



# Line Type Heat Detectors SecuriSens LIST and d-LIST

Company Presentation and System Overview



For your safety

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# LIST

## Linear Sensing of Temperature

### for special environmental conditions

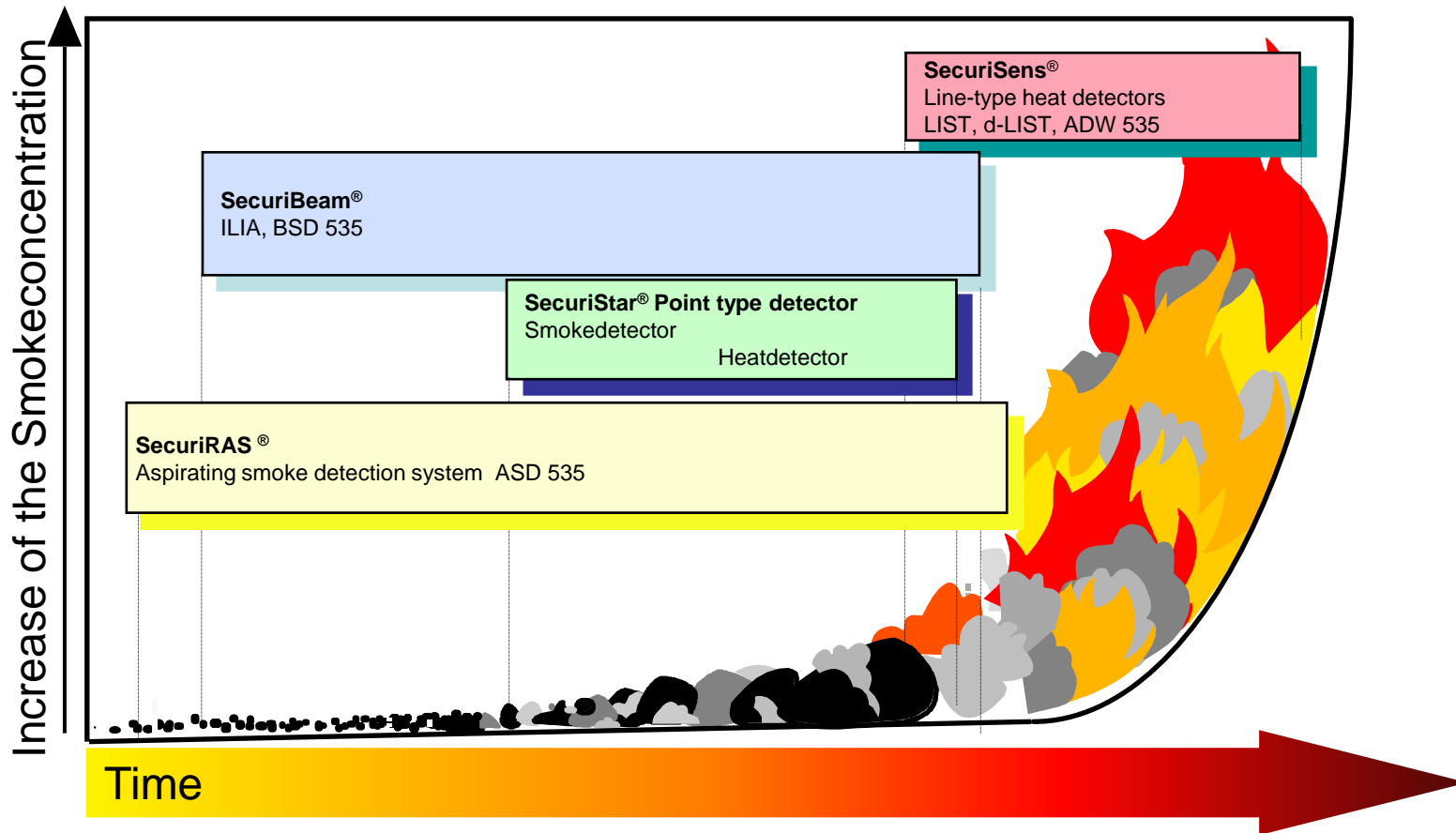
# Content

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- **Detection Properties**
- **The company and its history**
- **The cable – the idea**
- **The products SCU 800 / SEC 15 & LISTcontroller / SEC 20**
- **Signalling, special features and accessories**
- **Maintenance and service**
- **Certificates**

# Detection Properties

## Sensitivity survey of fire detectors



# History Listec

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- 1990 Foundation of MüTec GmbH, in Neubiberg
- 1999 Move to Isen, about 40 km east of Munich
- 2000 Change of the company's name to LISTEC® GmbH
- 2000 .. First installations in ..2002 Asia, North Africa, South America
- 2003 LISTEC certified according to ISO 9001-2000
- 2009 First installations in Australia
- 2010 20 years LISTEC - a company can celebrate its birthday!
- 2014 Securitas Member of the Swiss Securitas Group



# History Cable

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- 1983 The first electric cable with sensors for temperature measurement is presented as a 15-core prototype.
- 1986 Surveillance of several kilometers of district heating pipelines with 8-core-cable
- 1988 Installation of the first LIST sensor cable (8-core-flat) for fire detection
- 1990 Development and production of a round 4-core sensor cable.
- 1996 The 100th km LIST sensor cable was installed
- 1999 Development of a round, 2-core sensor cable (SEC 15)



# History Cable

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- 2000 Successful completion of fire tests with wind speed up to 10 m/s in tunnels
- 2001 Installation of the first redundant systems
- 2006 1.000.000 meters of LIST sensor cable for security worldwide
- 2008 Presentation and installation of the new LISTcontroller
- 2010 1.500.000 meters of LIST sensor cable in total
- 2013 LIST installations on all continents

