Electrical Tank Container Heating Systems
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„On land or on the high sea: We keep your products at temperature and ensure that your tank container fleet is working smoothly."

Members of the specialist team for applications with electrical tank container heating systems: Frank Vogel and Haldun Danaci.
Founded in 1991 in Burbach, Germany, eltherm has developed into a global engineering solution provider with own production facilities and a one-stop-shop for electrical heat tracing products and systems. The company has attained worldwide recognition as a turn-key partner for engineering, design, installation and commissioning of electrical heat tracing for complex industrial plants and facilities.

With its own comprehensive production facilities for all types of heating cables and accessories, eltherm has built up the engineering expertise to become one of the leading manufacturers of electrical heat tracing systems in the world.

Besides frost protection and temperature maintenance applications up to 900 °C, eltherm is the competent partner for complete system solutions like heating whole chemical or other industrial plants. eltherm proved its potential and expertise in different industries such as oil and gas, power plant, construction, automotive and food.

From Process to Product
The eltherm Story

¬ Portfolio Focus
We provide a comprehensive range of electrical heat tracing products, systems and solutions from A to Z. Your One-Stop-Shop.

¬ Customer Focus
Our focus on the benefits to our clients sets us apart from competitors. We understand and solve our clients’ needs with technological passion.

¬ Technical Focus
We specialise in electrical heat tracing. That is our core competence and inspiration.

¬ Global Focus
We are a global engineering company with our own production facilities, serving international markets and projects from 13 locations on 5 continents – and with a staff force of 270.
Your scope of application is not included? We will advise you individually.
At a Glance

Benefits
- Exact constant temperature throughout the production and transport process
- Exact constant temperature for loading and unloading
- Monitoring and storage of temperature data
- No cold zones, even if a cable is damaged
- Corrosion resistant
- Low net weight of trace heating
- Fast and easy repairs and maintenance
- Operational readiness of the entire fleet
- Safe, problem-free operation

Approvals
- UL approval on request

eltherm is a member of ITCO!

As part of a global association, we support you in helping to shape the future of the tank container industry.

Electrical Tank Container Heating Systems

Electrical trace heating for tank containers provides a safe, sophisticated and reliable alternative to heating with glycol or steam. The eltherm portfolio combines high-quality systems and accessories for eltherm trace heating with special solutions developed for individual customers. Fleet operators worldwide benefit from the engineering and application know-how of our technicians. Paired with our global organisation, this forms a reliable basis for problem-free operation.

Application
Electrical trace heating from eltherm is used to keep temperature constant and for reliable transport with no heat loss of sensitive chemicals including MDI, high-viscosity substances in the chemical and petrochemical industries, oil, grease, resin, paints, bitumen, adhesives, foodstuffs and sealants in tank containers, SWAP containers, road tankers and IBCs (Intermediate Bulk Container). Because electrical trace heating is resistant to sea water and corrosion, it can be used reliably on land or in the water.

eltherm benefits in technical features
- Temperature accuracy of ±1 °C during storage and transport
- Standard output up to 18 kW, other power levels available on request
- PTFE heating cables are resistant to cargo filling temperatures up to 260 °C
- Designed for power supply between 220 V and 500 V for worldwide transport
- The empty tank can be heated before filling
- Reliable compensation for heat loss on cold bridges such as tank plants and tank suspension
- Undisturbed operation, even with peak stresses during ship transport
- The heating cable is laid redundantly, so even if one heating cable is damaged in each heating circuit, secure cargo transport is ensured

Checklist

The electrical tank container heating system
1 Tank container surface
2 Dome case
3 Riser pipe
4 Control system
5 Discharge valve

This is just a schematic overview, not an installation instruction. For detailed information, please contact our engineers.
Our support
On your way with us

Your requirements are top priority for us. Because of this we have structured our team so you always have a direct contact person you can turn to. We build on reliability and the trust of our customers as we strive to give you the best support possible. Our specialists for trace heating in tank container applications will keep your tank container fleet ready for use. We help you to ensure the reliability of your fleet. To do that we provide extraordinary and custom-made support solutions.

We offer you the end-to-end worry-free package: Service and trained personnel, dedicated to serving you personally with their ample experience.

PERSONAL & DEDICATED
Practical experience and skilled service, directly on site. We are there for you.

Contact us
tc@eltherm.com

On site globally
Trained personnel are always on site for you to support you reliably for your requirements. We ensure worldwide support.

Maintenance & servicing
We check to ensure the reliable function of our installations, carry out timely maintenance and repairs on site and make certain you are spared expensive downtimes.

