Ex tD A21 IP 65 T 200 °C, T 195 °C, T 130 °C.

The self-limiting heating cable Type HSB is available with various nominal power ratings from 10 W/m to 60 W/m at 10 °C (maximum admissible work-piece temperatures of +120 °C power ON and +190 °C power OFF). The standard outer insulation jacket is made of fluorine polymer plastic for special applications which require chemical resistance and mechanical strength.

Dependant on the cut-in temperature and respectively the cut-in current and the supplied voltages a maximum heating circuit length about 200 m is possible.



System overview

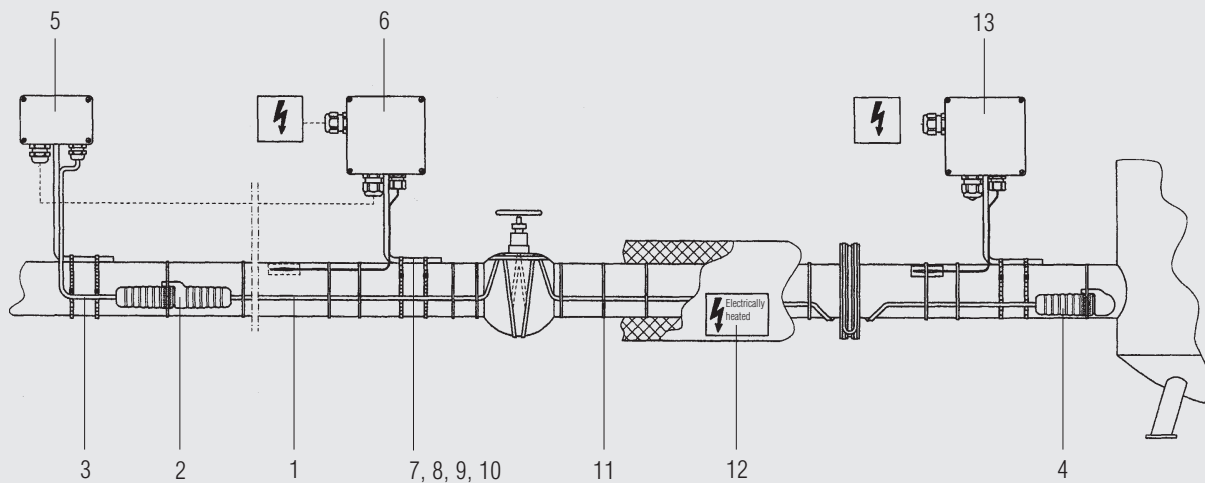
- Self- limiting parallel heating cable type HSB (AC 110 to 120 V, AC 208 to 254 V)
- Heat shrink technology or silicone cold applied technology or plug & socket for connection and terminating (ambient temperature -55 °C up to +55 °C, IP 65)
- Junction box made of polyester, stainless steel and aluminium
- Option: mechanical or electronic control systems
- Flexible connection by using a cold lead into the junction box (indirect) made of PLEXO plug & socket technology
- Direct connection of the heating cable into a junction box with heat shrink technology
- Direct connection of the heating cable into a junction box with silicone cold applied technology
- Connection with PLEXO plug & socket technology

Explosion protection

Certification

KEMA 08 ATEX 0110
CSA 1862457
IECEx KEM 09.0083

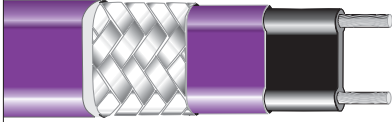
HSB heating circuit with system PLEXO-H in an Ex area (typical example)



- | | | |
|--------------------------------------|-----------------------------------|---|
| 1 Parallel circuit HSB heating cable | 5 Ex e junction box | 9 Fixing strap for mounting bracket |
| 2 PLEXO-H plug and socket connection | 6 BSTW Safety temperature monitor | 10 Buckles for fixing strap |
| 3 Silicone-sheathed cable | 7 Mounting bracket | 11 Self adhesive glass-fibre fixing tape |
| 4 PLEXO-H remote end termination | 8 Mounting plate | 12 "Electrically Heated" caution label |
| | | 13 BSTW Safety temperature monitor as an extra alarm (optional) |



HTSB heating cable



Connection system



Junction box



System overview HTSB

Features

- Easy planning of heating circuits
- Offers a complete range of products
- Simple installation on site
- Pipes can be steam-cleaned

Description

The HTSB system from BARTEC covers a wide range of application possibilities in trace heating:

- Frost protection
- Temperature maintenance
- Space heating
- Combination of temperature raising and temperature maintenance

Particular distinguishing features of this system are its simple project planning and easy assembly. The parallel structure of the HTSB heating cable allows the heating circuit to be easily adapted to the actual pipe lengths on the construction site. It is now possible to change the lengths of the heating circuits even after the completion of the project planning without this affecting the specific heating output per metre.

