Innovations in heat tracing

Heated Systems for Loading and Unloading
From A to Z.
Your One-Stop-Shop

**Heating Cables and Tapes**
Pre-assembled or cut-to-length, from frost protection to process temperatures up to 1000°C.

**Heated Sample Lines**
For temperature sensitive transport of liquids and gases up to 450°C.

**Heated Mats and Jackets**
Tailor-made and optimized for any application. up to 900°C.

**Measurement and Controls**
For trouble-free and cost-effective operation.

**Custom-Engineered Solutions**
Precision manufactured and supplied to specific requirements.

**Accessories**
From assembly tools to termination sets, from your one-stop-shop.
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Portfolio Focus:
We provide a comprehensive range of electrical heat tracing products, systems and solutions – from A to Z. Made in Germany. 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 do only electrical heat tracing. Nothing else. We concentrate on our fields of expertise without compromise.

Global Focus:
We are a global engineering company with our own production facilities, serving international markets and projects from 11 locations on 4 continents – and with a staff force of 265.

eltherm eQ
stands for expertise, intelligent solutions quality and reliability in heat tracing.
From Process to Product.
The elterm Story

Founded in 1991 in Burbach, Germany, elterm has developed into a global engineering solution provider with its own production facilities and a one-stop-shop for electrical heat tracing products and systems „made in Germany“.

The company has attained worldwide acclaim as a turn-key partner for engineering, design, installation and commissioning of electrical heat tracing for complex industrial plants and facilities.

elterm is part of the publicly listed INDUS Holding AG. In 2017, a staff force of around 9000 generated revenues of € 1.641 billion.
Keeps Gases and Fluids Flowing Safely.
Your Processes in Reliable Hands.

eltherm is a world leader for heated transport systems and sample lines. They ensure safe transport of liquid and gaseous substances without temperature loss.

Applications for process temperatures up to 450°C:
› Gas analytics, where emission samples are transported from chimneys to analytic systems
› in machine and plant engineering
› in the chemical and petrochemical industry
› in food production
› in the automobile industry, connecting moving machines and roboters to one another
› in hazardous areas

eltherm heated transport lines are developed, designed and manufactured according to customer specifications. We are your single-source supplier for controlled heated analytic sample lines, heated sample lines with integrated filters, heated pressure lines and a range of specific solutions for complex industrial processes.

Homogeneous Heat Transfer

eltherm standard heated transport lines include bifilar heating cables and special fiberglass spacers. This ensures homogeneous heat transfer, prevents hot spots in moving applications and prevents failure since the heating cable never touches.
**Typical Design of a Heated Loading System**

**Type ELH / ELSH md...**

Maintain temperatures and enable loading/unloading of oil, fat, resins, paint, bitumen, adhesives, compounds and foods without temperature loss. Our speciality: flexible and yet robust design for pressures up to 50 bar and temperatures to 250°C. Diameters from 25 to 100mm allow large flow rates. eltherm loading/unloading systems are available with approval for hazardous areas.

### Applications
- Chemical industry
- Food production
- Pharmaceutical industry
- PU foaming plants
- Batching and dosing systems
- Surface engineering
- Coating and spraying plants
- Adhesives and casting plants

### Advantages
- High performance through close, tight coiling of heating cable with spacer
- Homogenous heat transfer
- Longer lifespan and reliable operation
- High quality standard
- Safety against hot spots
- Temperature range: 5°C to 250°C (standard design)
- Diameters: 25 mm to 80 mm (standard design)
- Voltage: 24 V to 500 V
- Operating pressures: up to 50 bar
- Heating performance optimised to application
- Heaters from own production made in Germany
Standard Heated System for Loading and Unloading
up to 250°C

Type ELH / ELSH...