Warranty
24 months warranty with assembly by eltherm-trained specialists.

Spare parts
Do you need a spare part? We have all the necessary parts, available for you on site. Our dedicated team will be pleased to support you with practical experience in professional assembly.

Installation & commissioning
We make certain your trace heating is delivered to you professionally installed and ready to use. We ensure all the conditions needed for an on-time start and smooth, long-term operation.
Frequently asked questions  
– our experts reply

What is our approach to designing container heaters?
Our task is to design your container heater specifically for you, to be suitable for your highest possible standards. Whether onshore or offshore: We offer you trace heating solutions tailor-made to your needs.

For maritime operating conditions, we recommend using ELKM-AG-L or Ni-Alloy 825 depending on the temperature requirement, since they are corrosion resistant. We can also plan the right control unit for you, tailor-made for the heating system and ambient conditions.

How do we ensure fast support for you as a customer?
We are available for you as a direct contact person for advice and active support. We support you through the entire process, from the design of your container heater to implementation and commissioning.

Corrosion protection of your switch cabinet? Why is that so important?
Does your tank container fleet operate worldwide, even under extreme environmental and ambient conditions? We offer sea water-resistant IP69 switch cabinets for these requirements. Maximum protection that pays for itself. Choose the best solution for you individually from our extensive assortment.

When you need a spare part, how do we support you?
No matter which spare part or component you need: You can contact us directly and reach us at any time. We ensure your system availability with our fast support. So your tank containers are always ready for operation.

What advantages do we offer you?
Every application is very specific in its own way. We bring the necessary experience and know-how to support our customers and offer them individual solutions. We place great emphasis on personal contact and long-term contact persons. Assembly is performed by our skilled employees. We are ready to provide advice or active support for you whenever you need help. As a manufacturer, eltherm is familiar with all the interfaces, so we are able to offer you the advantage of everything from a single source.
Type ELKM-AG-L
up to 260 °C

1 Heating conductor
2 Insulation
3 Protection
4 Outer jacket

Checklist ELKM-AG-L

Power Connection & End Termination
ELVB30 Connection set up to 1.5 mm² cold cable 0911056
ELVB30-1 Connection set 2.5 mm² up to 6 mm² cold cable 0911059

Junction Boxes
ELAK-R-1 Junction box, 150 mm diameter, 125 mm height, Polyester housing, for star point ELK-AG-N/-L 0920051
ELAK-R-2 Junction box, 150 mm diameter, 125 mm height, Polyester housing, for two-phase circuit ELK-AG-N/-L 0920052

Temperature-resistant cold ends
ELKM-AG-L 11,7 Ex- cold end 1.5 mm² 01TT011E
ELKM-AG-L 7,20 Ex- cold end 2.5 mm² 01TT007E

Technical Information

Nominal voltage
750 V

Max. output
30 W/m*

Max. Maintain temperature
260 °C

Min. Bending radius
2.5 x Outer diameter

Min. installation temperature
-60 °C

Trace heater configuration
Stranded

*Note: The output per metre of heating cable and the maximum possible operating temperatures depend on the application in question. We recommend that you contact our engineers for specific cases - we will be happy to advise you.

Weight tolerances are possible for manufacturing reasons.
Nominal resistances up to 1,500,000 Ω/km upon request. Resistance tolerance: ±5 %.

For applications with fixed external diameter, please contact our engineers first. Cables shall neither intersect nor contact. Provide protection by means of circuit breaker FI 30mA. Please observe the standards EN 60079-30-2, EN 60519-10.
Type ELKM-AG-N
up to 260 °C

1 Heating conductor
2 Insulation
3 Protection
4 Outer jacket

Checklist ELKM-AG-N

Power Connection & End Termination

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Art.-No.</th>
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</thead>
<tbody>
<tr>
<td>0X81115</td>
<td>Connecting sleeve for ELKM-AG-N, wire cross-section up to 2.5 mm², 7 J, Ex e</td>
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<td>0X81120</td>
<td>Connecting sleeve or ELKM-AG-N, wire cross-section from 2.5 to 35 mm², 4 J, Ex e</td>
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</table>

ELVB30 | Connection set up to 1.5 mm² cold cable | 0911056
ELVB30-1 | Connection set 2.5 mm² up to 6 mm² cold cable | 0911059

Junction Boxes

<table>
<thead>
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<tr>
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<tr>
<td>0X80052</td>
<td>Junction box, Polyester housing, for two-phase circuit ELK-AG-N/L</td>
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</tbody>
</table>