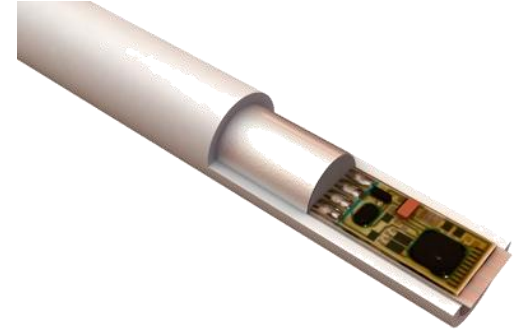


# System Overview Listec

## Tunnel system

### LIST (LIST controller / SEC 20):

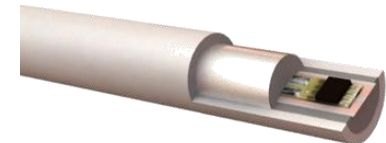
- Up to 350 sensors, 3200 m
- Branch or loop-System
- Detection all 10 sec
- Branching possible
- Destroyed sensor doesn't stop the System



## Industrial system

### d-LIST SCU 800 / SEC 15):

- Up to 2 x 99 sensors, 2 x 250 m
- Detection all 10 sec
- Branching possible
- Destroyed sensor doesn't stop the System

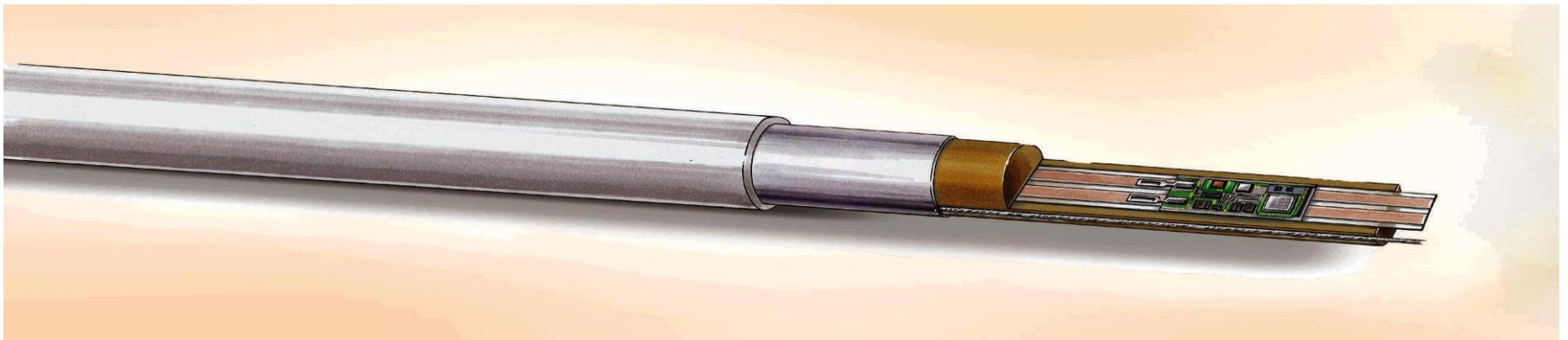




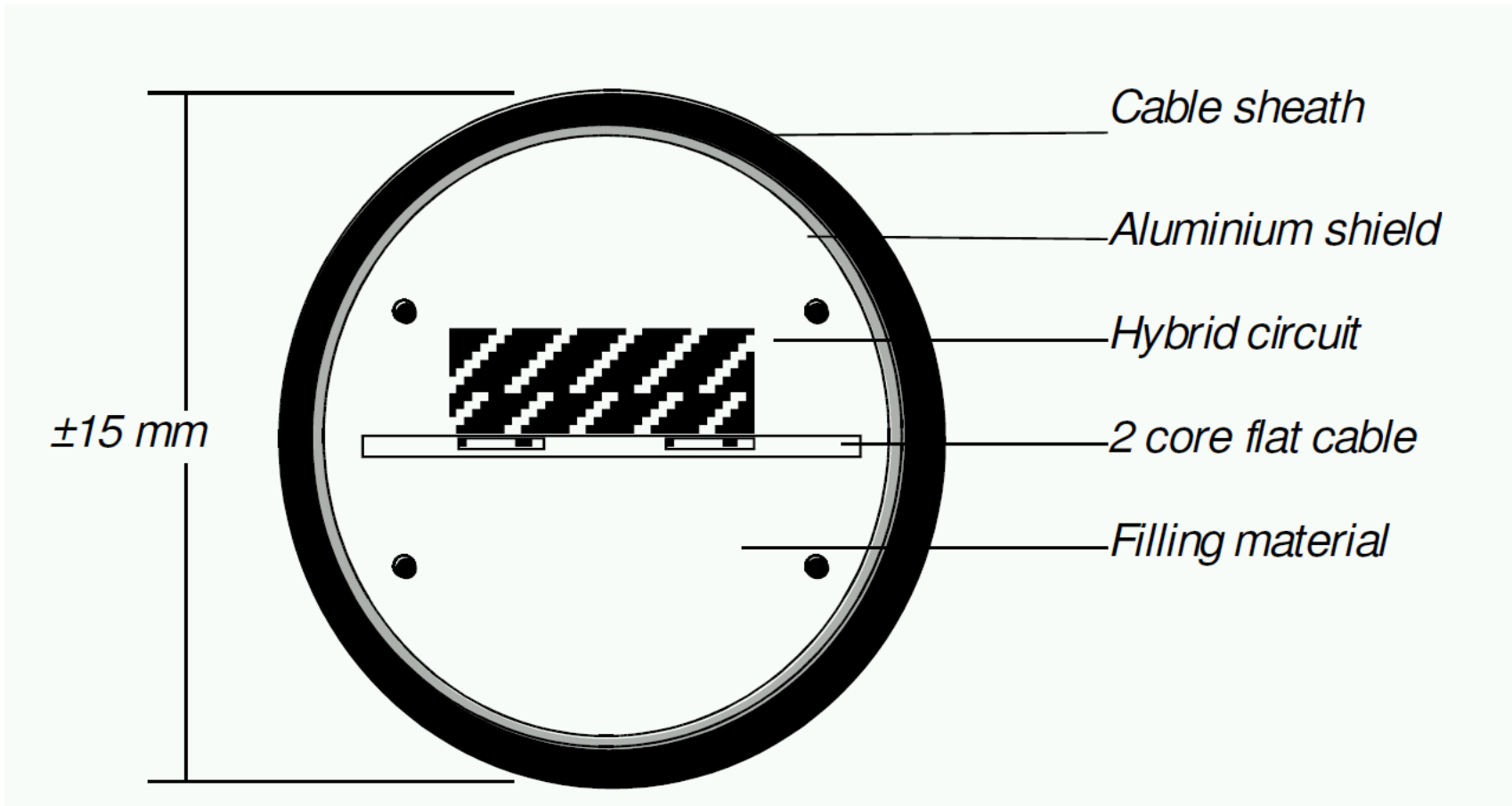
# Sensor cable SEC 15

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- Measures temperature from -40 to +85°C ( for short periods +120)
- With a 0.1°C resolution
- Freely selectable sensor spacing