Technical Data

<table>
<thead>
<tr>
<th>Length</th>
<th>depends on application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process temperature</td>
<td>up to 250°C</td>
</tr>
<tr>
<td>Voltage</td>
<td>25 – 500 V</td>
</tr>
<tr>
<td>Heater</td>
<td>eltherm resistance heating cable: ELKM-AE / ELKM-AG-N</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>depends on temperature, inner tube, and connecting fitting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameters</th>
<th>Performance at 200 °C (standard)</th>
<th>Outer diameter (stainless steel braid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 25</td>
<td>300 w/m</td>
<td>75 mm</td>
</tr>
<tr>
<td>D 32</td>
<td>360 w/m</td>
<td>85 mm</td>
</tr>
<tr>
<td>D 40</td>
<td>400 w/m</td>
<td>90 mm</td>
</tr>
<tr>
<td>D 50</td>
<td>480 w/m</td>
<td>100 mm</td>
</tr>
<tr>
<td>D 65</td>
<td>580 w/m</td>
<td>130 mm</td>
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<tr>
<td>D 80</td>
<td>650 w/m</td>
<td>145 mm</td>
</tr>
<tr>
<td>D 100</td>
<td>on request</td>
<td>on request</td>
</tr>
</tbody>
</table>

Design with series resistance heating cable and non-woven thermo fabric insulation
1 Insulation: multi-layer thermofleece

Design with series resistance heating cable and foam insulation
1 Outer jacket: stainless steel braid
2 Insulation: foam stripes
3 Insulation: non-woven thermo fabric
4 Inner tube: corrugated stainless steel tube
## Standard Heated System for Loading and Unloading up to 250°C

### Type ELH / ELSH md... Designs and Options

<table>
<thead>
<tr>
<th>Outer jacket</th>
<th>PU corrugated tube</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TPE corrugated tube</td>
</tr>
<tr>
<td></td>
<td>Industrial fabric</td>
</tr>
<tr>
<td></td>
<td>Stainless steel braid</td>
</tr>
<tr>
<td></td>
<td>Galvanized steel braid</td>
</tr>
<tr>
<td></td>
<td>Nylon braid</td>
</tr>
<tr>
<td></td>
<td>(refer to page 16)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insulation</th>
<th>Multi-layer thermofleece</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thermofleece with foam</td>
</tr>
<tr>
<td>tube</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inner tube</th>
<th>Corrugated stainless steel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PTFE corrugated tube</td>
</tr>
<tr>
<td></td>
<td>Universal FEP tube for</td>
</tr>
<tr>
<td></td>
<td>chemicals</td>
</tr>
<tr>
<td></td>
<td>Provided by customer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connecting fittings</th>
<th>all common fittings</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sensors</th>
<th>PT-100 / 2 wire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PT-100 / 3 wire</td>
</tr>
<tr>
<td></td>
<td>PT-100 / 4 wire</td>
</tr>
<tr>
<td></td>
<td>PT-1000</td>
</tr>
<tr>
<td></td>
<td>Thermo couples Type Fe Cu-Ni (Type J) and Ni Cr-Ni (Type K)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Endkappen</th>
<th>Shrinked end caps</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metall end caps (aluminium / stainless steel)</td>
</tr>
<tr>
<td></td>
<td>Silicone end caps</td>
</tr>
</tbody>
</table>

| Connecting lead               | Standard: 1,5 m in silicone protective tube with multiple pole plug (4 pole + PE / 6 pole + PE) suitable for eltherm eltherm controller |

<table>
<thead>
<tr>
<th>Options</th>
<th>Reinforced connecting lead in PA corrugated tube</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reinforced silicone cable with stainless steel braid jacket</td>
</tr>
<tr>
<td></td>
<td>Without multiple pole plug or with plug to customer specifications</td>
</tr>
</tbody>
</table>
Heated Loading and Unloading System with Self-Regulating Heater
up to 100°C