Temperature-resistant cold ends

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Art.-No.</th>
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<tbody>
<tr>
<td>01TA011E</td>
<td>Ex- cold end 1.5 mm²</td>
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<tr>
<td>01TA011E</td>
<td>Ex- cold end 2.5 mm²</td>
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</tbody>
</table>

Technical Information

Nominal voltage: 550 V
Max. output: 30 W/m²
Max. Maintain temperature: 260 °C
Min. Bending radius: 2.5 x Outer diameter
Min. installation temperature: -60 °C
Trace heater configuration: Stranded

*Note: The output per metre of heating cable and the maximum possible operating temperatures depend on the application in question. We recommend that you contact our engineers for specific cases - we will be happy to advise you.

Weight tolerances are possible for manufacturing reasons. Resistance tolerance: +/- 5%.

For applications with fixed external diameter, please contact our engineers first. Cables shall neither intersect nor contact. Provide protection by means of circuit breaker FI 30mA. Please observe the standards EN 60079-30-2, EN 60519-10.
**Type ELK-MI/VA-Ex**

**Temperature maintenance 250 °C to 300 °C**

1. **Bus wire**
   - Nichrome R, KP, Constantan, Alloy 68 or Copper

2. **Insulation**
   - Magnesium oxide (MgO) to ASTM E1652 standard

3. **Outer jacket**
   - Stainless steel 1.4541 (AISI 321)

4. **Cable gland**
   - Stainless Steel M20 x 1.5 / M25 x 1.5

**Technical Information**

- **Process temperature**: up to 700 °C
- **Ambient temperature**: -60 °C up to +60 °C
- **Nominal output**: Up to 250 W/m*
- **Nominal voltage**: Up to 500 V AC
- **Installation temperature**: > -60 °C
- **Conductor**: Protective connection integrated
- **Protection class**: IP 65
- **Bending radius**: Diameter x 6
- **Cold lead cross section**: 2.5 mm² / 6 mm²

**MI System Checklist**

- **Temperature controller**: ELTC-15
  - Electronic temperature controller

- **Temperature sensors**: Temperature sensors and thermocouples

- **Junction box**: ELAK-3-SP, ELAK-6-SP
  - Junction box for 1, 2 or 3 heaters

- **Assembly parts**: ELAP-...
  - Assembly parts

- **Accessories**: ELB-...
  - Fastening and attachment parts

**Applications**

- Temperature maintenance
- Freeze prevention
- Pipelines
- Tank container
- Viscosity protection in industrial processes
- Temperature maintenance in mobile process modules
- Heat tracing of instrumentation and sample stations
- High temperature exposure
- High watt density requirements
- Vacuum processes

**Benefits**

- Purity: no foreign material
- Full range of resistances
- Quick assembly
- Economy

**Approvals**

- Manufactured according to EN 60079-30-1
- Certificates cable EPS 13 ATEX I 127 U
- Certificates system FM15ATEX0046X
- Classification cable II 2G Ex IIC T6…T1 Gb
- Classification System II 2D Ex db IIIC T85°C…T450°C Db

**Viscosity protection in industrial processes**

- Temperature maintenance in mobile process modules
- Heat tracing of instrumentation and sample stations
- High temperature exposure
- High watt density requirements
- Vacuum processes

**Applications**

- Temperature maintenance
- Freeze prevention
- Pipelines
- Tank container
- Viscosity protection in industrial processes
- Temperature maintenance in mobile process modules
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  - Junction box for 1, 2 or 3 heaters

- **Assembly parts**: ELAP-...
  - Assembly parts

- **Accessories**: ELB-...
  - Fastening and attachment parts

**Note**

- The output per length unit of trace heater and the maximum possible operating temperatures depend on the respective application. For individual cases, we recommend that you contact our engineers — we shall be pleased to advise you. This is just a summary of all available resistances. For further resistances, please contact us. Other cross sections and lengths of cold leads are available upon request. Flexible cold leads available.

**Type ELK-MI/VA-Ex**

**Temperature maintenance 250 °C to 300 °C**

The free end of the cold lead is potted and fitted with a flexible lead (cross section matching that of the cold lead conductor) for power connection and a 1.5 mm² lead for earthing. A compression ring flameproof stainless steel gland 1.4404 (AISI 316L) threaded M20 x 1.5 or M25 x 1.5 is fitted at the end of each cold lead and prevented from possible loss by the potted end seal.

