



DEHN + SÖHNE



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Surge Protection: Safety for Sewage Plants.

DEHN – Competent in Lightning and Surge Protection.

Surges interfere processes.
Sewage Plants are a decisive part of the treatment of water as a resource. With a chain of mutually dependent processes, they manage to filter the toxic substances bound in the dirty wastewater and regain drinking water.

For the process control various measuring and analysis procedures are applied, which in turn require extensive technology. Damage to this equipment can interfere the process sustainably and even lead to a threat to the environment. Therefore, its availability deserves high priority.

Sensitive parts like the power supply as well as the measuring and control installations of sewage plants can be hit by direct lightning strikes and surges caused by close or distant lightning strikes or switching operations.

More Information Material

I would like to have more information material about the following topics:

- Main Catalogue "Surge Protection"
- Main Catalogue "Lightning Protection"
- DS 647E: Surge Protection
"Safety for your data networks"
- DS 663E: Surge Protection
"Safety for your measuring and control system"
- DS 649E: "Surge Protection – Easy Choice"
- Please arrange for a visit of one of your Sales Engineers (by appointment)

Name

Company

Address

Country

Phone / Fax

eMail

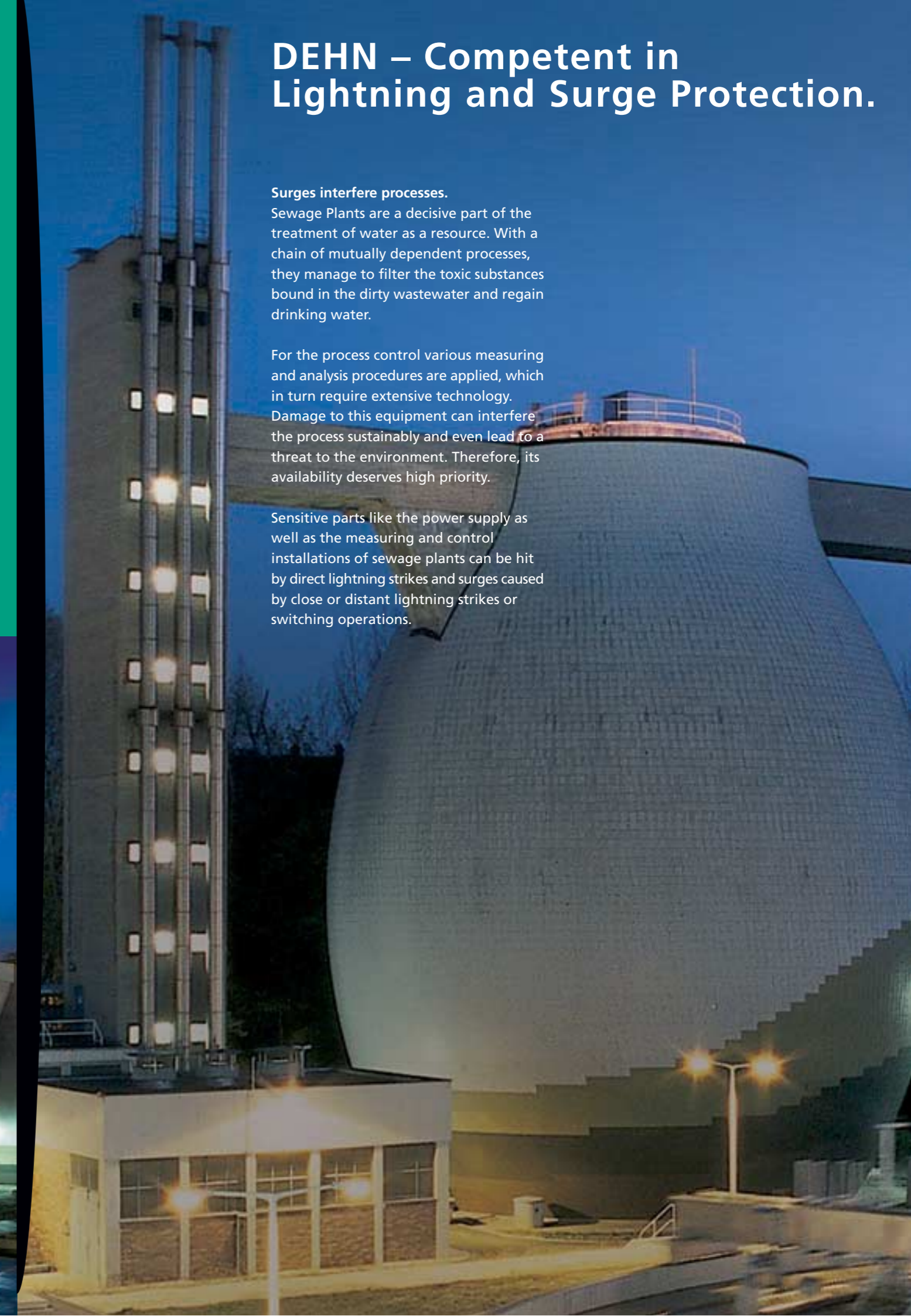
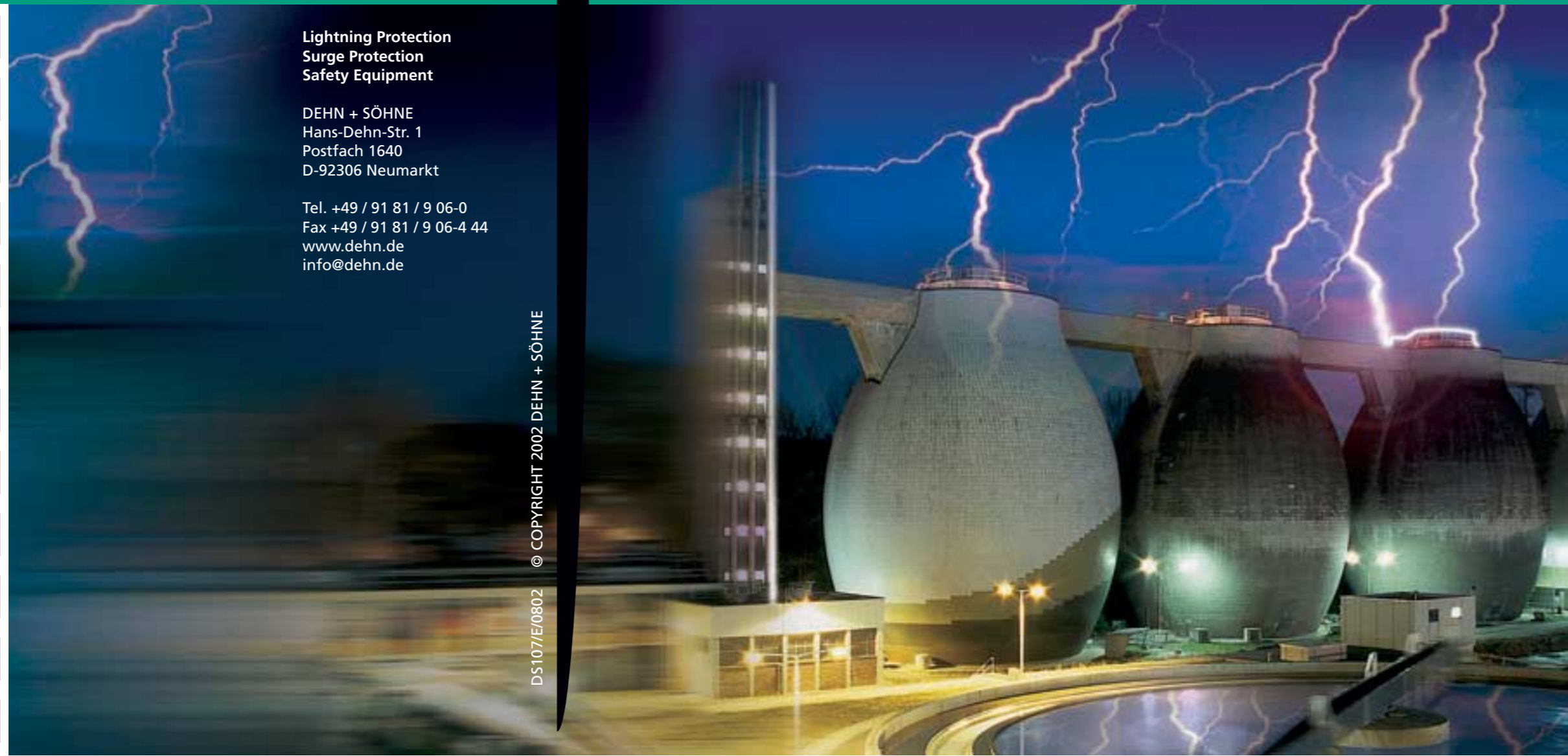
Please fill in and send to us!