Type ELH / ELSH mdsb... Technical Data

<table>
<thead>
<tr>
<th>Length</th>
<th>depends on application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process temperature</td>
<td>5 to 100°C</td>
</tr>
<tr>
<td>Voltage</td>
<td>230 / 120 V</td>
</tr>
<tr>
<td>Heater</td>
<td>eltherm self-regulating heaters ELSR-N / ELSR-H</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>depends on temperature, inner tube, and connecting fitting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameters</th>
<th>Performance</th>
<th>Outer diameter (stainless steel braid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 25</td>
<td></td>
<td>75 mm</td>
</tr>
<tr>
<td>D 32</td>
<td></td>
<td>85 mm</td>
</tr>
<tr>
<td>D 40</td>
<td></td>
<td>90 mm</td>
</tr>
<tr>
<td>D 50</td>
<td></td>
<td>100 mm</td>
</tr>
<tr>
<td>D 65</td>
<td></td>
<td>130 mm</td>
</tr>
<tr>
<td>D 80</td>
<td></td>
<td>145 mm</td>
</tr>
<tr>
<td>D 100</td>
<td></td>
<td>on request</td>
</tr>
</tbody>
</table>

Design with self-regulating heater and non-woven insulation fabric

1 Connection fitting, e.g. loose flange
2 Outer jacket: PU corrugated tube
3 Insulation: multiple layer thermofleece
4 Aluminium foil
5 Inner tube: corrugated stainless steel tube

Heated system for fixed applications, not suitable for automatic batching plants, roboter applications or applications with frequently changing bending strain.
Heated Loading and Unloading System with Self-Regulating Heater up to 100°C

Type ELH / ELSH mdsb... Designs and Options

**Outer jacket**
- PU corrugated tube
- TPE corrugated tube
- Industrial fabric tube
- Stainless steel braid
- Galvanized steel braid
- Nylon braid
  (refer to page 16)

**Insulation**
- Multi-layer non-woven fabric

**Inner tube**
- Corrugated stainless steel tube
- PTFE corrugated tube
- Universal FEP tube for chemicals
- Provided by customer

**Connecting fittings**
- all common fittings

**Sensors**
- PT-100 / 2 wire
- PT-100 / 3 wire
- PT-100 / 4 wire
- PT-1000
- Thermo couples Type Fe Cu-Ni (Type J) and Ni Cr-Ni (Type K)

**End caps**
- Shrinked end caps
- Metall end caps (aluminium / stainless steel)
- Silicone end caps

**Connecting lead**
- 1,5 m silicone cable 3 x 1 mm², without plug

**Options**
- Thicker connecting lead in PA corrugated tube
- Silicone cable with VA braid jacket
- With plug to customer specifications

Also suitable for hazardous areas.
Heated System for Loading and Unloading with Vulcanized Outer Jacket up to 200°C / 180°C

**Type ELH / ELSH mdR... (Ex) Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>Length</td>
<td>depends on application</td>
</tr>
<tr>
<td>Process temperature</td>
<td>max. 180°C (T3)</td>
</tr>
<tr>
<td>Limiter setting</td>
<td>max. 192°C (T3)</td>
</tr>
<tr>
<td>Voltage</td>
<td>24 – 500 V</td>
</tr>
<tr>
<td>Heater</td>
<td>eltherm resistance heating cable ELKM-AE / ELKM-AG-N</td>
</tr>
<tr>
<td></td>
<td>eltherm self-regulating heater ELSR-H</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>depends on temperature, inner tube, and connecting fitting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameters</th>
<th>Performance at 200 °C (standard)</th>
<th>Outer diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 25</td>
<td>300 w/m</td>
<td>75 mm</td>
</tr>
<tr>
<td>D 32</td>
<td>360 w/m</td>
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<td>D 50</td>
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<td>D 65</td>
<td>580 w/m</td>
<td>130 mm</td>
</tr>
<tr>
<td>D 80</td>
<td>650 w/m</td>
<td>145 mm</td>
</tr>
<tr>
<td>D 100</td>
<td>on request</td>
<td>on request</td>
</tr>
</tbody>
</table>

**New: With vulcanized outer jacket and series resistance heating cable**
1 Outer jacket: vulcanized EPDM
2 Insulation: multiple layer thermofleece

Heated system for fixed applications, not suitable for automatic batching plants, roboter applications or applications with frequently changing bending strain.