**Applications**

- Temperature maintenance
- Freeze prevention
- Pipelines
- Tank container
- Viscosity protection in industrial processes
- Temperature maintenance in mobile process modules
- Heat tracing of instrumentation and sample stations
- High temperature exposure
- High watt density requirements
- Vacuum processes

**Benefits**

- Purity: no foreign material
- Full range of resistances
- Quick assembly
- Economy

**Approvals**

- Manufactured according to EN 60079-30-1
- Certificates cable EPS 13 ATEX I 127 U
- Certificates system FM15ATEX0046X
- Classification cable II 2G Ex IIC T6…T1 Gb
- Classification System II 2D Ex db IIIC T85°C…T450°C Db

**Viscosity protection in industrial processes**

- Temperature maintenance in mobile process modules
- Heat tracing of instrumentation and sample stations
- High temperature exposure
- High watt density requirements
- Vacuum processes

**Applications**

- Temperature maintenance
- Freeze prevention
- Pipelines
- Tank container
- Viscosity protection in industrial processes
- Temperature maintenance in mobile process modules
- Heat tracing of instrumentation and sample stations
- High temperature exposure
- High watt density requirements
- Vacuum processes
MI-trace heaters consist of a single or two conductor series trace heater connected to mineral-insulated cold leads (with 2.0, 2.5, 3.3 or 5.0 mm² copper conductor) by means of a clean laser seal (splice). The outer sheath material is Alloy 825. The free end of the cold lead is potted and fitted with a flexible lead (cross section matching that of the cold lead conductor) for power connection and a 1.5 mm² lead for earthing.

A compression ring (flameproof stainless steel gland) 1.4404 (AISI 316L) threaded M20x1.5 or M25x1.5 is fitted at the end of each cold lead and prevented from possible loss by the potted end seal.

MI trace heaters are supplied prefabricated by eltherm and ready for installation. Each unit comes with a type plate bearing all information/ marklings. Maximum maintain temperatures are derived from the maximum sheath temperature determined by eltherm and are also indicated on the type plate.

### At a Glance

**Applications**
- Temperature maintenance
- Freeze prevention
- Viscosity protection in industrial processes
- Temperature maintenance in mobile process modules
- Heat tracing of instrumentation and sample stations
- High temperature exposure
- High watt density requirements
- Vacuum processes

**Benefits**
- Purity: no foreign material
- Full range of resistances
- Quick assembly
- Economy

**Approvals**
- IEEE
- Manufactured according to EN 60079-30-1
- Certificates cable
  - EPS 13 ATEX 1 627 U
  - IECEx EPS 14.0013 U
- Certificates system
  - FM 15 ATEX0046X
  - IECEx FMEx 15.0089X
- Classification cable
  - II 2 G Ex e IIC T6…T1 Gb
- Classification System
  - 8 2 G Ex tb IIC T85°C, Ta = -60°C – +60°C
  - II 2 D Ex tb IIC T85°C…T450°C Db
  - Ta = -60°C – +60°C
  - II 2 G Ex db e IIC T6…T1 Gb
  - II 2 D Ex db IIIC T85°C…T450°C Db

**Technical Information**

- **Process temperature**
  - up to 700 °C
- **Ambient temperature**
  - -60 °C up to +160 °C
- **Nominal output**
  - Up to 250 W/m
- **Nominal voltage**
  - Up to 500 V AC
- **Installation temperature**
  - > -60 °C
- **Conductor**
  - Protective connection integrated
- **Protection class**
  - IP 65
- **Bending radius**
  - Diameter x 6
- **Cold lead**
  - 1/2 x 0.50 m **
- **Cold lead cross section**
  - 2.5 mm² / 6 mm²

### MI System Checklist

**Temperature controller**
- ELTC-15
- Electronic temperature controller

**Temperature sensors**
- ELTS-
- Temperature sensors and thermocouples

**Junction box**
- ELAK-3-SP
- Junction box for 1, 2 or 3 heaters
- ELAK-6-SP
- Junction box for 1, 2 or 3 heaters

**Assembly parts**
- ELAP-
- Assembly parts

**Accessories**
- ELB-
- Fastening and attachment parts

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<th>MI-trace heater resistance (Ω/m) @ 20 °C</th>
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<td>15</td>
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</table>

* Depends on operating temperature and application.
** For other specs contact eltherm engineering
Type EL-PCP/Ex
Power and Control Panels for Hazardous Areas

Applications
- Tank container

Benefits
- Customer-specific options possible
- Miniature circuit breaker, tripping characteristic C
- Residual current circuit breaker with overcurrent release, tripping characteristic C
- Terminal sizes from 1.5 to 16 mm²

