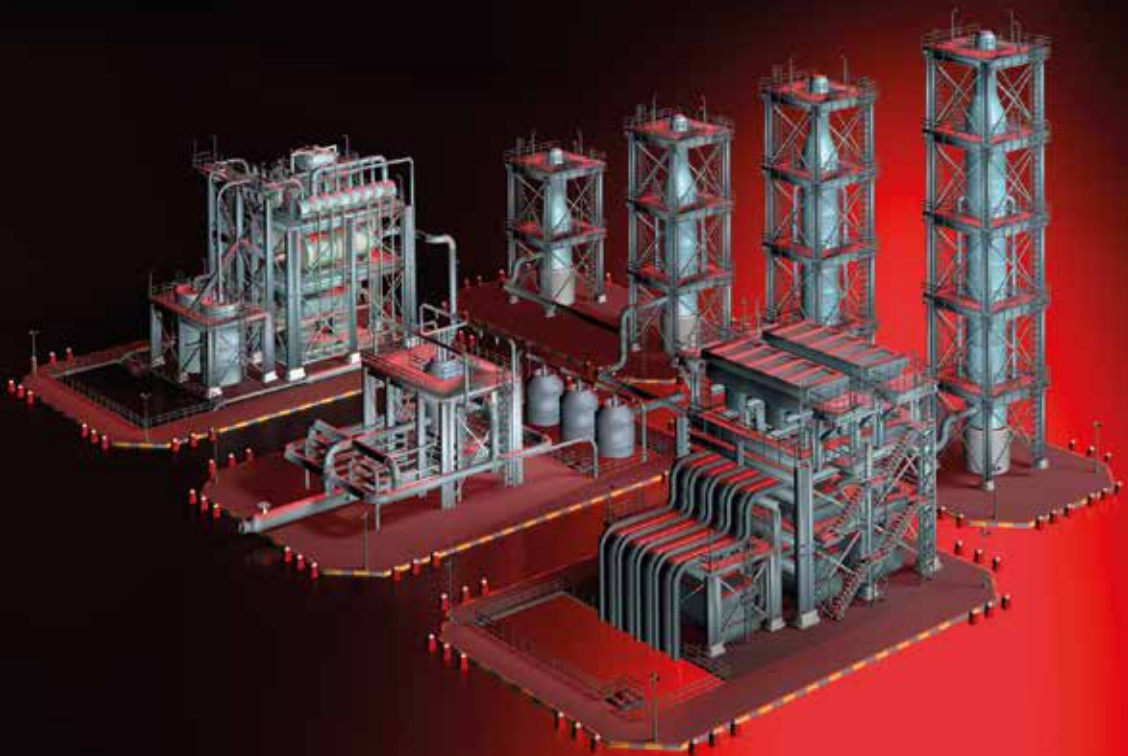




# eltherm – Your EHT Turnkey Solutions Provider

innovations in heat tracing



## eltherm GmbH – Your reliable EHT solutions provider

eltherm GmbH is an international operating company specialising in the field of electrical heat tracing systems and belongs to the strong and successful INDUS Holding AG. With more than 40 years of technology expertise this company has grown significantly since its humble beginning.

We are always striving to produce the utmost quality and provide a flexibility of approach in order to respond to market demands. Our philosophy is to supply our customers with electrical heat tracing system solutions individually customized to their requirements at the highest level.

The application options for the ELSR self-regulating heating cable range from frost protection to temperature maintenance on pipes and vessels.

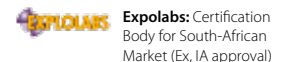
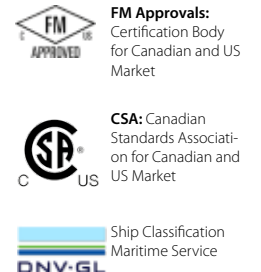
The comprehensive production facilities for all types of heating cable and accessories and the built up engineering expertise allow us to become one of the leading manufacturers of electrical heat tracing systems in the world.

We have proven our potential and expertise in different applications for industries such as chemical and petrochemical industries, pharmaceuticals, oil and gas, power plants, automotive, rail and food industries. With us, you will find your competent partner for turnkey and complete system solutions for applications ranging from frost protection to temperature maintenance up to 1000 °C.

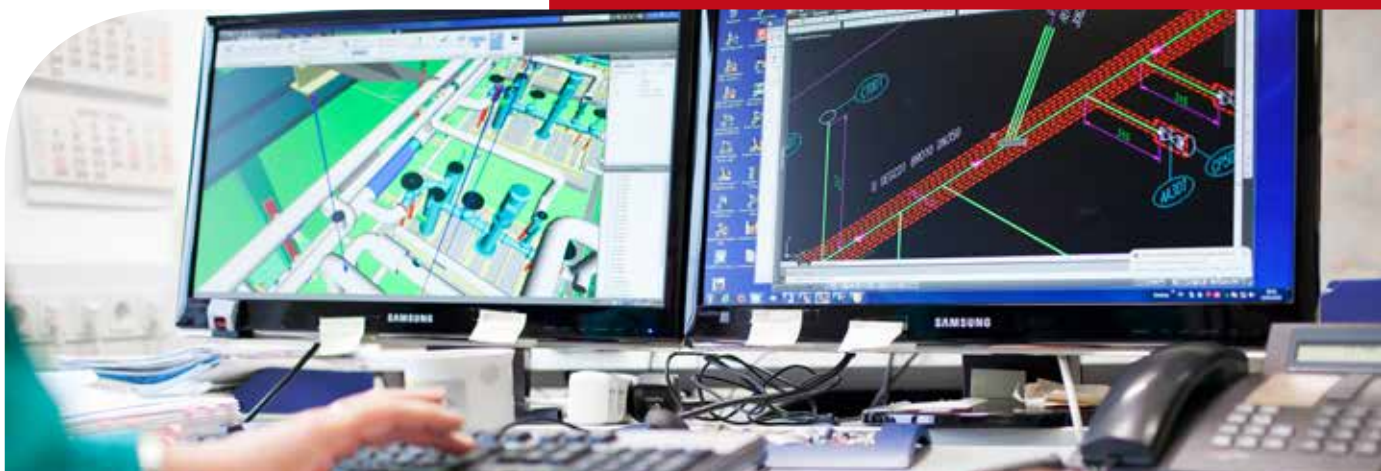
### eltherm engineers have many years of experience, including the following projects (extract):

- Cryogenic storage tank heating
- Pipe trace heating for complete chemical parks
- Heating of BPA and phenol plants
- Heating of MDI and TDI plants
- Power plant heating, including coal fired, nuclear and CSP power plants
- Heating jackets for particle accelerators
- Heating of a gas compressor station
- Trace heating in hazardous locations
- Oil and gas industry
- and many more

## International Approvals



## innovations in heat tracing





## Internationalization

We are a global group with subsidiaries in the UK, Spain, Italy, Morocco, Singapore, China, Canada and South Africa and also Channel Business Partners in Russia, Middle East and Europe, for instance. All our operating companies and partners have the support of our expertise and commitment to excellence which allows us to provide a top quality and personal service to our customers all over the world.