- Simple installation and mounting
- Completely shielded against external influences
- Maintenance free
- Automatic control of all sensors every 10 seconds
- Certified through VdS as a class A1 detector (EN 54-5)



# Cable construction

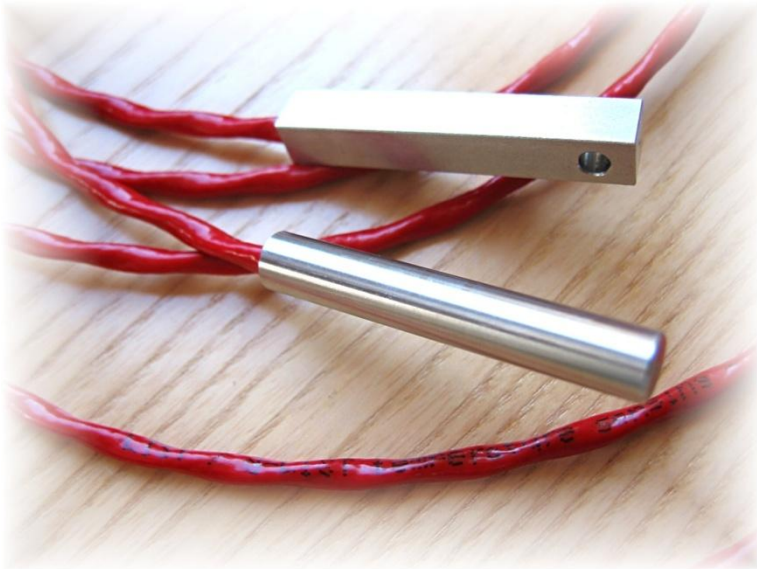


# Control Unit SCU 800

- Central supervisory element
- Cyclic addressing of the connected sensors ( 10 sec.)
- Freely selectable alarm thresholds
- Absolute and differential thresholds possible
- Cable length maximum **2 x 250 meter**
- For maximum **2 x 99 sensors**
- Aluminium housing
- Serial interface with open data protocols
- GL-certified for ship application



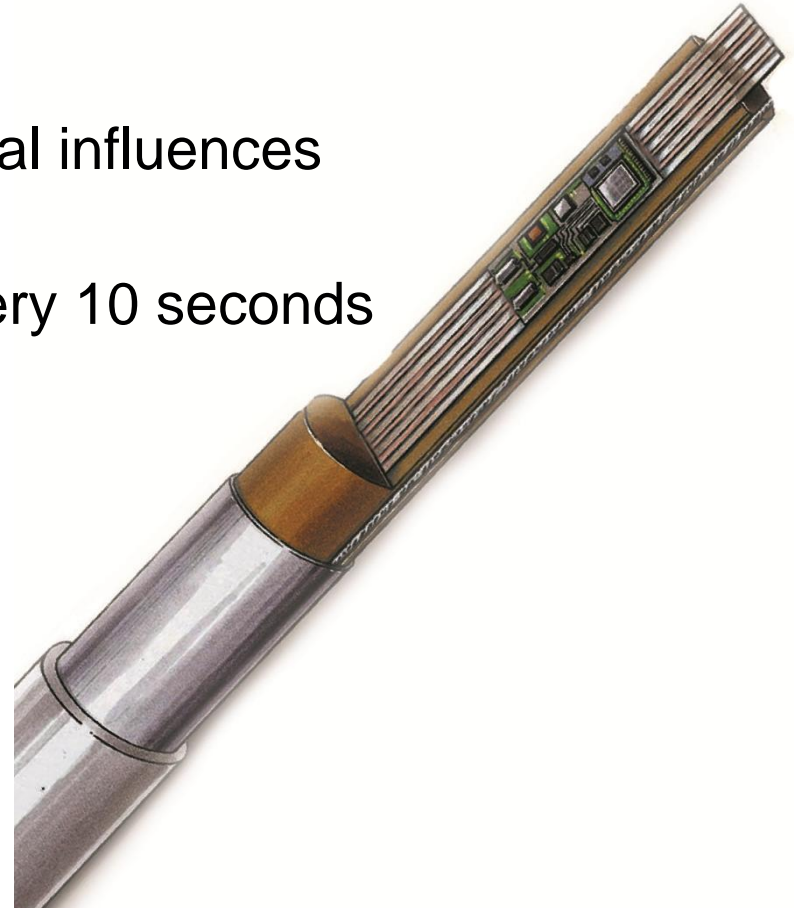
## Special d-LIST feature: External sensors in metal housing