**New: with vulcanized antistatic outer jacket**
1 Outer jacket: vulcanized, deflective EPDM
2 Protective braid
3 Insulation: thermofleece
4 Inner tube: corrugated stainless steel tube

**Classification**
1 2G Ex eb IIC T6 - T3 Gb II 2D Ex tb IIICTX Db

**Certificates**
- IBExU04ATEX1004X
- IBExU13ATEX1124X
Heated System for Loading and Unloading with Vulcanized Outer Jacket
up to 200°C / 180°C

<table>
<thead>
<tr>
<th>Type ELH / ELSH mdR... (Ex)</th>
<th>Designs and Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outer jacket</strong></td>
<td></td>
</tr>
<tr>
<td>› Non Ex: vulcanized EPDM, black, fabric texture</td>
<td></td>
</tr>
<tr>
<td>› Ex: vulcanized EPDM, electrically deflective</td>
<td></td>
</tr>
<tr>
<td><strong>Insulation</strong></td>
<td></td>
</tr>
<tr>
<td>› Multiple layer thermofleece</td>
<td></td>
</tr>
<tr>
<td><strong>Inner tube</strong></td>
<td></td>
</tr>
<tr>
<td>› Corrugated stainless steel tube</td>
<td></td>
</tr>
<tr>
<td>› PTFE corrugated tube</td>
<td></td>
</tr>
<tr>
<td>› provided by customer (temperature resistant to min. 160 °C)</td>
<td></td>
</tr>
<tr>
<td><strong>Connecting fittings</strong></td>
<td></td>
</tr>
<tr>
<td>› all common fittings</td>
<td></td>
</tr>
<tr>
<td><strong>Sensors</strong></td>
<td></td>
</tr>
<tr>
<td>› Non Ex: PT-100 / 2 wire, PT-100 / 3 wire, PT-100 / 4 wire, PT-1000, Thermo couples Type Fe Cu-Ni (Type J) and NiCr- Ni (Type K)</td>
<td></td>
</tr>
<tr>
<td>› Ex: 2 x Ex- PT-100 / 3 wire / 4 wire; position 1,00 m in front of E connection</td>
<td></td>
</tr>
<tr>
<td><strong>End caps</strong></td>
<td></td>
</tr>
<tr>
<td>› Shrunked end caps</td>
<td></td>
</tr>
<tr>
<td>› Metall end caps (aluminium / stainless steel)</td>
<td></td>
</tr>
<tr>
<td>› Silicone end caps</td>
<td></td>
</tr>
<tr>
<td><strong>Connecting lead</strong></td>
<td></td>
</tr>
<tr>
<td>› Non Ex: 1,5 m in silicone protective tube with multiple pole plug (4 pole + PE / 6 pole + PE) suitable for eltherm controller</td>
<td></td>
</tr>
<tr>
<td>› Ex: Standard 1,5 m PTFE insulated</td>
<td></td>
</tr>
</tbody>
</table>

The Vulcanized Outer Jacket

This newly developed outer jacket design for heated systems is particularly resistant to abrasion, chemically stable and easy to clean. In the electrically deflective design it is also suitable for use in hazardous areas.

**Benefits**
› high chemical stability
› resistant to abrasion
› flexibility
› insulation variable and can be optimised depending on application
› smooth, easy-to-clean surface
Heated System for Loading and Unloading in Hazardous Areas up to 180°C