**eltherm Canada Inc**  
Ontario, Canada



**eltherm Spain, S.L.U.**  
Les Roquetes (Barcelona), Spain



**eltherm UK Ltd**  
Berkshire, UK



**eltherm Rus Limited Liability Company**  
Korolev, Russia



**eltherm (Shanghai) Co., Ltd**  
Shanghai, China



**Headquarters / production site**  
**eltherm GmbH** Burbach, Germany



**eltherm North Africa SARL**  
Casablanca, Morocco



**eltherm Italy S.r.l.**  
Milan, Italy



**eltherm South Africa (Pty) Ltd**  
Sandton, Republic of South Africa



**eltherm Asia-Pacific Pte. Ltd**  
Singapore



# Company Capabilities

## eltherm GmbH operates in 5 major fields:

- 1) As a manufacturer and supplier of turn-key electrical heat tracing systems for Industrial Plant Facilities including Engineering (FEED-Basic-Detail), Procurement, Construction and Management, Site Management Training of Staff, Commissioning and Start-Up, Maintenance and Support and also Additional Services.
- 2) As a provider of customised engineered heat tracing solutions for specialised industrial applications. eltherm engineers the most suitable solutions for customer's requirements.
- 3) As a manufacturer of a wide range of electrical heat tracing cables like: self-regulating heating cables, fluoropolymer-insulated serial resistance heating cables, constant wattage heating cables and also Mineral Insulated (MI) heating cables and accessories.
- 4) As a manufacturer of electronic control and high-tech monitoring equipment to run electrical heating systems in a safe, accurate and efficient way.
- 5) As a manufacturer and supplier of electrical heat tracing solutions for infrastructures and building construction applications.

## innovations in heat tracing



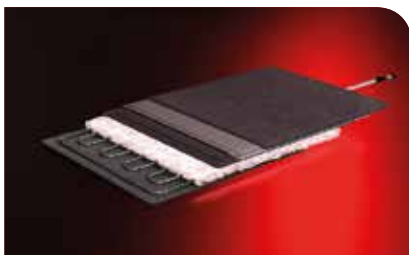
Heating Cables / Heating Tapes



Self-regulating Heating Cables



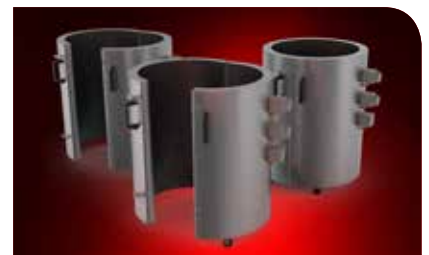
Heated Hoses



Heating Mats / Heating Jackets



Measurement and Control



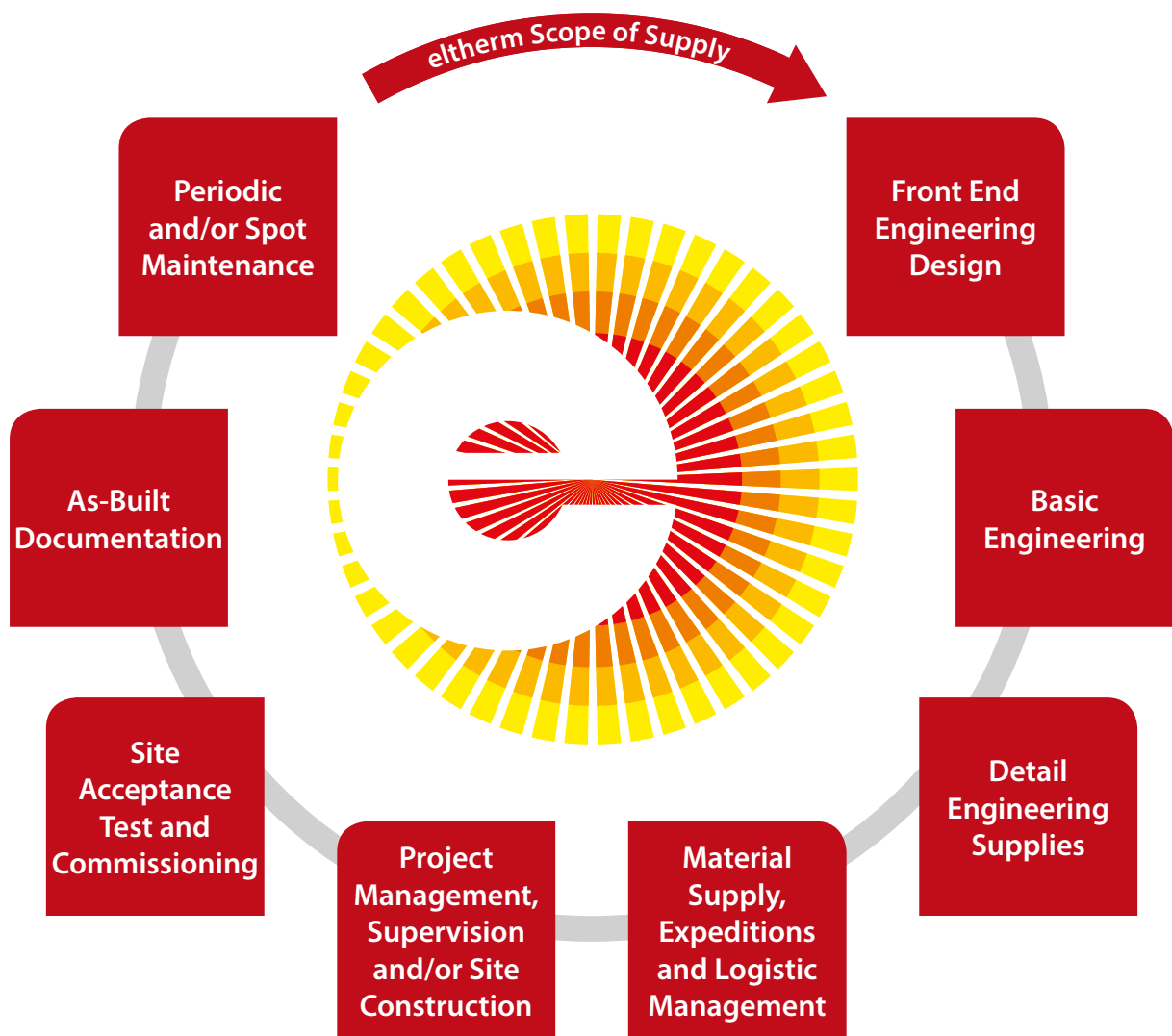
Customized Engineered Heat Tracing Solutions