Lightning Protection
Surge Protection
Safety Equipment

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DEHN – Lightning and Surge Protection for Sewage Plants from One Expert.

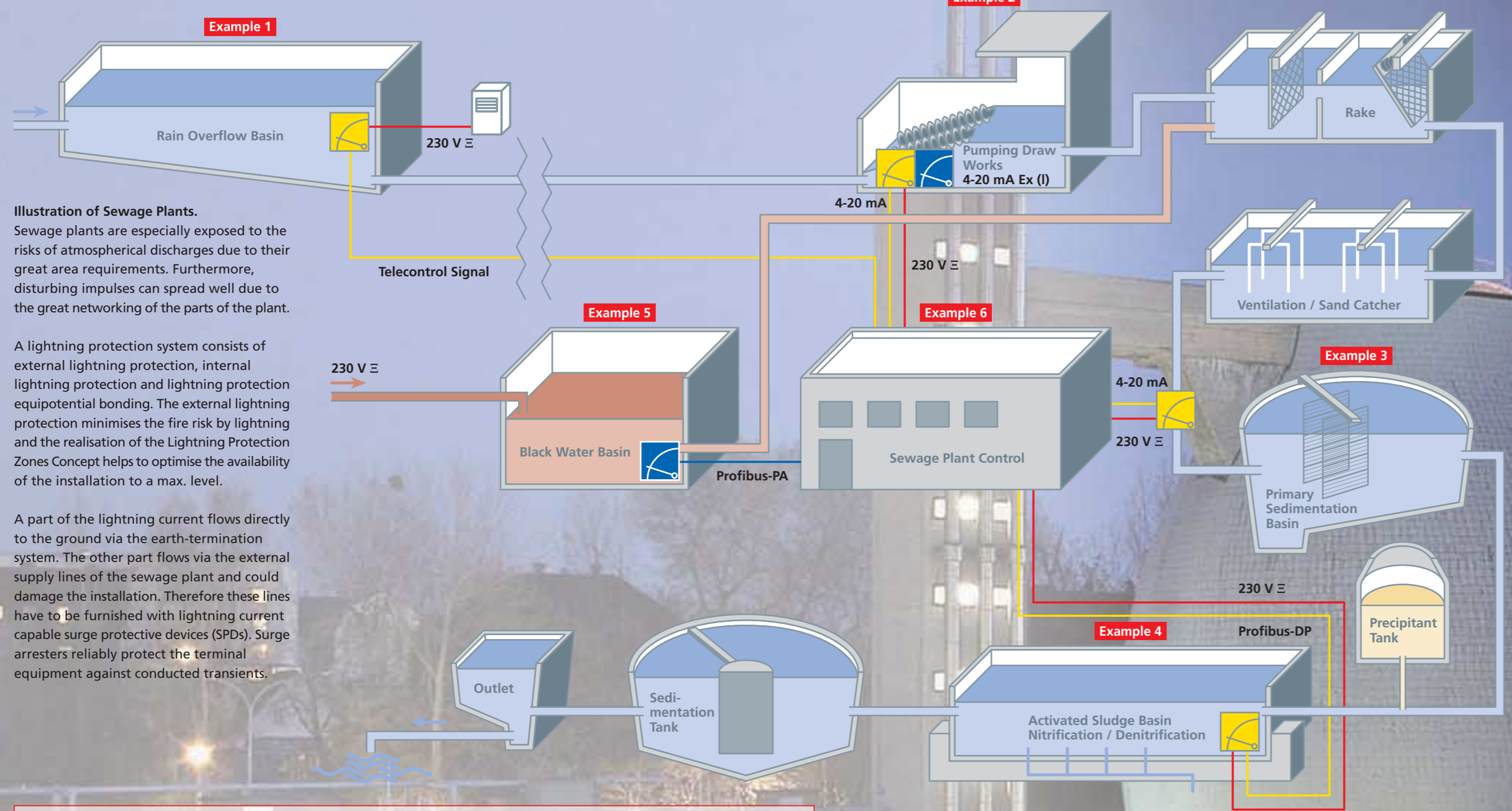


Illustration of Sewage Plants.
Sewage plants are especially exposed to the risks of atmospheric discharges due to their great area requirements. Furthermore, disturbing impulses can spread well due to the great networking of the parts of the plant.

A lightning protection system consists of external lightning protection, internal lightning protection and lightning protection equipotential bonding. The