# Sensor cable SEC 20

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- Measures temperature from -40 to +85°C ( for short periods +200)
- With a 0.1°C resolution
- Freely selectable sensor spacing
- Bi-directional bus, easy branching
- Completely shielded against external influences
- Maintenance free
- Automatic control of all sensors every 10 seconds
- Certified through VdS as a class A1 detector (EN 54-5)



# Control Unit, LISTcontroller

## A new generation of sensor control units:

- One or two sensor cable may be connected Recurring measurement accuracy of  $\pm 0.1^\circ$
- **2800m** of sensor cable with **350 sensors** or **3200m** and **320 sensors** maximum
- Measuring cycle: 10 sec
- Up to 254 alarm zones programmable
- Clear text display
- Navigation and function keys
- USB host interface



# LISTcontroller Key points

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- Commissioning via web interface
- Configuration down load from memory stick
- Software Update with memory stick
- Automatic switching summer / winter time
- SNTP time synchronization
- Temperature storage in case of an alarm

## **Data protocols:**

- MODBUS TCP with 4 connections
- IEC 60870-5-104
- Simatic 3964 R
- Protocol test implemented

# LISTcontroller Key points

## Commissioning via web interface

Software-Version: V01.20.20.06.13  
IP-Adresse: 192.168.1.120  
Protokolltyp: MODBUS ser. + TCP  
Gerätename: V01.20 - MKON394  
Gerätetyp: RDT-controller A

**LISTEC** GmbH  
Lineare Sensor Technik

Anlage in Ordnung  
» Menü «

**Startseite**  
**Status**  
Sensorkabel  
Controller  
Protokoll-Test  
Relais  
Kommunikation  
Störung  
Listen  
**Revision/Abschaltung**  
**Inspektion/Wartung**  
Wartungsdatei  
System Info