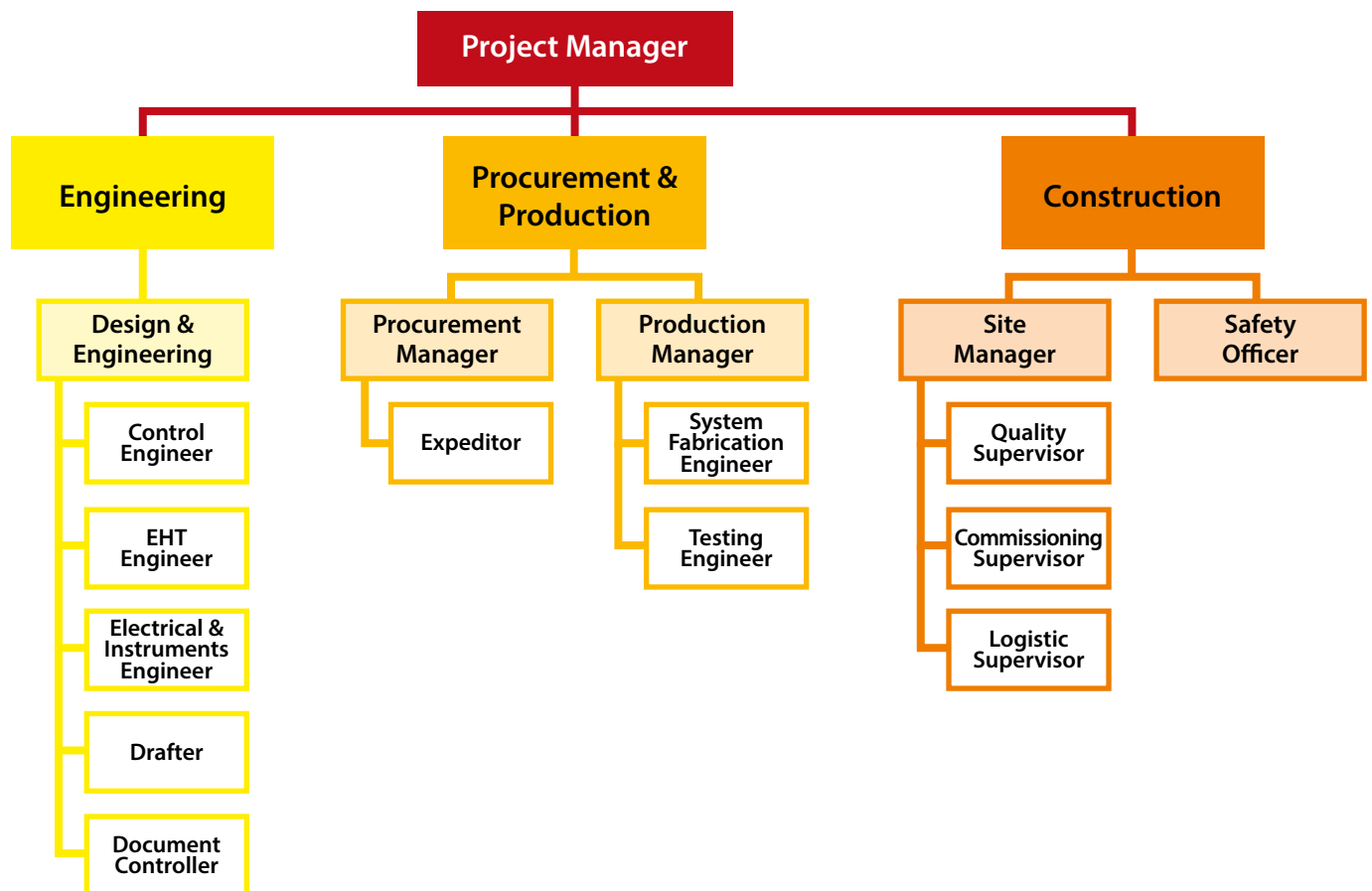
Accessories



## eltherm **Scope of Supply**



## Project Management & Services



innovations in heat tracing



## Additional Services

Additional to electrical heat tracing solutions, eltherm also offers further services according to the customer's requirements and needs.

- Cable Laying System
- Site Management
- Installation
- Commissioning
- Start-Up
- After Sales Support Services
- Training of Staff



Cable Laying System



Site Management



Installation



Commissioning



Start-Up



After Sales Support Services



Training of Staff



## Process Automation

### Digital engineering of pipe heat tracing systems with Intergraph software tools

Automating the engineering for electrical heat tracing, based on a digital database, and implementing data in various in-house areas pays off with significant benefits and impressive time savings. The time required for technical design of heat tracing including automatically generated documentation is shortened considerably. Together with Intergraph we make the necessary modifications and expansions to the standard software to automate engineering of electrical heat tracing.

Isometrics of pipelines, R&I diagrams, heat tracing and insulation specifications must be recorded and evaluated for the technical design of a heat tracing system. Recording isometrics manually is very time-intensive. If revisions are made to the pipeline planning over the course of a project, heat

eltherm is a member of the

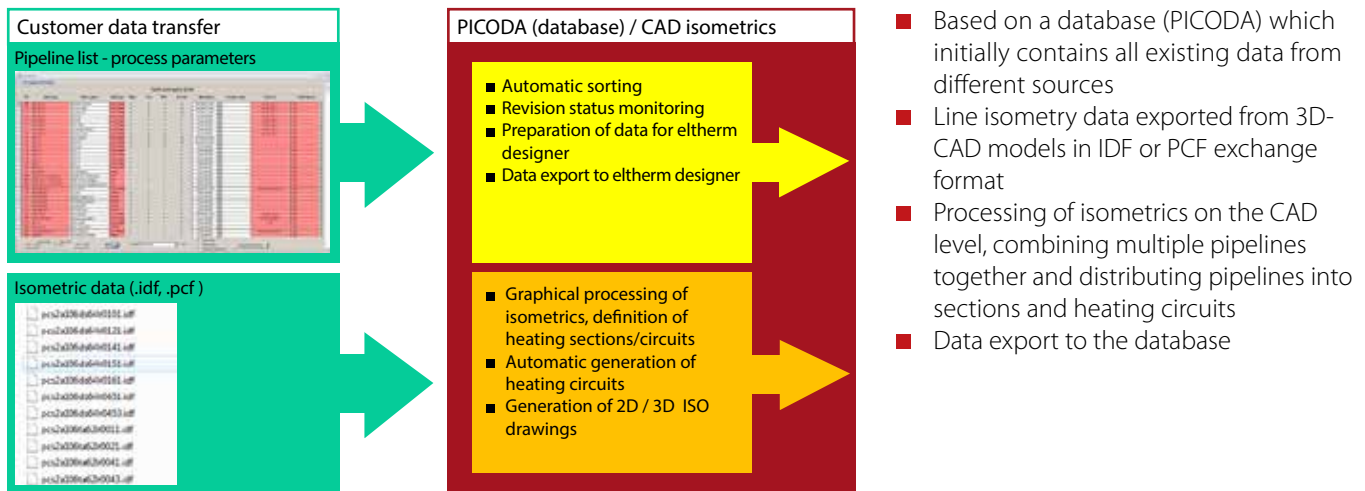


ters that have already been planned have to be redesigned. Recent years have seen a transformation in plant engineering, with data ever more frequently available in digital form. This has led to ideas for automating engineering of electrical heat tracing with a corresponding software solution.

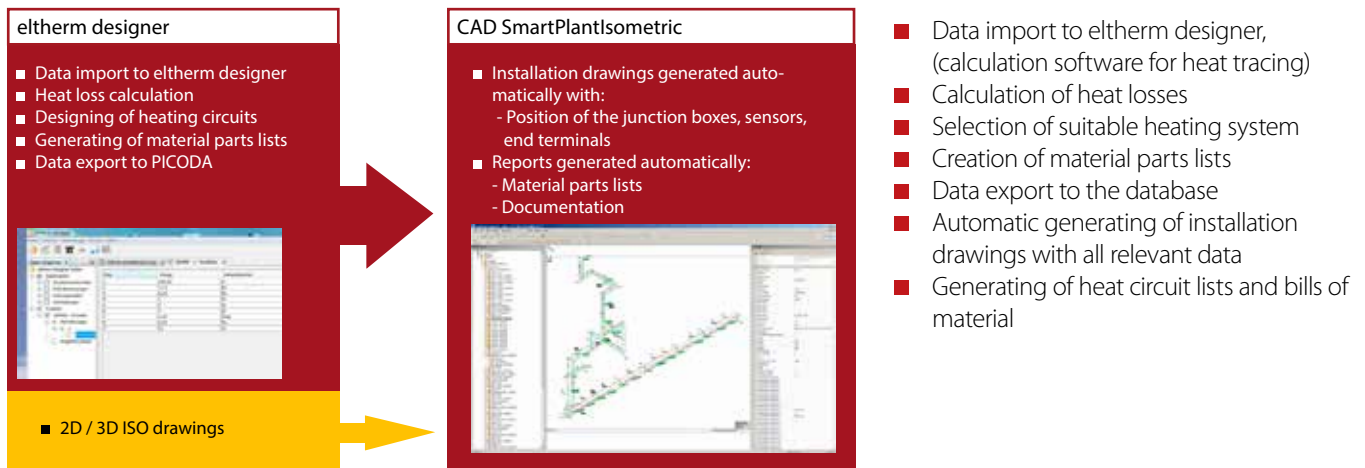
#### Advantages:

- All data is available in digital form and can be further processed as required
- Revising is easy if planning changes are made
- Saves time
- Generated drawings are integrated in process control systems with control screens branching to isometrics and heating circuit lists

#### Workflow: Data import (line list, isometrics), database:



#### Workflow: Calculation with eltherm designer, assignment plans generated:





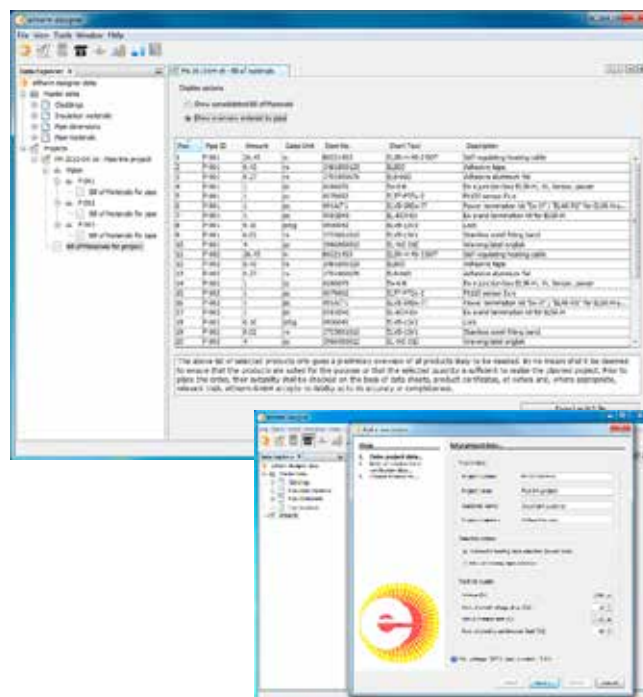


eltherm designer

The eltherm designer is a software solution to perform quick and easy heat-loss calculations, manage whole pipe-systems projects, create automated customized item lists for project and pipe-systems and export data for Microsoft Excel.

### eltherm Designer

- Heat Loss Calculation
- Heat Up Calculation
- Pitch Space Calculation
- Thermal Finite Element Analysis
- Heat Transfer Simulation
- Bill of Material Generation
- General Arrangement Drawing
- Vendor Data Registry



# TraceVision® Control and Monitoring

## Temperature Monitoring and Supervision

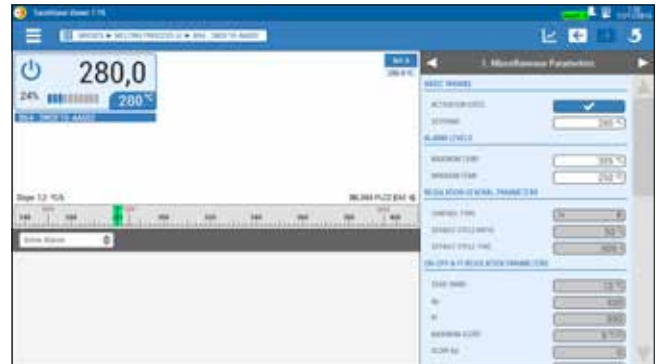
TraceVision® is eltherm's innovative solution for control and monitoring of electrical heat tracing systems for use in any type of industry. It is safe and reliable, and the system's modular approach provides maximum flexibility. TraceVision®'s heat tracing controllers may be programmed individually and configured for each particular heat tracing circuit.

A heat tracing system may be configured with up to 72 temperature controllers (type EL-HTC/22) capable of providing several operating modes, including ON/OFF, PI or ATPC (ambient sensing) control. Each controller may be individually programmed and key parameters including temperature set points and alarm limits, current alarm levels as well as input from up to 12 temperature probes may be configured.

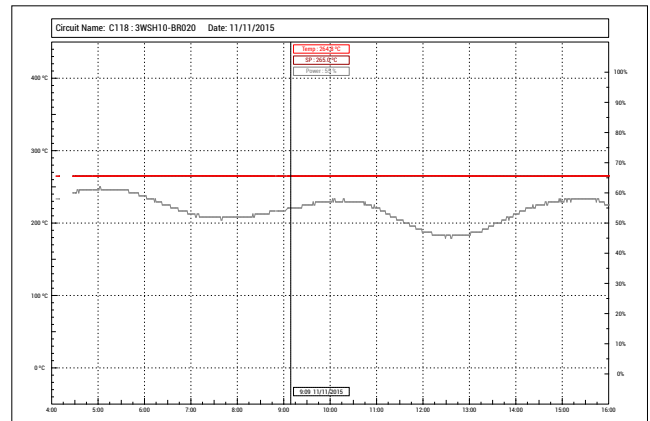
TraceVision® is based on an industrial PLC platform with multiple CAN-BUS I/O modules. The user may access the system using eltherm's software, developed exclusively for and based on a client-server approach, allowing several sessions from several devices to be operated at the same:

- TraceVision® Viewer: client software to allow the user to operate the system by connecting to the server (TraceVision® Manager)
- TraceVision® Manager: server software which allows the connection to multiple Viewers, performs the following functions:
  - a) Manage the database which stores all the information of the particular project
  - b) Manages communications with the heat tracing controllers and interface with TraceVision® Viewer
  - c) Logs alarms and data from the heat tracing controllers to the database

TraceVision® software is compatible with any computer operating with Windows OS, and it runs smoothly even in machines with few resources.