external lightning protection minimises the fire risk by lightning and the realisation of the Lightning Protection Zones Concept helps to optimise the availability of the installation to a max. level.

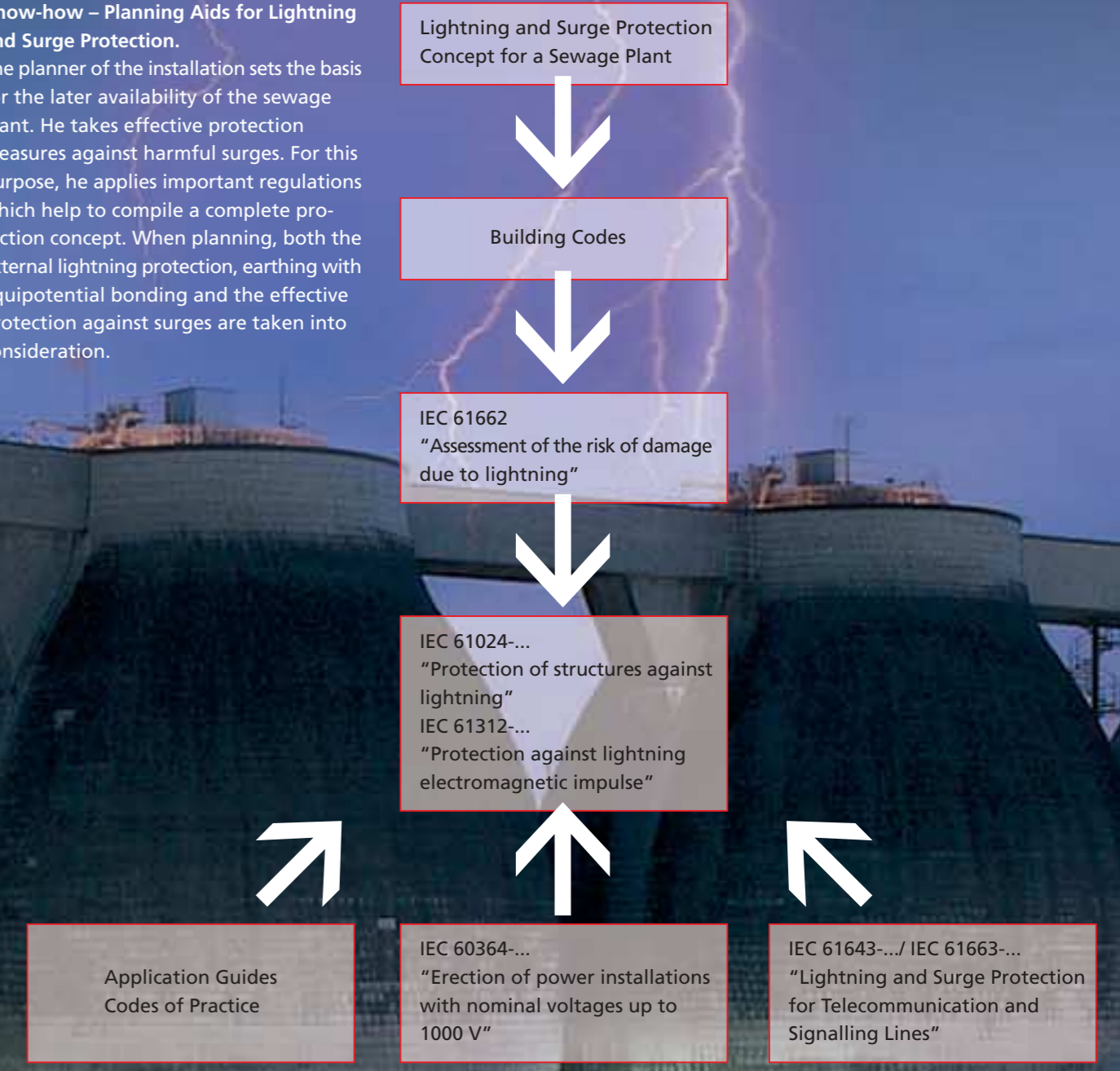
A part of the lightning current flows directly to the ground via the earth-termination system. The other part flows via the external supply lines of the sewage plant and could damage the installation. Therefore these lines have to be furnished with lightning current capable surge protective devices (SPDs). Surge arresters reliably protect the terminal equipment against conducted transients.