The choice of four different power settings allows a simple adaptation to the heat losses.

Installing the parallel heating cables couldn't be easier. As a rule a single cable is laid in a straight line. A return line is not necessary.

The overlapping of heating cables as can happen when controls and instruments, pumps, flanges etc. are being installed, does not present any risk to safety.

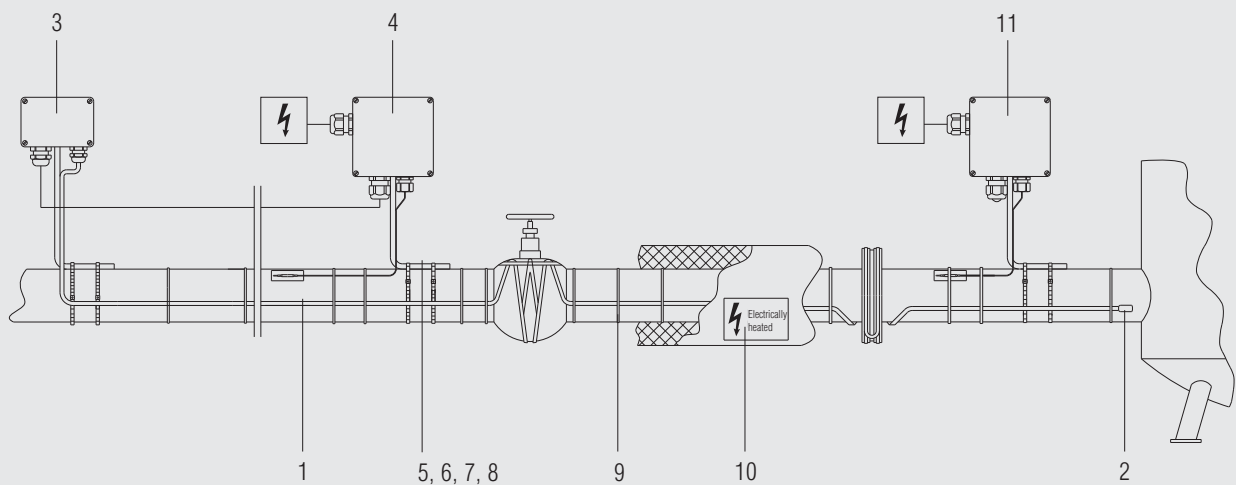
The self-limiting effect rules out the risk of the heating cable becoming overheated and destroyed. The use of high-quality materials offers reliable protection from almost all chemicals and other influences. A limiter is not necessary.



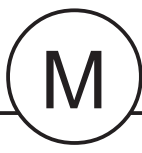
System overview

- **Self limiting parallel heating cable HTSB**
- **Connection systems** Cold-applied technology
- **Automatic controller** in mechanical or electronic version
- **Accessories** such as adhesive tapes, fixing brackets with mounting plates, insulation entries, caution labels

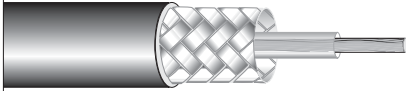
HTSB heating circuit system cold-applied technology (Application example)



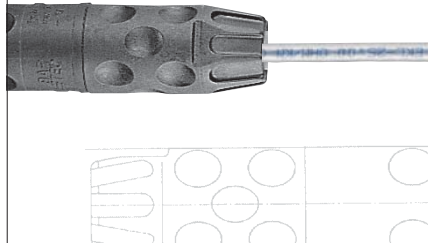
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| 1 HTSB parallel-heating cable | 5 Mounting bracket | 9 Glass-fibre self-adhesive tape |
| 2 Remote-end termination | 6 Mounting plate | 10 "Electrically heated" label |
| 3 Ex e junction box | 7 Clamping ring for mounting bracket | 11 BSTW Safety temperature monitor for extra alarm (optional) |
| 4 BSTW Safety temperature monitor | 8 Buckles for clamping ring | |



Heating cable EKL



Connection system



Junction box



System overview EKL

EKL light

EKL medium

EKL premium

Features

- Adjustable to customer requirements
- Offers a complete range of products
- Simple tailoring on site
- Suitable for the use in explosive areas

Description

The BARTEC EKL system helps you meet the most different requirements for electric trace heating systems regarding

- Frost protection
- Temperature maintenance
- Temperature increase

The great variety of systems allows the customer-specific project planning and installation of our electric trace heating systems.