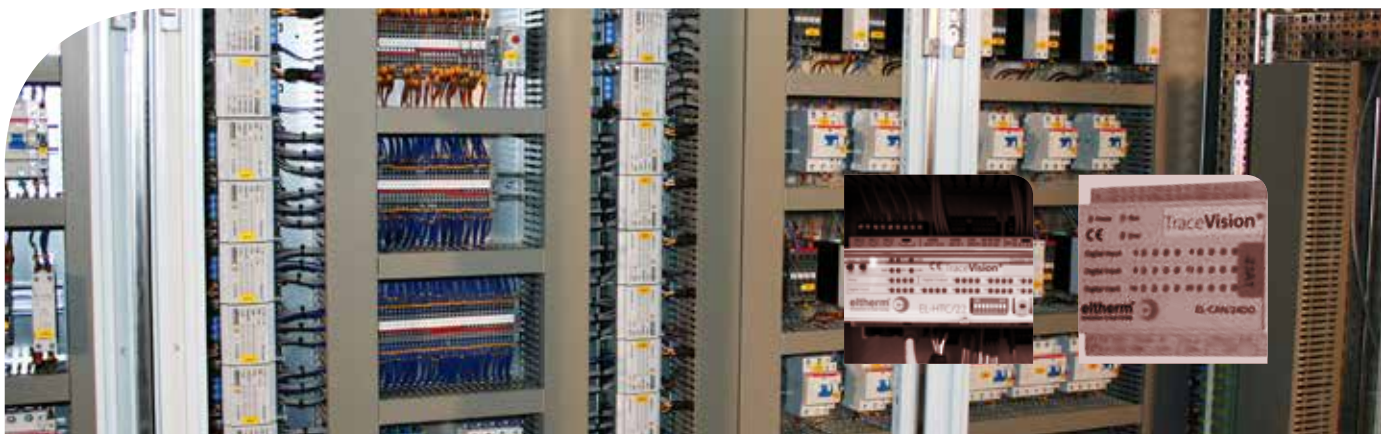
Control Screen



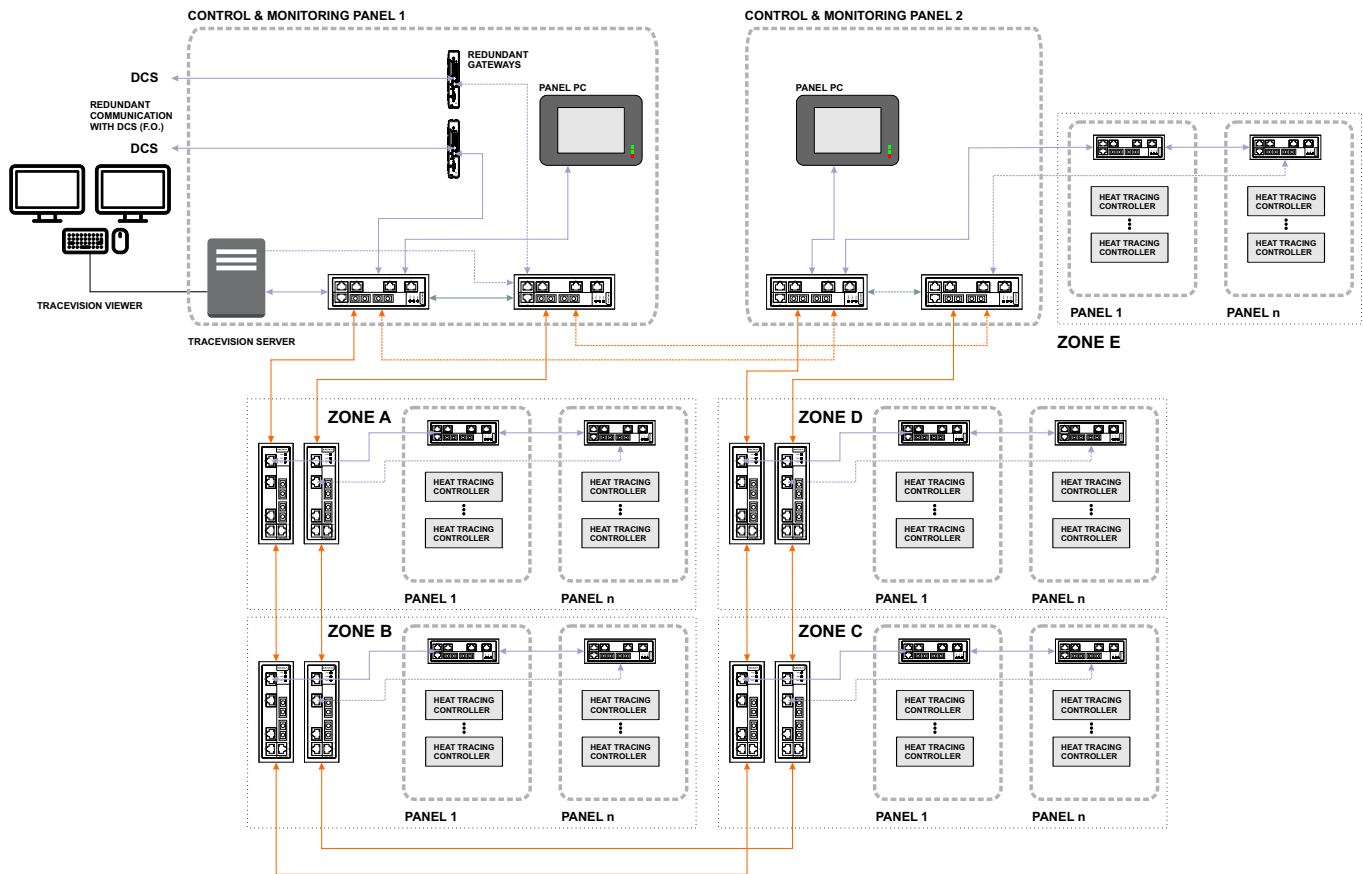
Temperature vs Time



Group Screen



## eltherm TraceVision<sup>®</sup> Control Solution





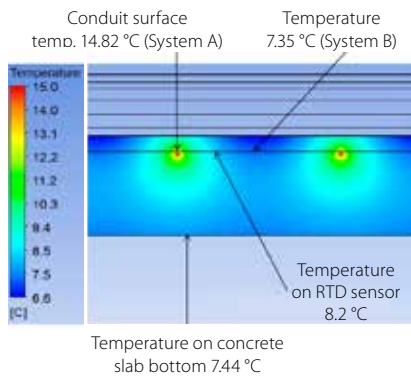
# Engineering Tools

## Finite Element Thermal Analysis

eltherm uses 2D/3D Finite Element Thermal Analysis to design and proof of design concepts for electrical heat tracing systems.

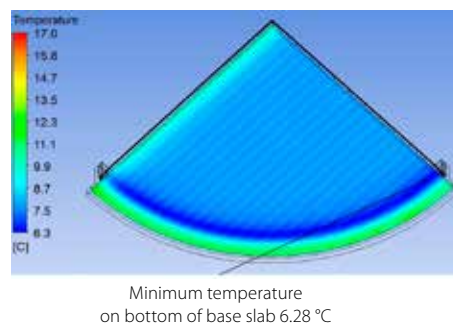
### 2D-Analysis with Base Slab Heaters

- Temperature field in concrete slab



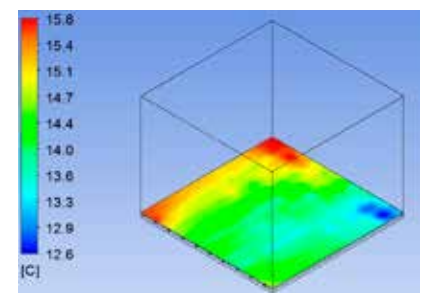
### 3D-Thermal Analysis

- All conduits working



### 3D-Thermal Analysis

- Tank and Vessel

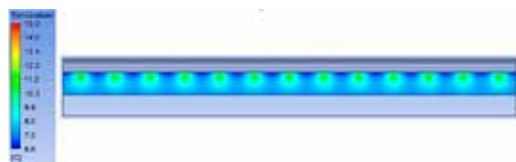


### Example for Finite Element Analysis

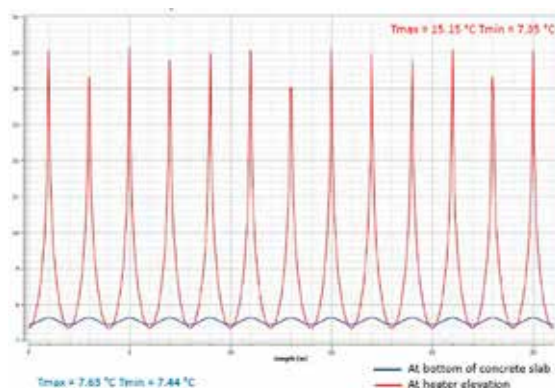
Concerning to the Finite Element Analysis result please see the following solution:

- Distance between conduits: 2.0 m
- Depth of conduits from top surface of concrete base: 0.24 m
- Soil temperature in a depth of 1.2 m from the 1st layer between the soil and the bottom of the concrete slab: 5.0 °C
- Installed heating tape output: 30.69 W/m @ 0 °C

Temperature curve of above mentioned boundary conditions:



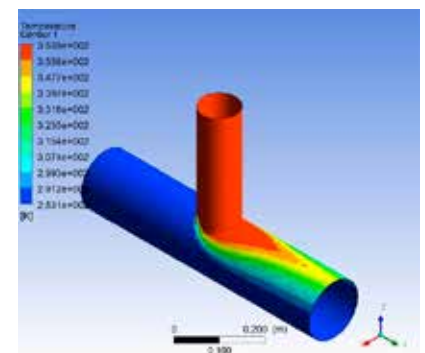
Temperature curve at bottom of concrete slab in a distance between heater of 2 m at a resolution of 1 m and at heater elevation, case 1:



The temperature curve is uniform for an analysis of 90 m!