Example for an Intermeshed Earth-Termination System.
It is recommended to establish a lightning protection equipotential bonding system for each part or building of the plant. Intermeshing these installations reduces conducted partial lightning currents among the parts of the plant. Capable surge arresters minimise the damage due to surges.

For the earth termination system the following standards have to be observed:

- IEC 61312-...: "Protection against lightning electromagnetic impulse"
- prEN 50114: "Materials and size requirements for earth electrodes from the corrosion point of view"

Know-how – Planning Aids for Lightning and Surge Protection.
The planner of the installation sets the basis for the later availability of the sewage plant. He takes effective protection measures against harmful surges. For this purpose, he applies important regulations which help to compile a complete protection concept. When planning, both the external lightning protection, earthing with equipotential bonding and the effective protection against surges are taken into consideration.



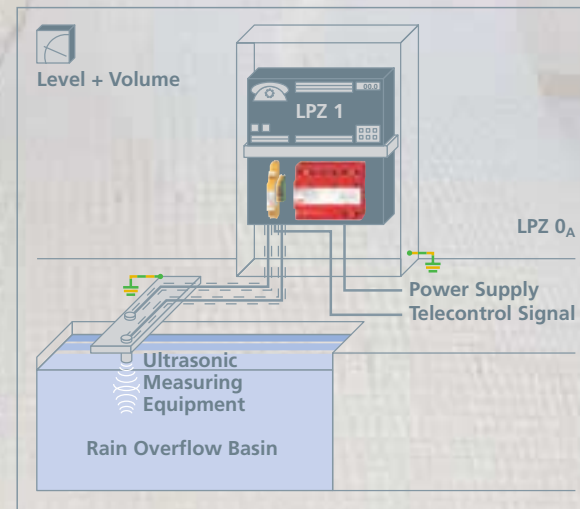
Solutions for Measuring Points.



Example 1: Telecontrol Signal and Power Supply

Lightning and Surge Protection of the Level and Spill Volume Measuring Equipment at the distant Rain Overflow Basin.