Approvals
- GOST TC-RU
- NEMA 4X

Polyester
- Material: Polyester
- Size: 190 x 75 x 55 mm to 600 x 250 x 160 mm
- Ambient temperature: -20 °C bis +40 °C (additional options available on request)

Stainless Steel
- Material: Stainless steel 1.4301, (AISI 304), brush finished
- Size: 150 x 150 x 80 mm
- Ambient temperature: -40 °C to +55 °C

Technical Information
- Ambient temperature: -20 °C to -40 °C; (others on request)
- Application classes (zones): 21, 22, 1, 2
- Protection classes: IP66
- Electrical data: 230-400V 50/60Hz
- Gland connections: Power supply M40 (others on request), Outgoing M16—M25 (others on request)
- Outgoing rates: 10, 16, 20, 25 A
- Cable Entries: from M20—M72
- Connection Terminals: up to 35 mm²

Designs
- Max. 6 outgoing, 1 pole, 16 A: 2018-PCP-Ex-0001
- Max. 12 outgoing, 1 pole, 16 A: 2018-PCP-Ex-0002
- Max. 18 outgoing, 1 pole, 16 A: 2018-PCP-Ex-0003
- Max. 24 outgoing, 1 pole, 16 A: 2018-PCP-Ex-0003

Optional: EX -enclosures and distributors for 2B/2C are planned individually to customer or project specifications.
At a Glance

Applications

- Tank container
- SWAP container
- Road tanker
- Stationary heating

Properties

- Moisture-resistant
- Self-regulating climate control
- Fast, easy assembly
- Horizontal or vertical assembly
- Variable door hinge
- Large door opening angle for better operation

Type EL-PCP-TC
Control systems IP66 and IP69

EL-PCP-TC/IP66
- Control system with viewing window for variable applications
- All control units are built for extreme maritime operating conditions
- All attachment parts including screw connections and many more are to protection rating IP66
- Stainless steel housing, powder-coated for additional corrosion protection
- Sturdy for use inside and outside, also seaworthy
- Easy switch cabinet locking

EL-PCP-TC/IP69
Benefits over IP66
- Salt water-resistant
- Housing can be painted in customer-specific colour scheme
- Powder-coating for additional corrosion protection
- Corrosion resistance against oil and chemicals
- No penetration of water in the automatic washing facility

Versions

<table>
<thead>
<tr>
<th>Dimensions (height x width x depth)</th>
<th>Housing material IP66</th>
<th>Housing material IP69</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 x 800 x 140 mm</td>
<td>Stainless steel 1.4301</td>
<td>Powder-coated stainless steel 1.4301</td>
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<tr>
<td>300 x 1000 x 140 mm</td>
<td>Stainless steel 1.4301</td>
<td>Powder-coated stainless steel 1.4301</td>
</tr>
<tr>
<td>300 x 1200 x 140 mm</td>
<td>Stainless steel 1.4301</td>
<td>Powder-coated stainless steel 1.4301</td>
</tr>
</tbody>
</table>

Electrical and performance data

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Output</th>
<th>Ambient temperature IP66</th>
<th>Ambient temperature IP69</th>
</tr>
</thead>
<tbody>
<tr>
<td>380 V – 440 V</td>
<td>6 kW</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
<tr>
<td>380 V – 440 V</td>
<td>9 kW</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
<tr>
<td>380 V – 440 V</td>
<td>10 kW (MDI)</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
<tr>
<td>380 V – 440 V</td>
<td>12 kW</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
<tr>
<td>380 V – 440 V</td>
<td>12 kW (MDI)</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
<tr>
<td>380 V – 440 V</td>
<td>15 kW</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
<tr>
<td>380 V – 440 V</td>
<td>18 kW</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
</tbody>
</table>

Mineral-insulated heating cables up to 300 °C

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Output</th>
<th>Ambient temperature IP66</th>
<th>Ambient temperature IP69</th>
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<td>380 V – 440 V</td>
<td>18 kW</td>
<td>-25 °C up to 50 °C</td>
<td>-25 °C up to 55 °C</td>
</tr>
</tbody>
</table>
A contribution to sustainability and climate protection: The eltherm fleet operation was rated carbon-neutral in 2018. To achieve this objective, 143 t CO₂ emissions were compensated by supporting global climate protection projects.
At Your Service
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Miano/Italy
Shanghai/China
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Calgary/Canada
Korolev/Russia*
Johannesburg/South Africa
Burbach/Germany
Casablanca/Morocco
Santiago de Chile/Chile
Nur-Sultan/Kazakhstan

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