### 3D-Thermal Analysis

- Fluid flow and heat transfer in a pipeline mixing tee





## Product Portfolio

### Overview of eltherm's Self-Regulating Heating Cables

#### Low temperature

ELSR-N-10...40-2 BO(T) / AO up to 80 °C



ELSR-NA-3...10-1 BO(T) / AO up to 80 °C



#### Low temperature

ELSR-M-10...15-2 BO / AO up to 60 °C



ELSR-MA-3...5-1 BO / AO up to 60 °C



ELSR-M-10-2 BF

ELSR-MA-3-1-BF and ELSR-MA-3-2 BF  
(approved for use in potable water and food applications)



ELSR-R up to 55 °C



#### Medium temperature

ELSR-W-55-2 BO / AO up to 100 °C

ELSR-W-65-2 BO / AO up to 100 °C



ELSR-WA-55-1 BO / AO up to 90 °C

ELSR-WA-55-2 BO / AO up to 90 °C

ELSR-WA-65-1 BO / AO up to 90 °C

ELSR-WA-65-2 BO / AO up to 90 °C



ELSR-FHP-23 up to 110 °C

ELSR-FHP-38 up to 110 °C



#### High temperature

ELSR-H 10...75-2 BOT up to 210 °C



ELSR-HA 3...20-1 BOT up to 200 °C



## Product Portfolio

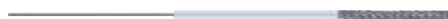
### Heating Cables / Heating Tapes

#### Heating Cables / Tapes up to 260 °C

Type ELKM-A



Type ELKM-AS



Type ELKM-AG



#### Heating Tapes up to 260 °C

Type ELW-GN

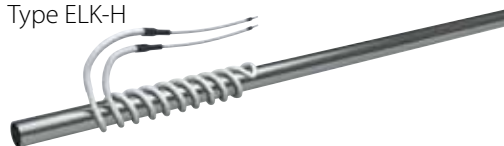


Type ELW-VA

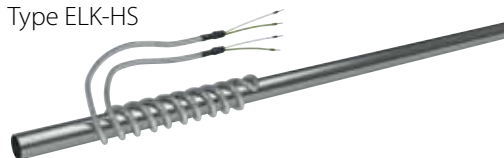


#### Heating Cables / Tapes up to 450 °C

Type ELK-H



Type ELK-HS



#### Heating Tapes up to 450 °C

Type ELW-H

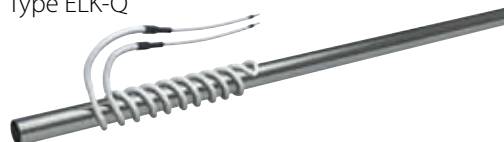


Type ELW-HS



#### Heating Cables / Tapes up to 900 °C

Type ELK-Q



#### Heating Tapes up to 900 °C

Type ELW-Q







## Product Portfolio

### Constant Wattage Parallel Heating Cables

Type ELP/Si-F up to 200 °C



Type ELP/Si up to 200 °C



Type ELP/PFA up to 260 °C



Type ELP/FEP up to 200 °C



### Laser Welded Connection Systems for MI Heating Cables



### Mineral Insulated Heating Cables

Type ELK-MI/VA and ELK-MI/VA-T up to 600 °C

Type ELK-MI/VA-Ex up to 480 °C



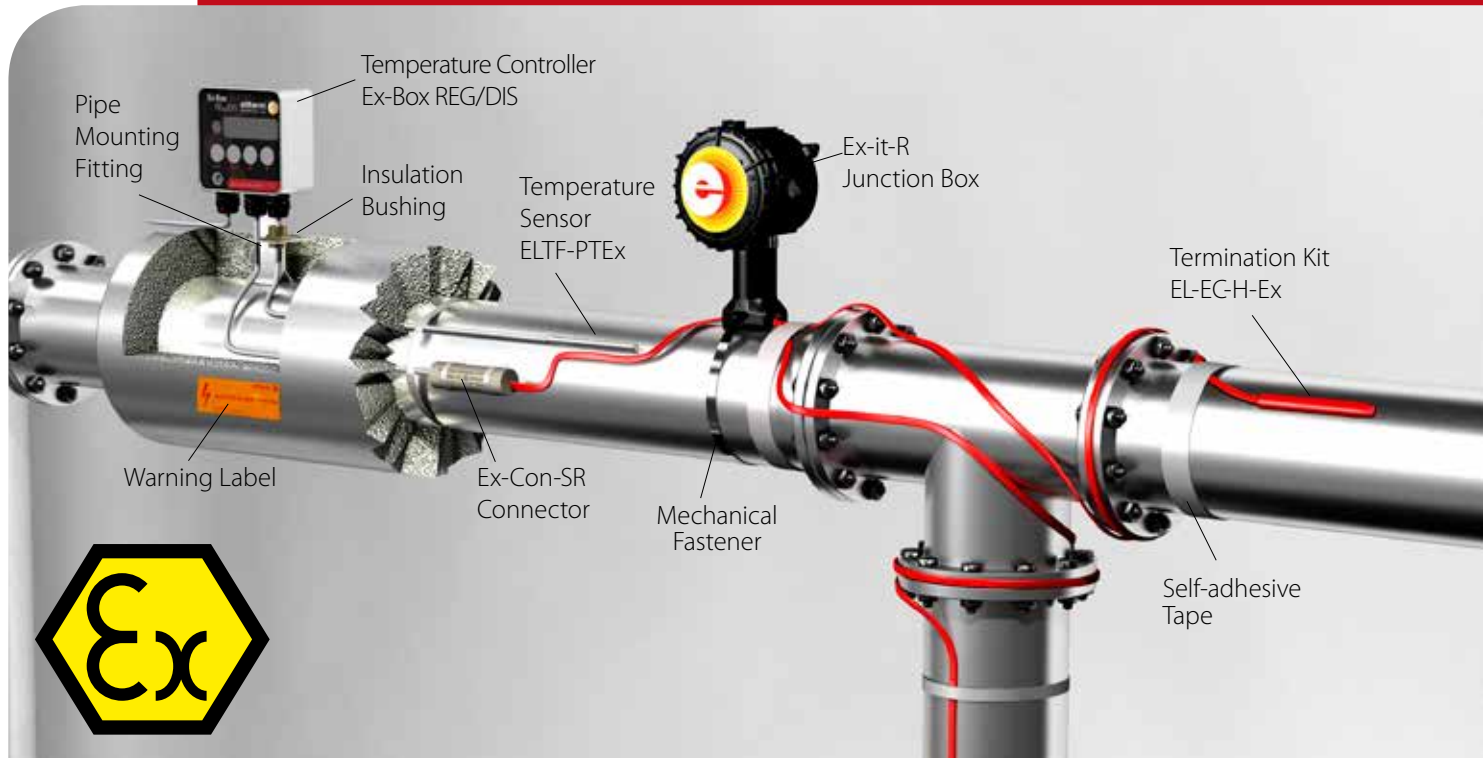
Type ELK-MI/AY600 and ELK-MI/AY600-T up to 1.000 °C