**Type ELH / ELSH md..w..SS..FE-EX Technical Data**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td>depending on application</td>
<td></td>
</tr>
<tr>
<td><strong>Process temperature</strong></td>
<td>180°C (T3)</td>
<td></td>
</tr>
<tr>
<td><strong>Limiter setting</strong></td>
<td>192°C (T3)</td>
<td></td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>24 – 500 V</td>
<td></td>
</tr>
<tr>
<td><strong>Heater</strong></td>
<td>eltherm resistance heating cable ELKM-AE / ELKM-AG-N eltherm self-regulating heater ELSR-H</td>
<td></td>
</tr>
<tr>
<td><strong>Operating pressure</strong></td>
<td>depends on temperature, inner tube, and connecting fitting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameters</th>
<th>Performance at 200 °C (standard)</th>
<th>Outer diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 25</td>
<td>300 w/m</td>
<td>75 mm</td>
</tr>
<tr>
<td>D 32</td>
<td>360 w/m</td>
<td>85 mm</td>
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<td>D 40</td>
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<tr>
<td>D 50</td>
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<tr>
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<td>130 mm</td>
</tr>
<tr>
<td>D 80</td>
<td>650 w/m</td>
<td>145 mm</td>
</tr>
<tr>
<td>D 100</td>
<td>on request</td>
<td>on request</td>
</tr>
</tbody>
</table>

Length: depending on application  
Process temperature: 180°C (T3)  
Limiter setting: 192°C (T3)  
Voltage: 24 – 500 V  
Heater: eltherm resistance heating cable ELKM-AE / ELKM-AG-N eltherm self-regulating heater ELSR-H  
Operating pressure: depends on temperature, inner tube, and connecting fitting

<p>| | | |</p>
<table>
<thead>
<tr>
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<tr>
<td>D 80</td>
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<td>145 mm</td>
</tr>
<tr>
<td>D 100</td>
<td>on request</td>
<td>on request</td>
</tr>
</tbody>
</table>

**Design with thermofleece insulation**

1. Insulation: thermofleece  
2. Outer jacket: PU corrugated tube

**Design with foam insulation**

1. Connecting lead: PTFE insulated  
2. Outer jacket: stainless steel braid or galvanized braid  
3. Insulation: foam stripes  
4. Insulation: multiple layer thermofleece  
5. Inner tube: corrugated stainless steel tube (refer to p.17)

**Classification**  
II 2G Ex eb IICT6 - T3 Gb II 2D Ex tb IICTX Db

**Certification**
- IBExU04ATEX1004X
- IBExU13ATEX1124X
## Heated Loading/Unloading System in Hazardous Areas up to 180°C

### Type ELH / ELSH md..w..SS..FE-EX Designs and Options

<table>
<thead>
<tr>
<th>Component</th>
<th>Options</th>
</tr>
</thead>
</table>
| **Outer jacket**   | - Stainless steel braid  
                         - Galvanized iron braid  
                         - Antistatic PU corrugated tube  
                         (refer to page 16) |
| **Insulation**     | - Multiple layer thermofleece  
                         - Thermofleece with foam tube |
| **Inner tube**     | - Corrugated stainless steel tube  
                         - PTFE corrugated tube  
                         - Universal FEP tube for chemicals  
                         - Provided by customer  
                         (temperature resistance min. 160°C) |
| **Connecting fittings** | Put all common fittings                    |
| **Sensors**        | 2x EX- PT-100 / 3 wire / 4 wire, position 1,00 m in front of E connection |
| **End caps**       | - Shrinked end cap  
                         - Metal end cap (aluminium / stainless steel)  
                         - Silicon end caps |
| **Connecting lead** | Standard 1,50 m PTFE insulated               |
**Designs and Options**

**Heated Loading/Unloading Systems**

### Outer Jackets

#### Insulation with thermofleece

- **TPE corrugated tube**
  - Flexible, light corrugated tube coated with TPE/TPK and scoring protection on the wire spiral.

- **PU Corrugated tube**
  - Flexible, light corrugated tube made of polyurethane, reinforced with spring steel spiral.

- **PU corrugated tube, deflective**
  - Flexible, corrugated tube made of electrically deflective polyurethane, reinforced with spring steel spiral. For use in hazardous areas.

#### Industrial fabric tube, red or white

- Robust and light. Mechanically resistant to abrasion. Limited dynamic capacity.