**Logout**  
(Login Ebene 2)  
Rücksetzen

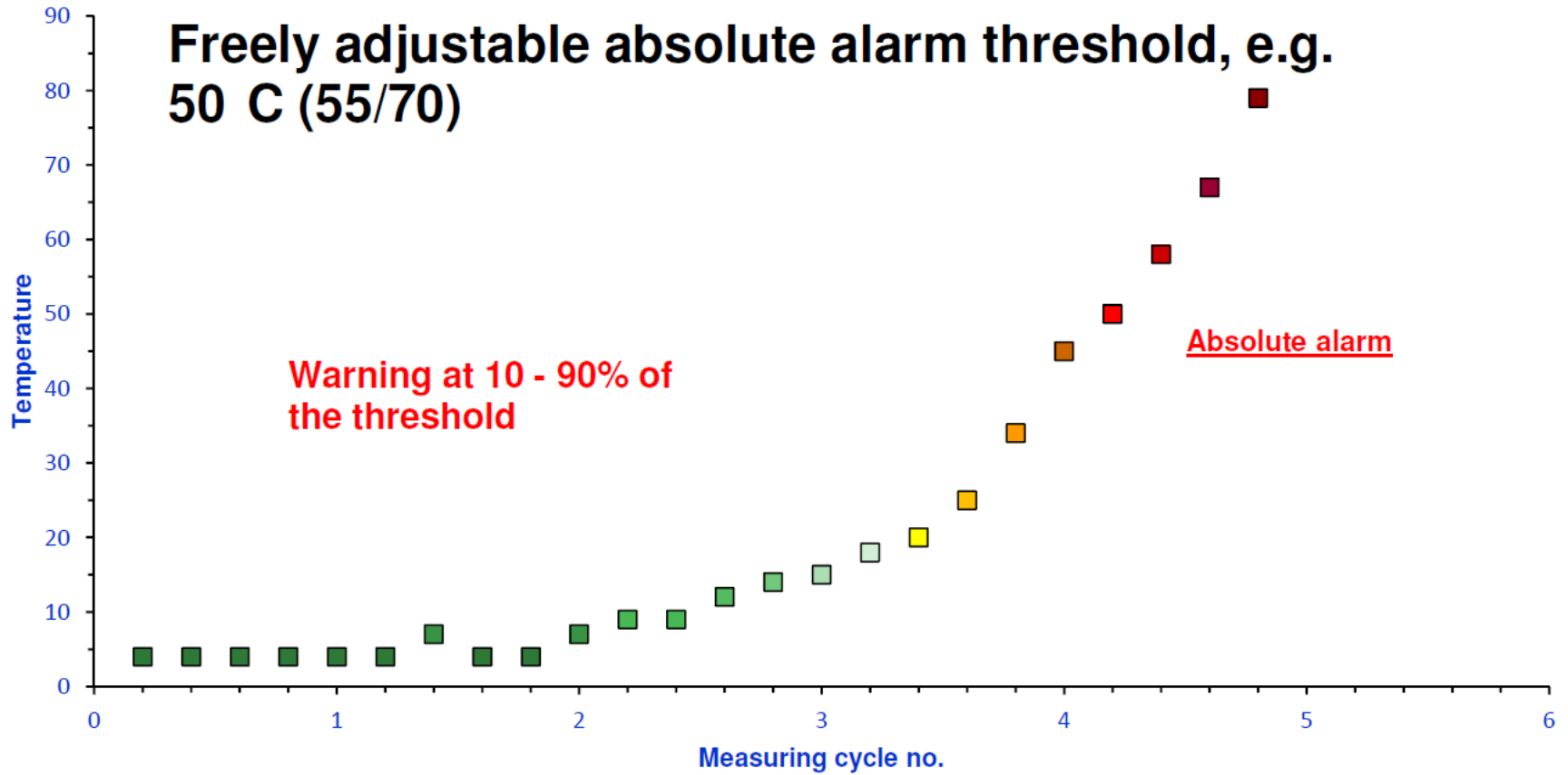
20.06.2013

**Status » Sensorkabel**

Abschnitt Nummer	Messstellen von	Messstellen bis	T-Max.	T-Dif.	T-Frost	
1	1	50	55.0 °C	2.5 °	-40.0 °C	
2	51	100	55.0 °C	2.5 °	-40.0 °C	OK
3	101	150	55.0 °C	2.5 °	-40.0 °C	
4	151	200	55.0 °C	2.5 °	-40.0 °C	
Alle:			°C	°	°C	OK