You can choose between 3 different EKL heating cable systems:

- **EKL light**
- **EKL medium** for use in Ex areas
- **EKL premium** for use in Ex areas

The BARTEC EKL system is characterised by its universal application possibilities.

The use of high-quality, corrosion-proof material guarantees the application of the systems even under extreme conditions as, for example, prevail in the chemical industry, petrochemical industry and waste incineration plants. The EKL system can be perfectly adjusted to the specific requirements of our customers.

The EKL systems EKL medium and EKL premium has been certified for its use in hazardous areas where it offers an extraordinary ease of application. A temperature limiter makes sure that the maximum surface temperature allowed for the heating circuit is not exceeded.



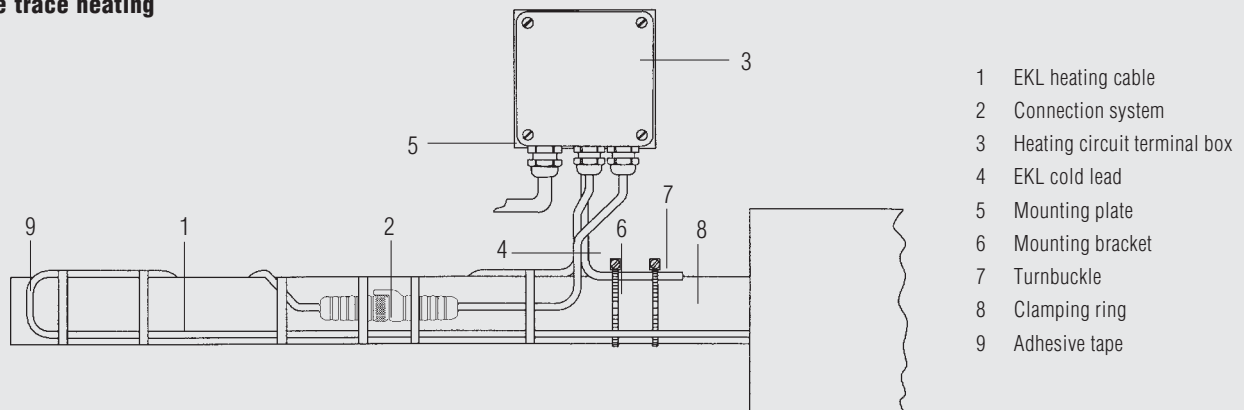
System overview

The EKL connection kits consist of:

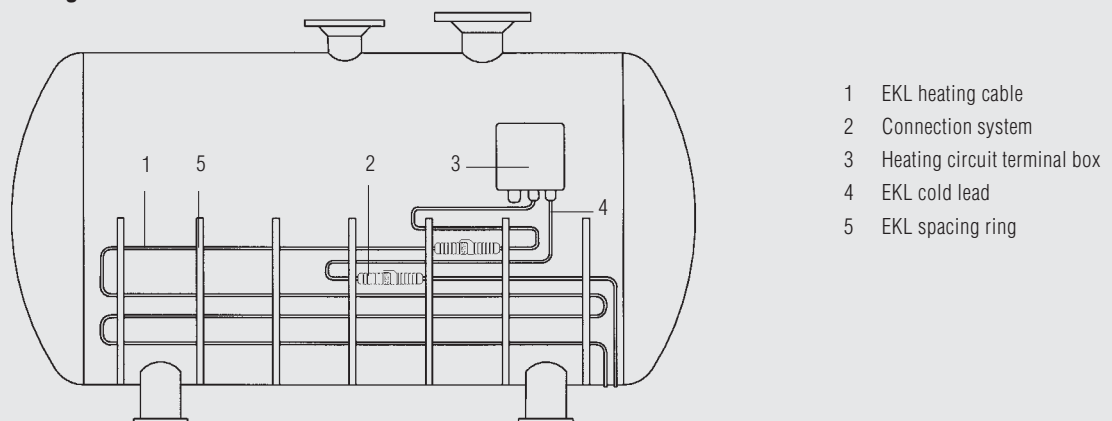
- **EKL heating cable**
- **EKL connection set**
 - Junction box
 - Cold lead
 - Connection system
- **Controller/Limiter**
- **Accessories**

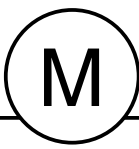
Such as adhesive tapes, fixing brackets with mounting plates, lead-in insulators, labels.