#### Vulcanized EPDM

- Particularly resistant to abrasion, chemically very stable and very easy to clean. Suitable for use in hazardous areas in its deflective version.

### Foam Insulation

- **Nylon braid / polyamide braid**
  - Flexible for tight bending radii. Available up to diameter 50.

- **Stainless steel braid (Mat. 14301)**
  - Highly corrosion resistant, available to diameter 100. Approved for hazardous areas.

- **Galvanized iron braid**
  - Available up to diameter 65. Approved for use in hazardous areas.
Designs and Options

Heated Loading/Unloading Systems

Inner Tubes

FEP- or PTFE universal tube for chemicals

Inner tube made of transparent, seamlessly extruded FEP or PTFE, electrically conductive. Reinforcement with woven fabric inlays and galvanized steel wire helix.

Applications:
For loading/unloading processes at up to 100 °C. In the chemical, petrochemical, cosmetics and pharmaceutical industries.

Benefits:
- Chemical stability
- Can be steam cleaned up to 30 min / 150 °C
- Fulfills DIN EN 12115
- Fulfills TRbF 131.2
- Inner tube conductive
- FDA conformity
- Suitable for drinking water (KTW recommendation)
- Improved diffusion resistance
- Smooth surface with low friction coefficient
- Fittings attached via hose clamp or stainless steel press sheath

PTFE corrugated tube

with reinforcement layer. Designs with, for example
- Vacuum supporting spiral
- Fibreglass reinforcement
- Black PTFE, antistatic
- Smooth tube (smooth inside, corrugated on the outside)

Applications:
In the chemical, petrochemical, cosmetics and pharmaceutical industries. The basic material is FDA approved. For batching, dosing, filling and sealing processes.

Benefits:
- Chemical stability
- Suited for suction and vacuum applications with pressure clamps
- High flexibility
- Inner tube conductive
- FDA conformity
- Smooth surface with low friction coefficient
- Suited for roboter applications with fibreglass reinforcement
- Optimised for frequently changing bending strain

Corrugated stainless steel tube

with stainless steel wire reinforce-
ment inlay

Applications:
In the chemical, petrochemical and bitumen industries, machine and plant engineering.

Benefits:
- Universally suited for fluids and gases
- Absolutely diffusion resistant
- For temperatures above 250 °C
- Highly flexible thanks to bend profile
- Other materials and designs available on request
- Not suited for use with roboters or frequently changing bend strain.
# Designs and Options

## Heated Loading/Unloading Systems

### Fittings

| Design          | Design: DIN 2501, According to EN 1092-1
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Stainless steel 1.4571 or 1.4404. On request: galvanized steel</td>
</tr>
<tr>
<td>Sizes:</td>
<td>D 25 - D 100</td>
</tr>
</tbody>
</table>

| Design          | Design: DIN 32676
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Stainless steel 1.4571 or 1.4404</td>
</tr>
<tr>
<td>Sizes:</td>
<td>D 25 - D 100</td>
</tr>
</tbody>
</table>

| Design          | Flat sealing with cylindrical thread in inches according to ISO 228-1
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Stainless steel 1.4571 or 1.4404. On request: galvanized steel</td>
</tr>
<tr>
<td>Sizes:</td>
<td>G-1&quot; - G3&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design</th>
<th>Screw sealing with conical thread according to DIN EN 10226 ISO 7-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Stainless steel 1.4571 or 1.4404. On request: galvanized steel</td>
</tr>
<tr>
<td>Sizes:</td>
<td>R 1&quot; - R4&quot;</td>
</tr>
</tbody>
</table>
Fittings

**Tanker couplings**

- **Designs:** Tanker coupling (male/female) according to EN 14420-6 / DIN 28450.
- **Material:** Stainless steel 1.4404, brass, Hypalon, PTFE, NBR sealing rings
- **Sizes:**
  - D 25 - D 100
  - Rd 52x 1/6" - Rd 130x 1/4"