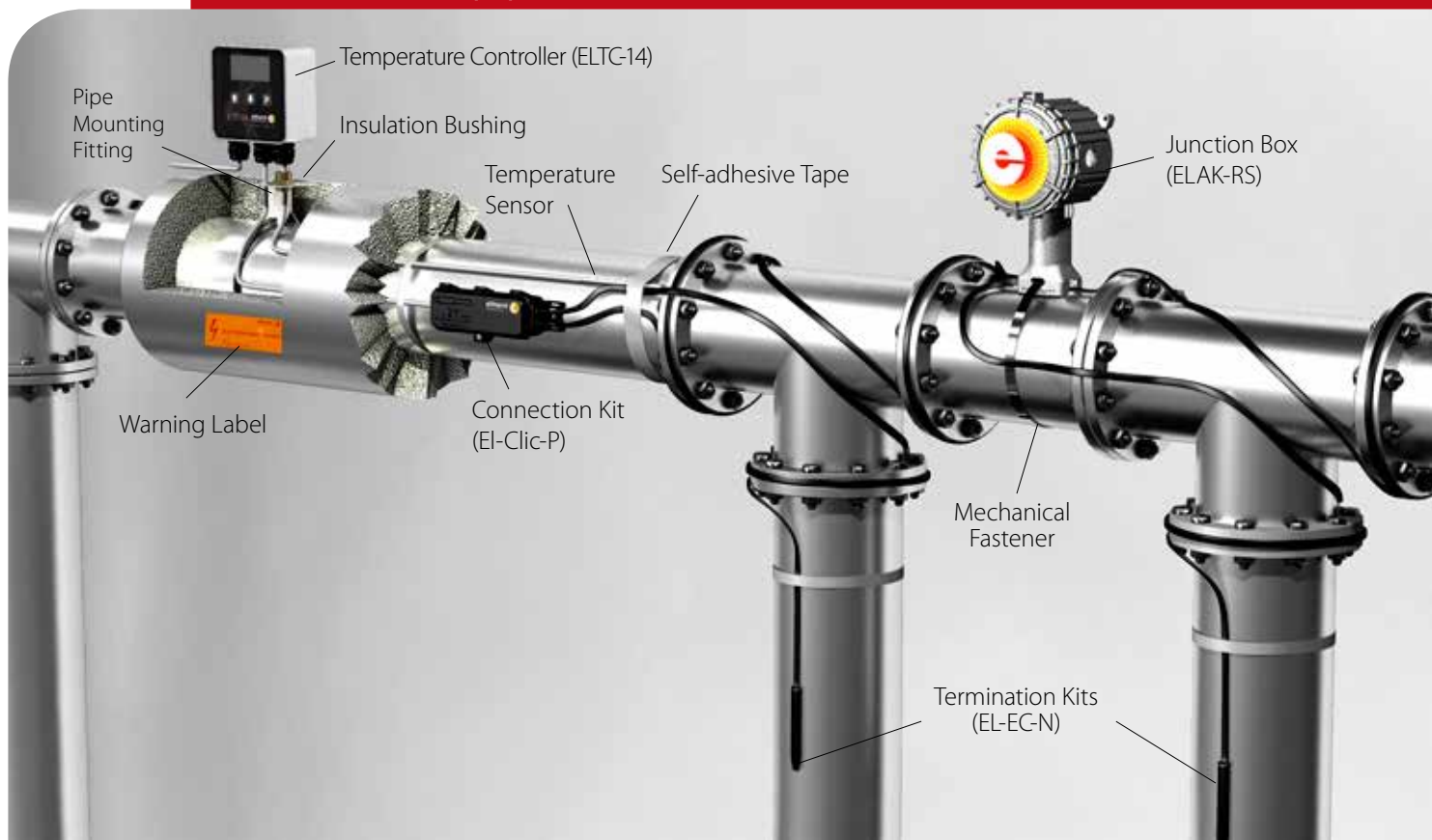
Type ELK-MI/AY825 and ELK-MI/AY825-T up to 700 °C



## ELSR: Application in Hazardous Areas



## ELSR: Application in Non-Hazardous Areas

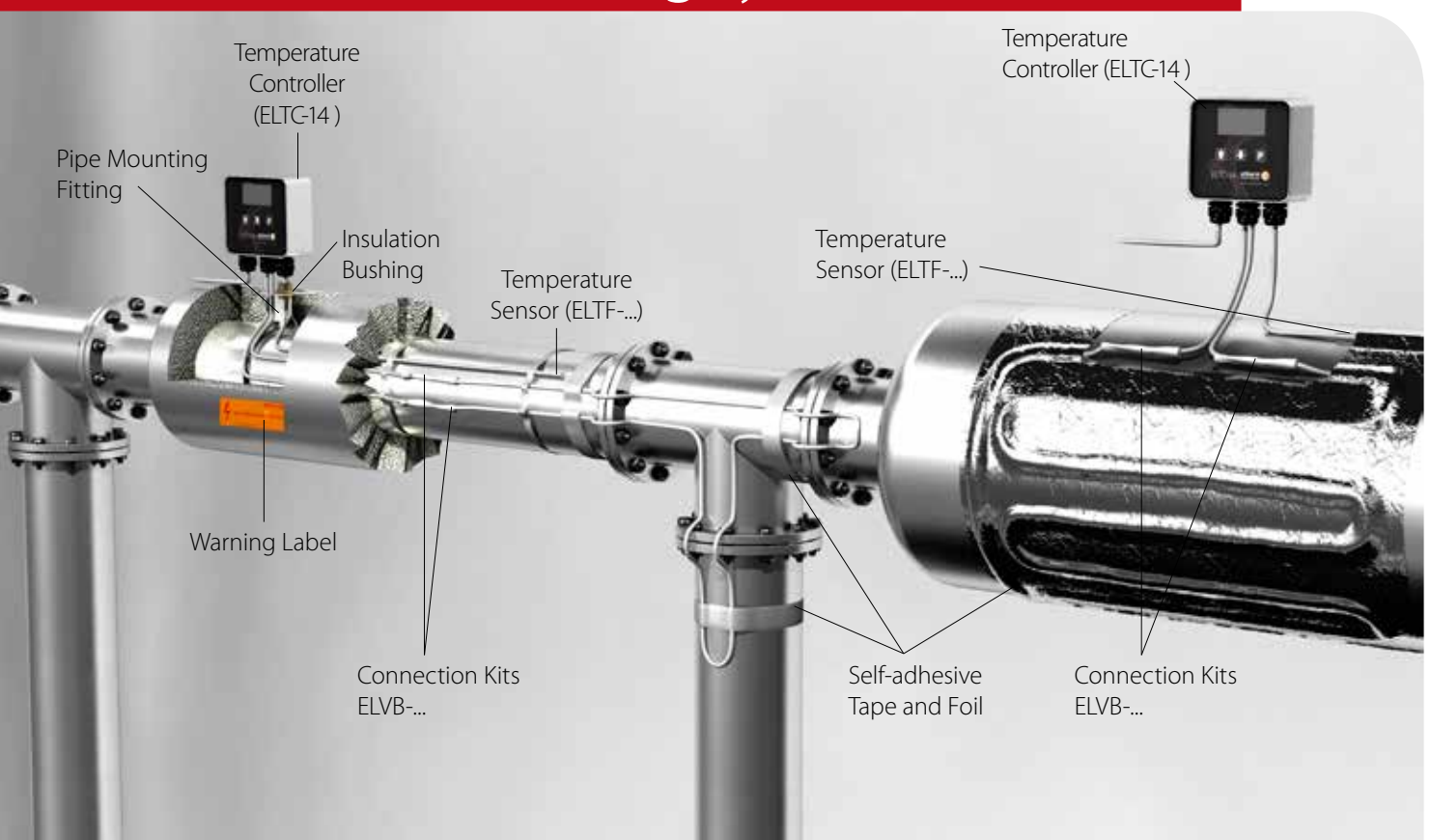




## EHT in Hazardous Areas



## Electrical Heat Tracing System





## Products & Solutions

### Junction Boxes & Enclosures (Ex)



ELAK-Ex  
(GRP Material; Ex e)



Ex-It-R  
(Polyamide Material; Ex e)



ELAK-Ex-SS  
(Stainless Steel Material; Ex e)

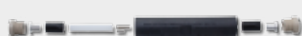


EL-EJB  
(Copper Free Aluminium  
Material; Ex d)

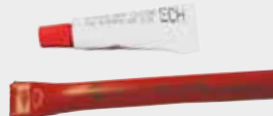
### Termination & Connection Splice Kits