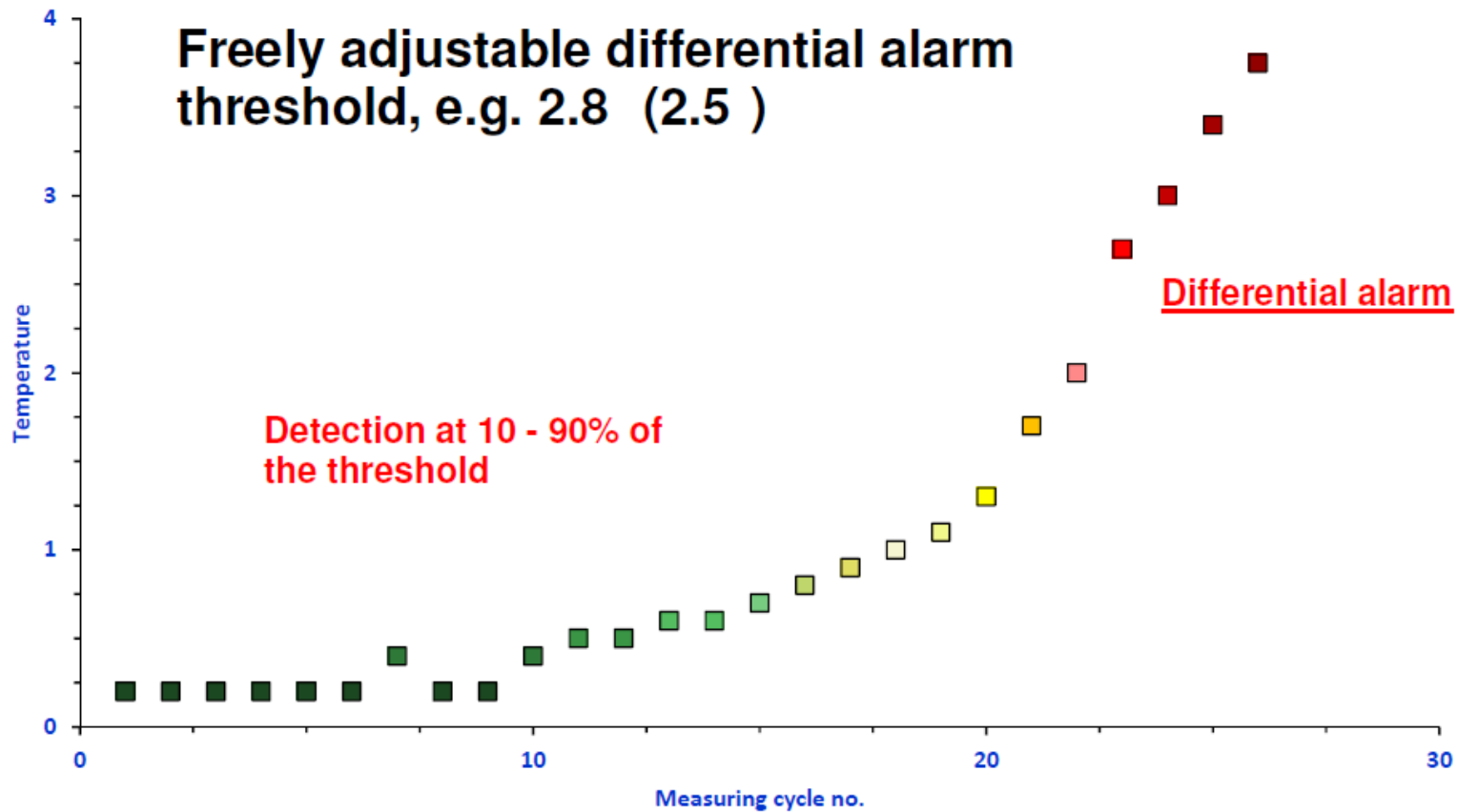


# Maximum alarm



## Maximum alarm

# Differential alarm



## Differential ( $\Delta T$ ) alarm

## **Each LIST control unit has:**

- Common alarm relay (SCU 800: 2x)
- Common fault relay
- External Reset

## **The LISTcontroller has in addition to that:**

- Pre-alarm relay
- Frost-alarm relay

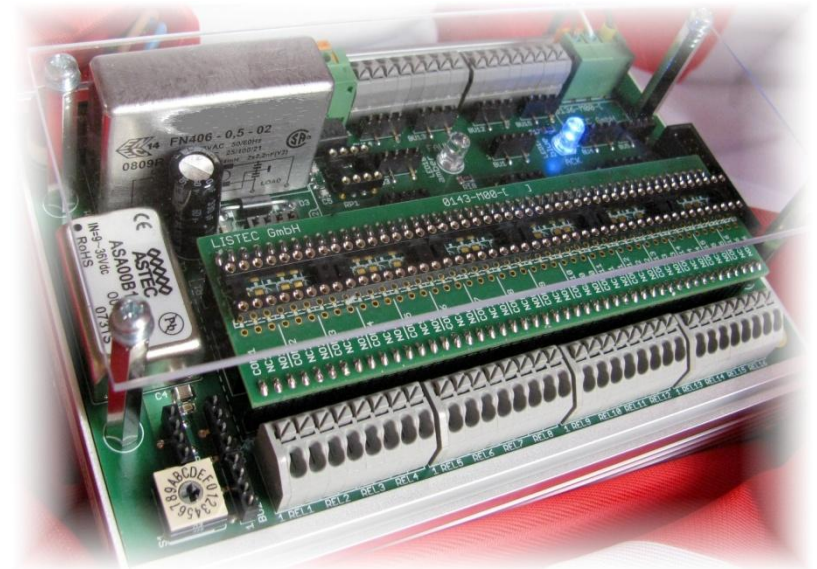
# Signalling

## SCU 800 also available with 16 alarm relays for:

- Alarm per zone
- Pre-alarm per zone
- Fault per zone

## The LISTcontroller uses RELMOD relays modules for:

- Alarm per zone
- Pre-alarm per zone
- Fault per zone



## **Each LIST control unit has an:**

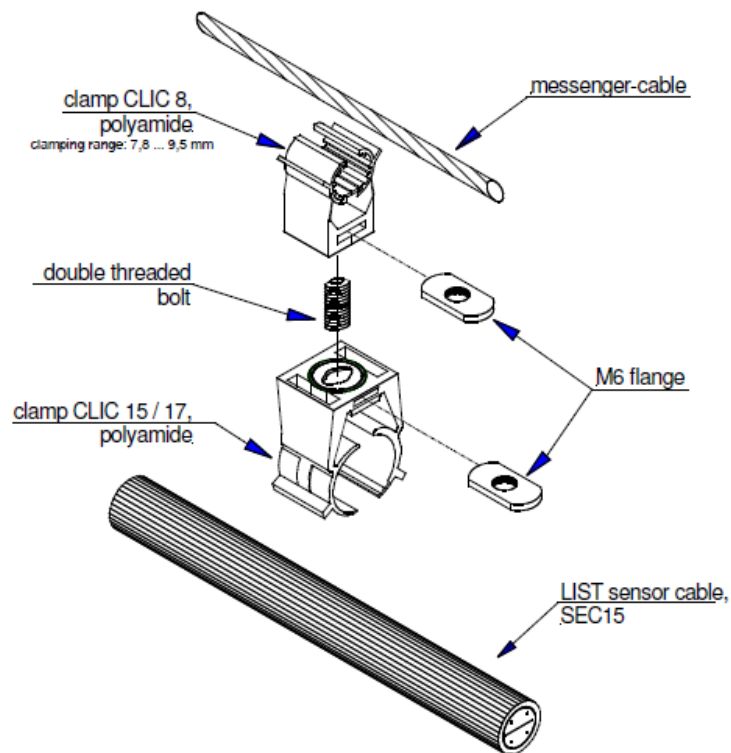
- RS 232 interface (programming and data communication with MODBUS protocol)
- RS 485 (LIST network master/slave)

## **The LISTcontroller has in addition to that:**

- Ethernet for LIST network and data communication with MODBUS TCP  
IEC 60870-5-104

# Installation material

**SEC20**



**SEC15**

**MDS20**

(flange: galvanized)

**MDS25**

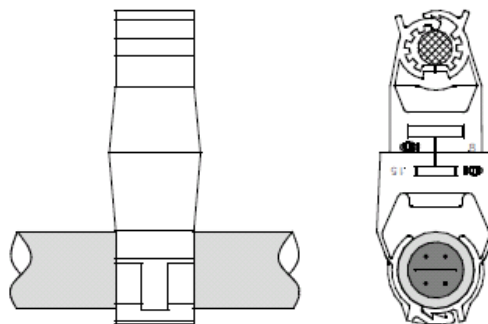
(flange: stainless steel)

**MDS10**

(flange: galvanized)

**MDS15**

(flange: stainless steel)



## **Sensor cable:**

- maintenance-free
- can be repaired, if damaged

## **Control units:**

- without components of reduced life time
- no batteries
- no regular calibration