**Kamlock coupling**

- **Designs:** Male or female
- **Material:** Stainless steel 1.4404, Aluminium BUNA N, PTFE, NBR, Silicone or EPDM sealing rings
- **Sizes:** 1" – 4"

**Conical coupling**

- **Material:** Stainless steel 1.4404 / cap nut made of 1.4301 HYPALON or PTFE sealing rings
- **Sizes:**
  - D 25 - D 100
  - Rd 52 x 1/6" – Rd 130 x 1/4"

**Threaded socket SC**

- **Designs:** Cone socket with cap nut or with threaded socket SC according to DIN 11851 / DIN 405-1
- **Material:** Stainless steel 1.4404 / cap nut made of 1.4301 HYPALON or PTFE sealing rings
- **Sizes:**
  - D 25 - D 100
  - Rd 52 x 1/6" – Rd 130 x 1/4"

**Designs and Options** Heated Loading/Unloading Systems

**Other fittings or materials on request.**
Controllers

Temperature Controllers (from eltherm Product Portfolio)

Electronic Temperature Controller

ELTC/H-14          ELTC-21 / ELTC-22

with digital display for wall mounting. The temperature is measured by a Pt100 sensor, processed by the microcontroller and displayed. After comparing actual and preset values, the output relays are switched. The controller is equipped with a socket. The unit is supplied in a weather proof plastic enclosure and a transparent cover.

Benefits:
- LED display works to -25 °C
- Programmable 0 °C to +390 °C
- 20 A resistive load with hybrid relay
- Signaling contact (can be set as alarm or release contact)
- Suitable for Pt100 with 2 or 3 wires
- Operating voltage: 90 - 260 VAC / 50/60 Hz

with digital display for top-hat rail mounting. The temperature is measured by a Pt100 sensor, processed by the microcontroller and displayed. After comparing actual and preset values, the appropriate output relays are switched.

Benefits:
- LED display works to –25 °C
- Programmable -50 °C - +400 °C
- 16 A resistive load alarm contact
- Pt100 with 2 or 3 wires

For additional controllers refer to the brochure Temperature Control and Monitoring.
In Practice