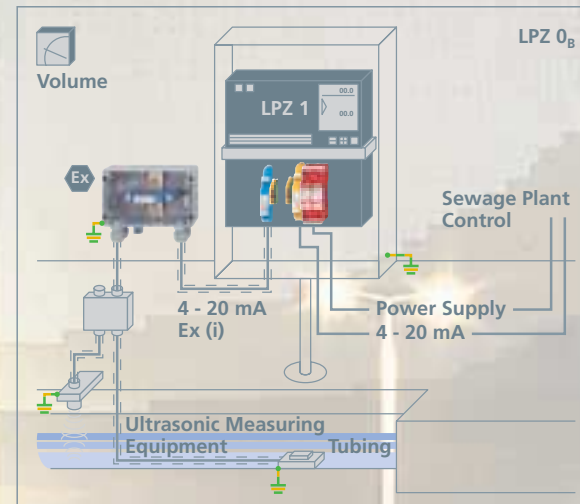
- Both-side shield earthing of the short lines from the measuring transformer to the ultrasonic sensors
- Measuring data transmission to the sewage plant control via telecontrol
- Powering carried out directly by the power authority
- Installation of combined lightning current capable SPDs for the power and telecontrol technology with a voltage protection level appropriate for terminal equipment and min. need in space



Example 2: 4-20 mA and Power Supply (not Ex) and 4-20 mA Ex (i)

Surge Protection of the Sewer Network Flow Measuring Equipment.

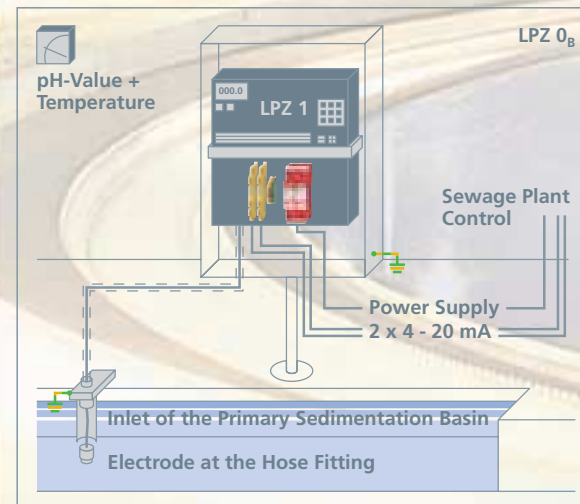
- In the Ex-Zone both-side shield earthing of the short lines from the measuring transformer to the ultrasonic sensors
- In case of spacial separation of the measuring transformer and the active barrier, surge arresters in Ex (i)-version have to be installed at both ends of the connecting cable
- In the non-Ex-zone, surge arresters are sufficient for the 4-20 mA signal and the power supply