Pipe trace heating

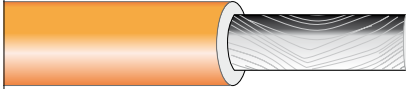


Container trace heating





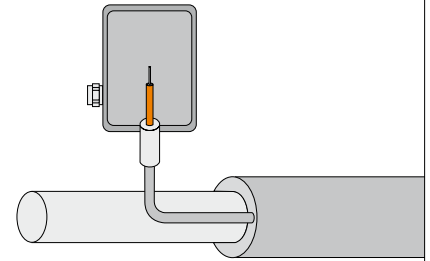
SEH Heating cable



Pull & splice box



Power feeding and end box



System overview SEH

Features

- Most cost effective solution to maintain temperature at long or unlimited distance lengths with least number of feeding points
- Constant power output for safe temperatures to protect the plant
- Qualified components for high temperature process applications up to 200 °C
- Rugged heating circuit encapsulated in heat tube element with electrical safety by zero potential against protective earth
- EC type test examination certificate and integration of IEEE844 standard
- High ambient temperature range
 T_a -55 °C up to +70 °C
- Economic solution by variation of cable types, heat tube dimensions and voltage supplied
- Optional temperature controller and limiter
- BARTEC calculation and design for the plant

Description

The SEH - Skin Effect Heating system is an electrical heating system using the AC phenomenon with a remarkable effect on the inner surface of a ferromagnetic tube.

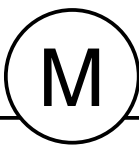
The heating element is a plastic insulated conductor inside a ferromagnetic carbon steel tube. The heating circuit is to be designed to any needs by variation heat pipe size, electrical conductor size, supply voltage and insulation material.

BARTEC provides the complete component range and a full package of EPC. The typical applications are material transfer lines, snow & frost protection, tank foundation heating, platforms and ramps.

All parts are protected against direct contact by connection to protective earth. Even if there is used high voltages up to 5000 Volts the current flow is always and only at the inner side of the carbon steel heat tubes and cable.

Optional temperature controller and limiter can be used to monitor the system operation and to protect medium.

The transformer and the control panel are customized to the project requirements for operation voltage and load requirements. When several runs heating circuits are applied then a special transformer and a phase balance units may be used.



System components

- SEH heating cable (120 °C/260 °C) with connection equipment
- SEH feeding and end box (up to 5 kV) with connection equipment
- Pull & splice box with pipe-work and coupling equipment
- Optional distribution panel, control equipment, vacuum switch and transformer

Explosion protection

Ex protection type

Ex II 2G Ex e IIC T3 or T4 Gb
 $-55\text{ °C} \leq T_a \leq +70\text{ °C}$ IP 56

Certification (System)