Application Examples

**ELSH/mdw up to 200°C, D 80**

**Application:**
Loading adhesives in the chemical industry

**Inner tube:**
Provided by the customer

**Maintain temperature:**
120 – 150°C

**Outer jacket:**
TPE corrugated tube

---

**ELH/mdR up to 100°C, D40**

**Application:**
Transport of fats and oil from a heated vessel to a dosing unit in the cosmetics industry

**Inner tube:**
Special PTFE corrugated tube

**Maintain temperature:**
80 – 100°C

**Outer jacket:**
vulcanized EPDM
## Heated Systems for Loading and Unloading

**In Practice**

### Customized Solutions

<table>
<thead>
<tr>
<th>Type ELH/mdw to 200°C</th>
<th>Type ELH/mdw to 200°C</th>
<th>Type ELH/mdw to 200°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heated system for loading and unloading D 80</td>
<td>Heated system for loading and unloading D 50 with two-part loose flange</td>
<td>Heated system for loading and unloading D 50</td>
</tr>
<tr>
<td><strong>Inner tube:</strong> corr. stainless steel</td>
<td><strong>Inner tube:</strong> corr. stainless steel</td>
<td><strong>Inner tube:</strong> corr. stainless steel</td>
</tr>
<tr>
<td><strong>Maintain temperature:</strong> 150°C - 200°C</td>
<td><strong>Maintain temperature:</strong> 180°C - 200°C</td>
<td><strong>Maintain temperature:</strong> 200°C</td>
</tr>
<tr>
<td><strong>Outer jacket:</strong> Corr. TPE tube</td>
<td><strong>Outer jacket:</strong> Corr. TPE tube</td>
<td><strong>Outer jacket:</strong> stainless steel braid</td>
</tr>
<tr>
<td><strong>Application:</strong> Bitumen transport</td>
<td><strong>Application:</strong> Bitumen dispensing</td>
<td><strong>Application:</strong> chemical industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type ELH/mdsbw to 80°C</th>
<th>Type ELH/mdsbw to 30°C</th>
<th>Type ELH/mdw to 100°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heated system for loading and unloading D 50</td>
<td>Heated system for loading and unloading D 50 with built-on Ex termination box</td>
<td>Heated system for loading and unloading D 50</td>
</tr>
<tr>
<td><strong>Inner tube:</strong> special corrugated antistatic PTFE tube, fittings lined with PTFE</td>
<td><strong>Inner tube:</strong> corrugated stainless steel tube</td>
<td><strong>Inner tube:</strong> corrugated PTFE tube</td>
</tr>
<tr>
<td><strong>Maintain temperature:</strong> 80°C</td>
<td><strong>Maintain temperature:</strong> freeze protection to 30°C</td>
<td><strong>Maintain temperature:</strong> 50°C</td>
</tr>
<tr>
<td><strong>Outer jacket:</strong> corrugated PU tube, electrically deflective</td>
<td><strong>Outer jacket:</strong> corrugated PU tube, electrically deflective</td>
<td><strong>Outer jacket:</strong> stainless steel braid</td>
</tr>
<tr>
<td><strong>Application:</strong> chemical industry, transport of phenolic resin in hazardous areas</td>
<td><strong>Application:</strong> petrochemical industry, hazardous areas</td>
<td><strong>Application:</strong> Chemical industry, hazardous areas</td>
</tr>
</tbody>
</table>
### Configurator

<table>
<thead>
<tr>
<th>Company:</th>
<th>Contact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street:</td>
<td>Code/city:</td>
</tr>
<tr>
<td>Tel.:</td>
<td>E-mail:</td>
</tr>
</tbody>
</table>

#### Hazardous Areas
- Number: 
- Material: 
- Length: 
- Operating temperature: 
- Maintain temperature: 
- Voltage: 
- Substance: 
- Ambient temperature: 
- Operating pressure: 
- Negative pressure: 
- Mating temperature: 
- Voltage: 
- Connecting lead exit: 
- Connecting line length: 
- Connecting plug: 
- Comments: 

#### Sensors
- Number: 
- Material: 
- Sensor position: 
- Fittings (refer to p. 40-43): 
- E connection (Type): 
- End termination: 
- Material: 
- Connecting lead exit: 
- Connecting line length: 
- Connecting plug: 
- Comments: 

#### Controllers
- Material: 
- Connecting lead exit: 
- Connecting line length: 
- Connecting plug: 
- Comments: 

#### Material inner tube or pipe
- Corrugated PTFE
- Corrugated stainless steel
- Universal FFP tube for chemicals
- Provided by customer, type:
- Outer diameter:
- Special:

#### Sensor type
- PT-100 / 2 wire
- Ex-protected PT-100 / 3 wire
- Thermocouple Type NiCr-Ni
- Special:
- PT-100 / 3 wire
- Ex-protected PT-100 / 4 wire
- Thermocouple Type FeCu-Ni
- Special:

#### Fittings
- Material inner tube or pipe:
- Provided by customer, type:
- Outer diameter:
- Special:

#### Application
- Moving: yes, no
- Outside: yes, no
- Inside: yes, no

#### Cables
- Corrugated TPE tube: yes, no
- Corrugated PU tube: yes, no
- Industrial fabric tube: yes, no
- Vulcanized EPDM: yes, no
- Braid, galvanized: yes, no
- Stainless steel braid: yes, no
- Special: yes, no

#### Operating pressure
- Operating pressure: 
- bar, at 
- °C

#### Temperature
- Ambient temperature: 
- Standard (-20 °C)
- Special °C

#### Negative pressure
- Operating pressure: 
- bar, at 
- °C

#### Temperature
- Ambient temperature: 
- Standard (-20 °C)
- Special °C