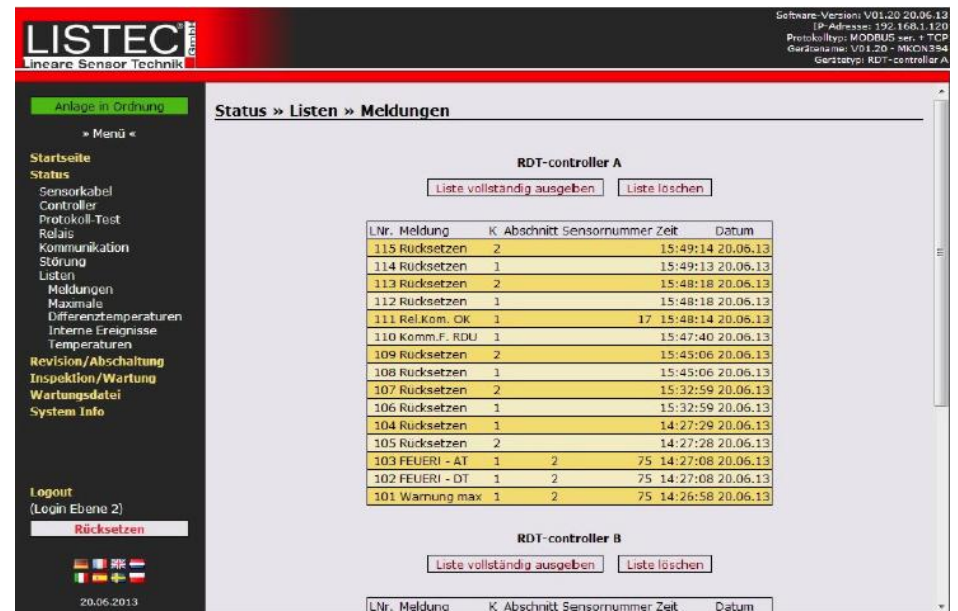
# Maintenance & Service

## Inspection & maintenance:

- check of the internal list of messages
- adaptation of alarm thresholds (if applicable)
- check of all signalling lines

## LIST controller:

- remote access via Ethernet with web-browser



The screenshot displays the LISTEC web interface. The top header includes the LISTEC logo and version information: 'Software-Version: V01.20 20.06.13', 'IP-Adresse: 192.168.1.150', 'Protokolltyp: MODBUS ser. + TCP', 'Geräteartname: V01.20 - MICON394', and 'Geräteart: RDT-controller A'. The main content area is titled 'Status » Listen » Meldungen' and shows a table of messages for 'RDT-controller A'. The table has columns for 'L.Nr.', 'Meldung', 'K', 'Abschnitt', 'Sensornummer', 'Zeit', and 'Datum'. The messages are listed as follows:

L.Nr.	Meldung	K	Abschnitt	Sensornummer	Zeit	Datum	
115	Rücksetzen	2			15:49:14	20.06.13	
114	Rücksetzen	1			15:49:13	20.06.13	
113	Rücksetzen	2			15:48:18	20.06.13	
112	Rücksetzen	1			15:48:18	20.06.13	
111	Rel.kom. OK	1	17		15:48:14	20.06.13	
110	komm.F. RDU	1			15:47:40	20.06.13	
109	Rücksetzen	2			15:45:06	20.06.13	
108	Rücksetzen	1			15:45:06	20.06.13	
107	Rücksetzen	2			15:32:59	20.06.13	
106	Rücksetzen	1			15:32:59	20.06.13	
104	Rücksetzen	1			14:27:29	20.06.13	
105	Rücksetzen	2			14:27:28	20.06.13	
103	FEUER! - AT	1	2		75	14:27:08	20.06.13
102	FEUER! - DT	1	2		75	14:27:08	20.06.13
101	Warnung max	1	2		75	14:26:58	20.06.13

Below the table, there are buttons for 'Liste vollständig ausgeben' and 'Liste löschen'. The interface also shows a sidebar with navigation options like 'Anlage in Ordnung', 'Startseite', 'Status', 'Sensorkabel', 'Controller', 'Protokoll-Test', 'Relais', 'Kommunikation', 'Störung', 'Listen', 'Meldungen', 'Maximale Differenztemperaturen', 'Interne Ereignisse', 'Temperaturen', 'Revision/Abschaltung', 'Inspektion/Wartung', 'Wartungsdatei', 'System Info', 'Logout (Login Ebene 2)', and 'Rücksetzen'. The date '20.06.2013' is displayed at the bottom of the sidebar.



# Certificates

- Quality Management System ISO 9001/2008
- VdS Approval Production
- VdS Approval Line Type Heat Detector
- Tunnel Approval high wind speed

**VdS** **Certificate**

VdS Schadenverhütung  
confirms the application of a  
quality management system  
for

**LISTEC** GmbH  
Lineare Sensor Technik  
Am Sandberg 34, 84424 Isen  
Tel. 08083/5385-0, Fax. -20

Certificate No.	No. of pages	Valid from	Valid to
S 803040	1	23.06.2009	22.06.2012

Scope of the certificate

Design, manufacturing, sales, commissioning and service  
of cable based sensor systems as well as training of handling,  
commissioning and service of cable sensor systems

**DIN EN ISO 9001**  
Quality management systems  
Requirements  
Edition December 2008

Quality manual of the holder of the approval

Köln (Cologne), 29.05.2009

**D** **A** **R**  
TGA-ZM-03-02-00  
Managing Director

*Schüling*  
Schüling  
Head of the VdS Certification Body

*pps. Urban*  
pps. Urban  
Head of the VdS Certification Body

VdS Schadenverhütung GmbH  
Zertifizierungsbüro  
Am Sandberg 34, 174  
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a company of the Gesamtverband  
der Deutschen  
Versicherungsunternehmen e. V.  
(GDV)  
accredited for the certification of  
Quality Management Systems by  
the Trägergemeinschaft für  
Attestierung (TGA)