ITS11ATEX37350X

Ex system label

for power feeding
and end box

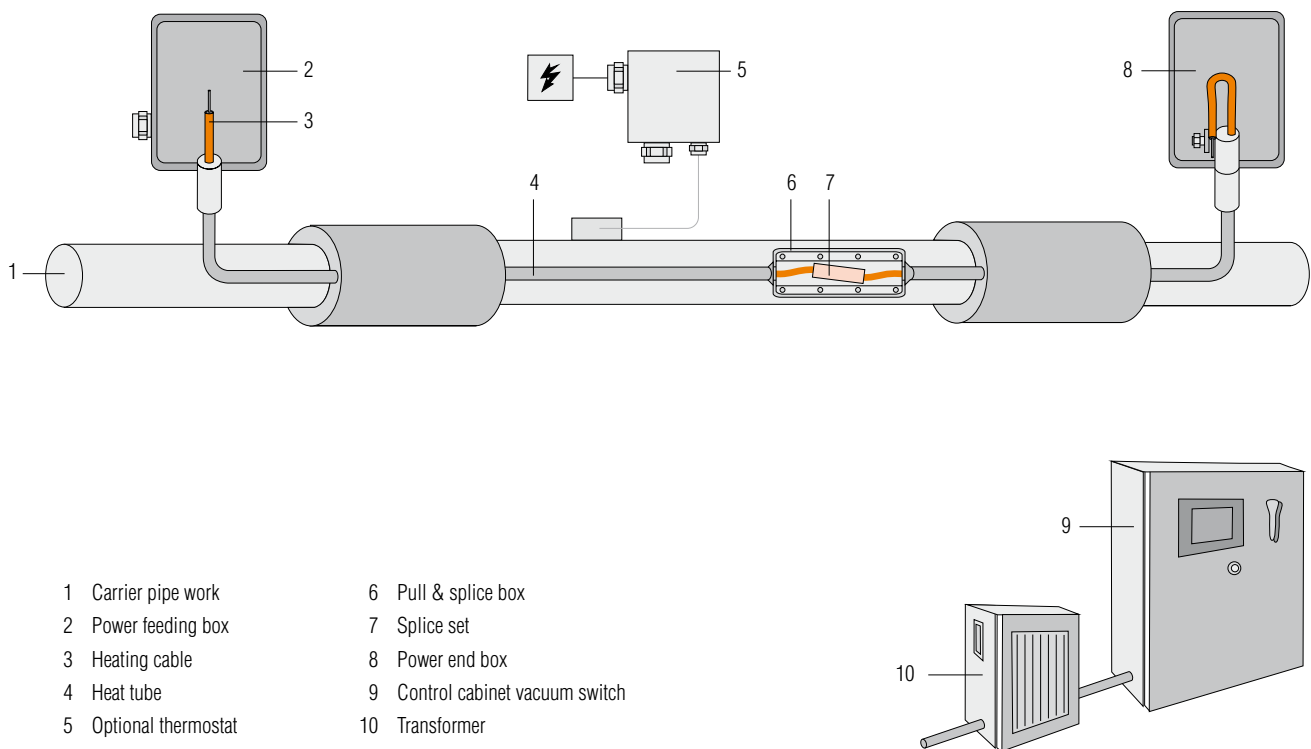
for distribution panels

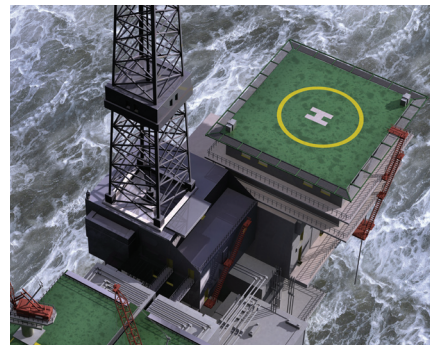
for transformers

complete set

with serial number

SEH heating circuit system diagram





Deep Sea Star for Electrical Trace Heating in Deep Water Areas

The heating of oil pipelines at great water depths is a very specific and complex application field for electrical heating systems. An electrical heating system is absolutely essential to guarantee reliable, constant oil production for such a specific application.

The hot oil from the crude oil deposits cools down significantly in the considerably lower ambient temperatures found on the sea bed. There is a great risk of the emergence of wax and hydrate formations.

Deep Sea Star prevents the emergence of wax and hydrate formations of the oil. The crude oil remains free-flowing – regardless of the prevailing ambient conditions. Deep Sea Star is highly efficient and is really the right choice when it comes to heating your pipeline.

Features

- Up to 20 km heating circuit length using just one feeding point. This reduces material and assembly costs!
- Deep Sea Star is extremely strong and can reliably withstand the high required temperatures.
- The quality of the heating cable Deep Sea Star has been confirmed by Sira in accordance with the international standards IEE844-200 and IEC 60079-30-1.

Technical data

Rated voltage
5000 V

Maximum operation temperature
+120 °C

Maximum withstand temperature unenergised
+150 °C

Minimum installation temperature
-30 °C

Maximum heating power
50 W/m

Maximum heating circuit length
20000 m

Cross section
16 mm²

Resistance DC
1.1 Ω/km

Minimum bending radius
120 mm

BARTEC - the specialists for electrical trace heating systems

For many years electrical trace heating systems from BARTEC have enjoyed widespread use throughout the world in the chemicals and petrochemicals industries, both on land and in the sea. The following represent typical application areas for BARTEC electrical heating systems:

- Temperature maintenance
- Process heating
- Frost protection

BARTEC offers a wide selection of heating tapes for the most diverse application fields. Efficient connection systems and a wide range of control systems complete our product range.

Our experts have many years of experience. They create the perfect heating system for your specific application. Use our know-how!

- System Solutions
- Customized Solutions
- International Approvals

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