Power Termination Kits (Ex)



Connection Splice Kits (Ex)



End Termination Kits (Ex)



Quick Connect (EL-CLIC)

### Temperature Sensors & Thermocouples



Thermocouple



Pt100 (2/3/4 Wire)  
Ex & Non-Ex



Mechanical Controller  
Thermostat (Ex)  
(EL-CT Series; Ex d)



Mechanical  
Controller & Limiter  
Combination (Ex); Ex e

### Temperature Controllers & Limiters



Electronic Controllers & Limiters (Ex)  
(EX-BOX Series, Ex e)



Electronic Controllers  
Wall Mount (ELTC-14)



Electronic Controllers  
Din Rail (ELTC-21)



## References **Cryogenic**

### SLNG Terminal Project

Project Name:	SLNG Terminal Project
Location:	Singapore
End User:	SLNG (Singapore LNG Corporation)
EPC:	Samsung C&T
Scope of Supply:	Engineering, Design Heat Tracing Material Supply Control Panels Cable Trays Installation Supervision Test & Commissioning Maintenance Contract



## References **Cryogenic**

### Lyse LNG Base Load Plant

Project Name:	Lyse LNG Base Load Plant
Location:	Stavanger, Norway
End User:	Skangass AS / Norway
EPC:	Linde Engineering
Scope of Supply:	Engineering Heat Tracing Material Supply Control Panels Commissioning



## References **Chemical/Petrochemical Industry**

### BPA-Plant

Project Name:	BPA-Plant
Location:	Taiwan
End User:	CCP / Taiwan
Scope of Supply:	Engineering Heat Tracing Material Supply SCADA Control Panels Installation Commissioning Supervision



## References **Chemical/Petrochemical Industry**

### CCJS BPA 1, CCJS BPA 2 BPA-Plant

Project Name:	CCJS BPA 1, CCJS BPA 2 BPA-Plant
Location:	Jiangsu, China
End User:	CCJS / China
Scope of Supply:	140 km Self-regulating Heating Cable 112 Control Panels SCADA 5,000 Heating Circuits Installation Commissioning Supervision







## References **Chemical/Petrochemical Industry**

### CCJS PN 2, Phenol Plant

Project Name:	CCJS PN 2, Phenol Plant
Location:	Jiangsu, China
End User:	CCJS / China
Scope of Supply:	Engineering Heat Tracing Material Supply SCADA Control Panels Installation Commissioning Supervision



## References **Chemical Plant**

### BASF-TDI Europe

Project Name:	BASF-TDI Europe
Location:	Ludwigshafen, Germany
End User:	BASF-SE
EPC:	Fluor B.V. Netherlands
Scope of Supply:	EPC-M Engineering Heat Tracing Material Supply Power & Control Panels Installation Supervision Commissioning



## References **Power Plants**

### Medupi Power Station, Kusile Power Station

Project Name:	Medupi Power Station Kusile Power Station
Location:	Medupi, South Africa Kusile, South Africa
End User:	ESCOM
EPC:	Hitachi
Scope of Supply:	Engineering ELSR, ELK-AG, Control Panels Installation & Commissioning with local Channel Business Partner Supervision



## References **Power Plants**

### NOOR I

Project Name:	NOOR I
Location:	Ouarzazate - Morocco
End User:	ACWA POWER
EPC:	UTE SENER-TSK-ACCIONA
Scope of Supply:	Turn Key EPC Engineering Heat Tracing Material Supply Power & Control Panels Installation Electrical Supply & Installation Commissioning





Kusile Power Station, Coal fired power plant  
Kusile, South Africa

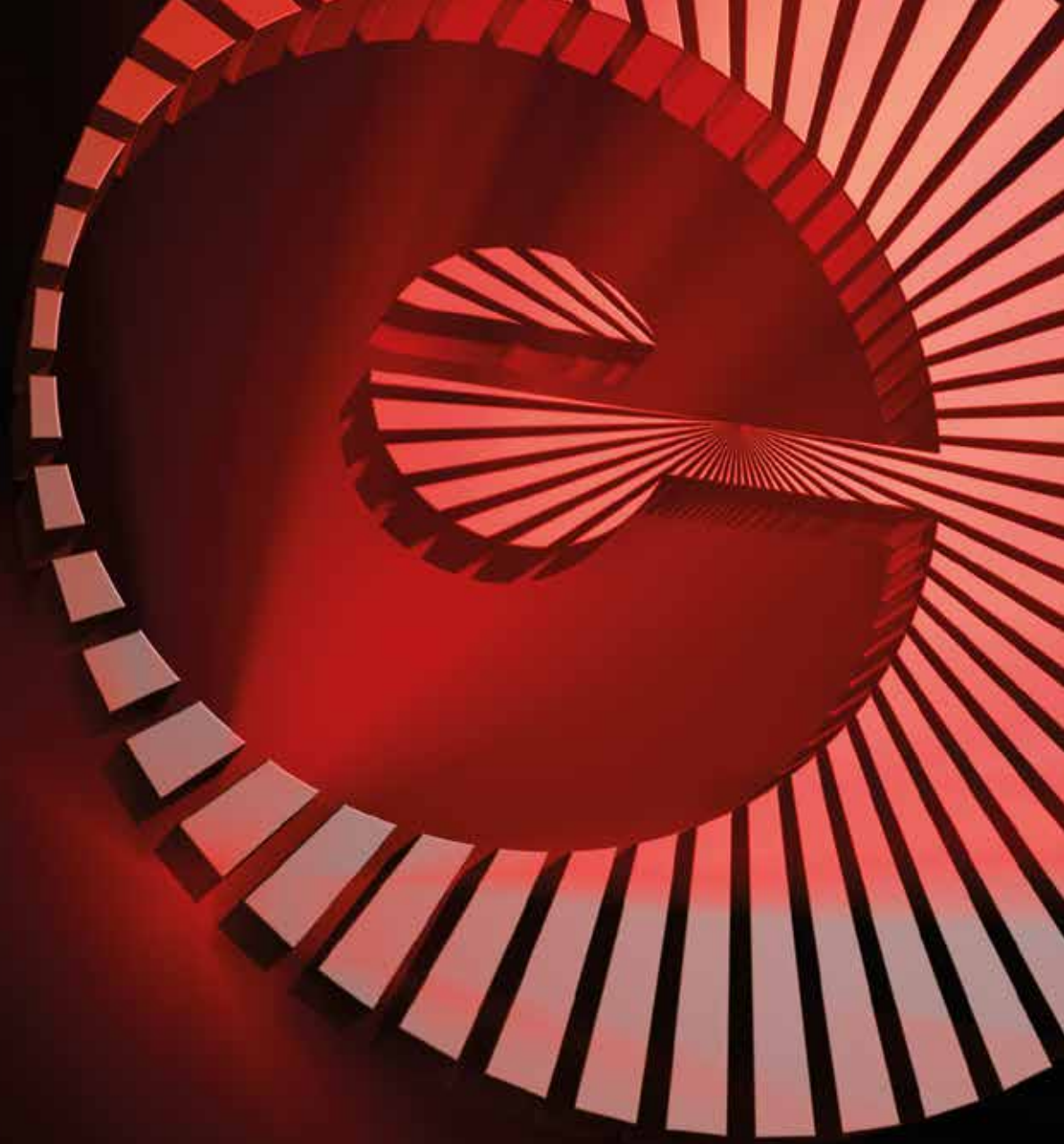


NOOR I, Solar power plant  
Ouarzazate, Morocco

***To protect the environment and to  
provide an economic solution for  
energy saving ...***

***eltherm*** provides options to save energy  
and minimize consumption with smart  
monitoring and process control concepts!





**eltherm®**  
innovations in heat tracing



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