# Applications



# Applications Tunnels

Applications

## LIST Sensor Cable Systems

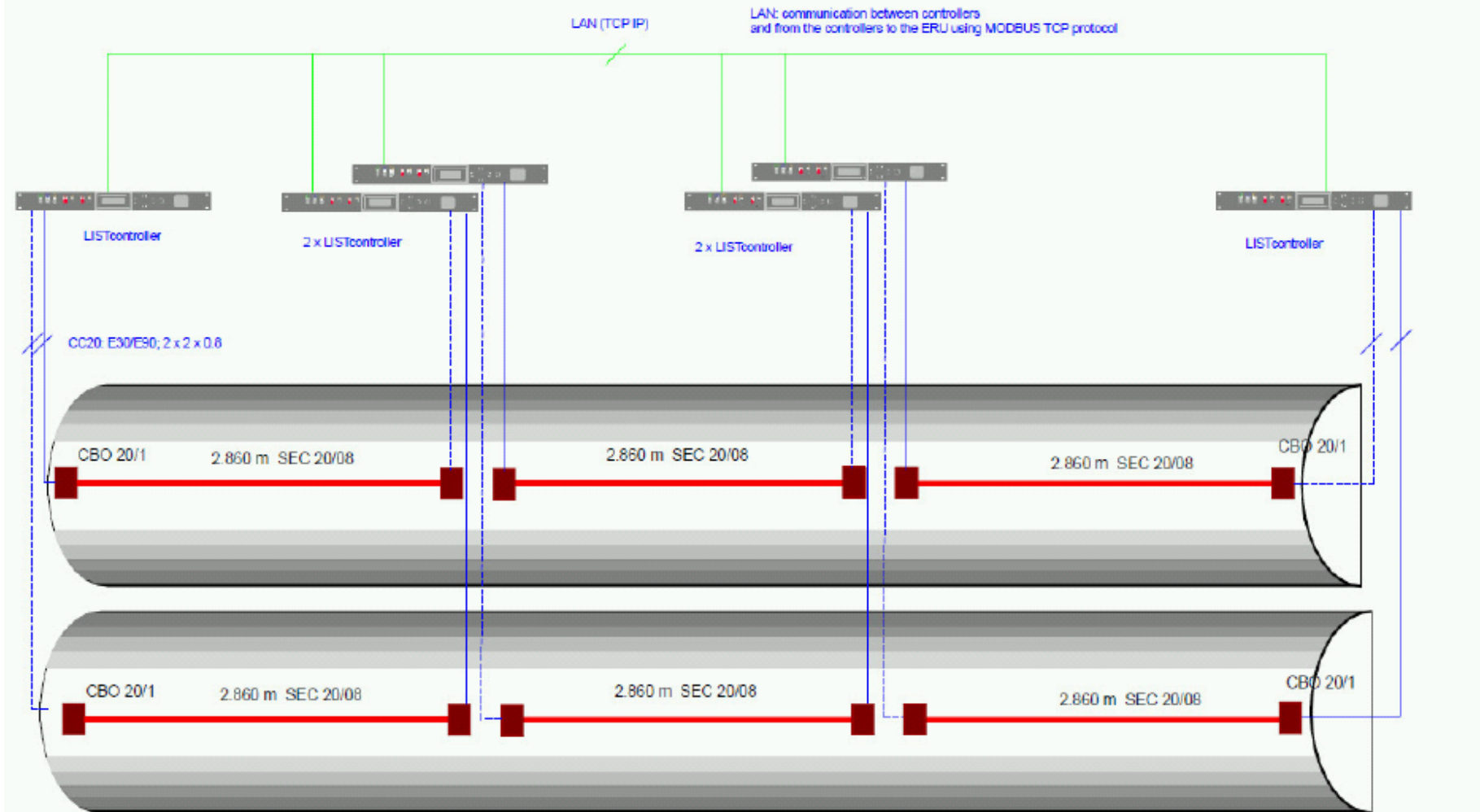
Tunnels



# Examples Tunnel

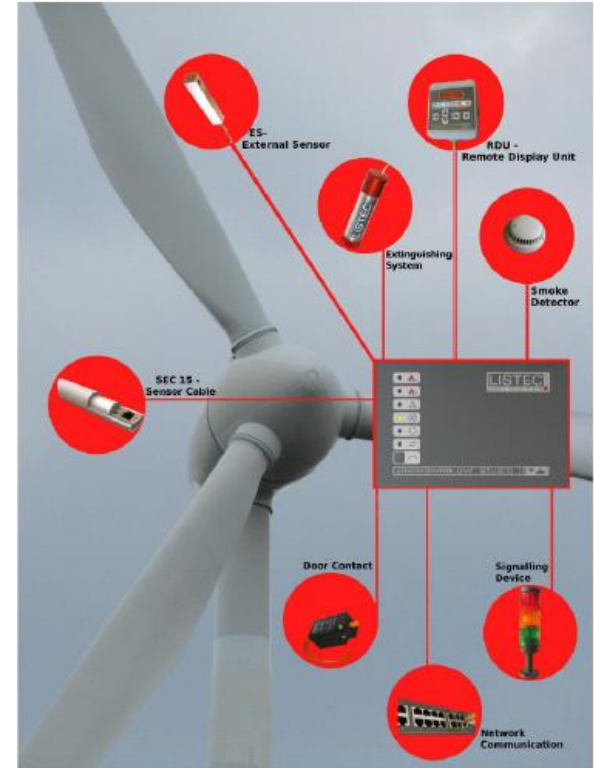
## Configurations

## LIST Sensor Cable Systems



# Wind power stations

## Monitoring temperatures in wind power stations



# LTHD by Securiton – the ideal addition