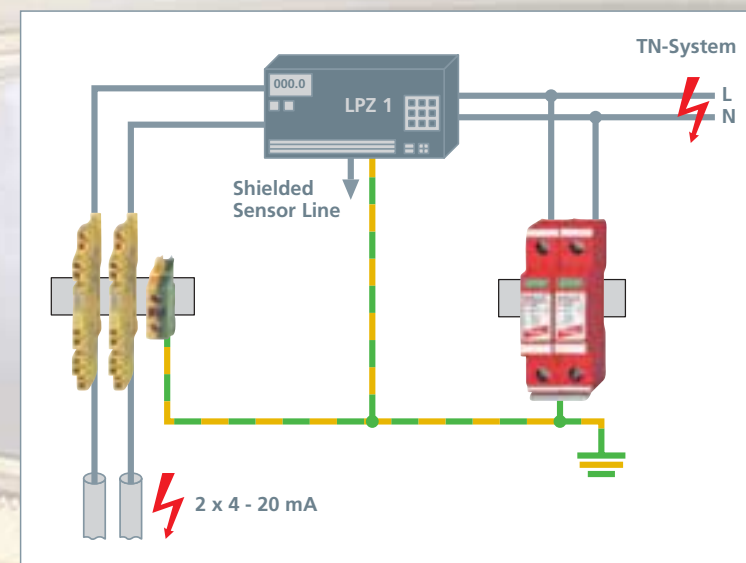
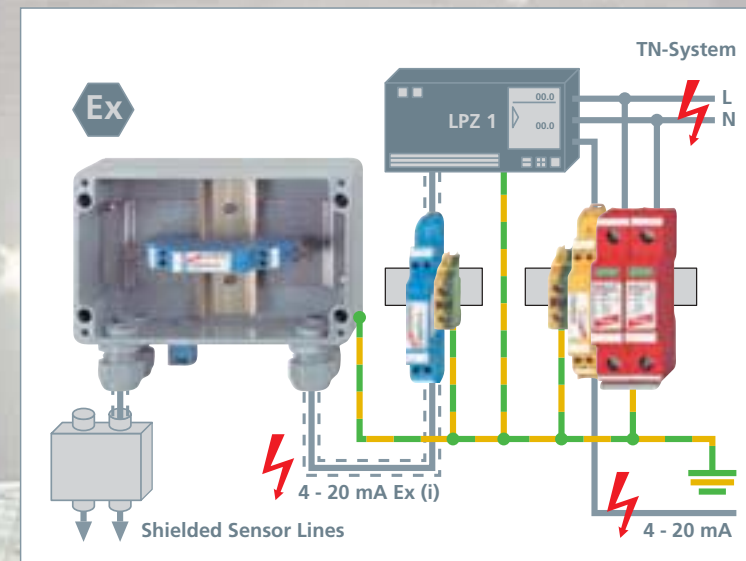
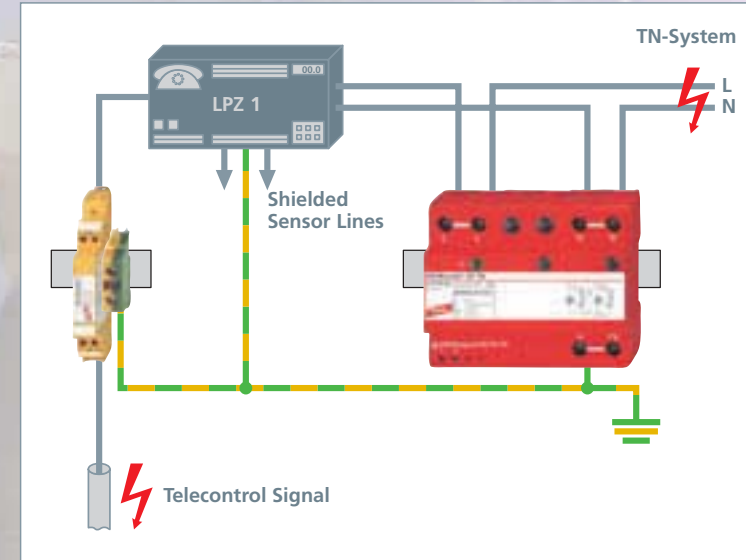
Example 3: 2 x 4-20 mA and Power Supply

Surge Protection of the pH- and Temperature Measuring Equipment.

- Both-side shield earthing of the line from the measuring transformer to the electrode at the hose fitting
- The pH-value and temperature are transmitted to the sewage plant control as two independent 4-20 mA signals
- Power supply of the sewage plant control
- For the lines to the sewage plant control surge arresters are used



LPZ = Lightning Protection Zone



Example 1:

- 1 x BLITZDUCTOR® CT BD 110 Part No. 919 506 + 919 647
Combined SPD, 2-part unit, Coordination Characteristics XX/2
- 1 x DEHNventil® 2P TT 255 Part No. 900 370
Combined SPD with Operating Voltage Indication for TT-Systems or
- 1 x DEHNventil® 2P TN 255 Part No. 900 371 (for TN)
Combined SPD with Operating Voltage Indication for TN-Systems
- 1 x SLK 16 Part No. 910 099
Accessories - PE Terminal

Example 2:

- 1 x BLITZDUCTOR® CT ME 30 Part No. 919 506 + 919 524
SPD, 2-part unit, Coordination Characteristics X/1
- 2 x BLITZDUCTOR® CT MD EX 30 Part No. 919 506 + 919 581
PTB 99 ATEX 2092 II 2 (1) G Eex ia IIC T6, FISCO
- 1 x ALGA 5 X Part No. 906 058
Accessories - Aluminium Enclosure, IP 65, sealable
- 4 x EFK BCT Part No. 919 508
Accessories - EMC-Spring Terminal for Shield Connection
- 2 x SLK 16 Part No. 910 099
Accessories - PE Terminal
- 2 x DEHNguard® T 275 Part No. 900 650
SPD Class II, pluggable
- 1 x MVS 1 4 Part No. 900 610
Accessories - Busbar for DEHNguard®

Example 3:

- 2 x DEHNconnect RK ME 30 Part No. 919 921
SPD, width: 6 mm, Coordination Characteristics X/1
- 1 x AD DCO RK GE Part No. 919 979
Accessories - Covering Plate for DEHNconnect RK
- 1 x SLK 16 Part No. 910 099
Accessories - PE Terminal
- 2 x DEHNguard® T 275 Part No. 900 650
SPD Class II, pluggable
- 1 x MVS 1 4 Part No. 900 610
Accessories - Busbar for DEHNguard®

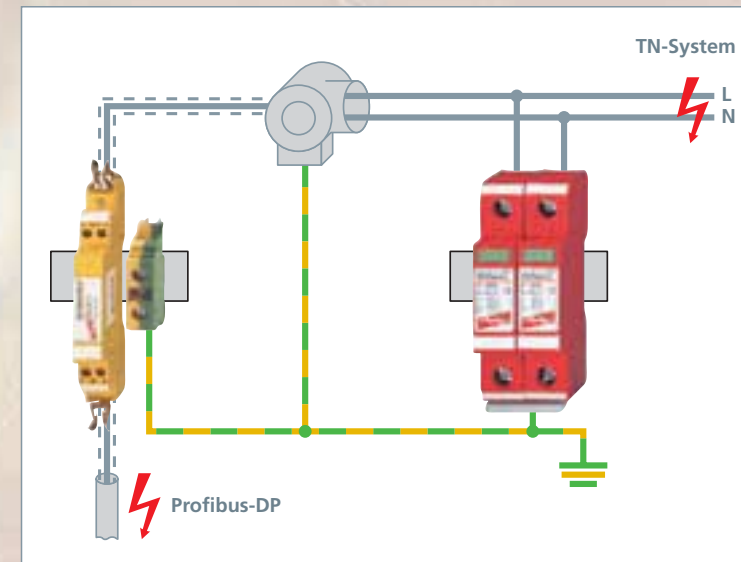
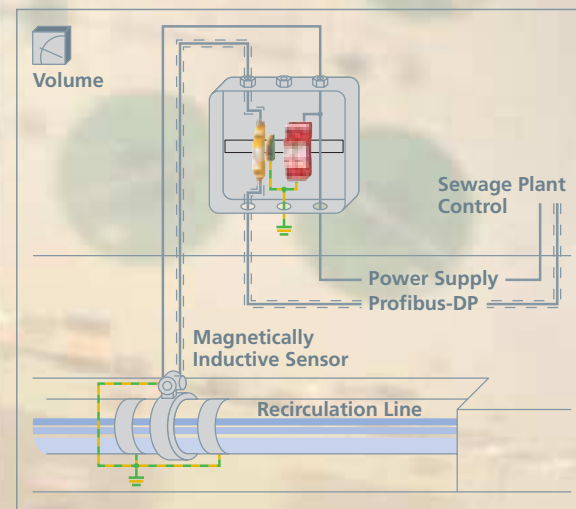
Solutions for Measuring Points.



Example 4: PROFIBUS-DP and Power Supply

Surge Protection of the Flow Measuring Equipment.

- Magnetically inductive sensor with PROFIBUS-DP- and power supply connection
- Installation of the SPD immediately close to a distribution board
- The shield of the bus cable has to be led continuously and earthed at low impedance both at the sensor and the SPD
- For the bus line and the power supply, surge arresters are applied



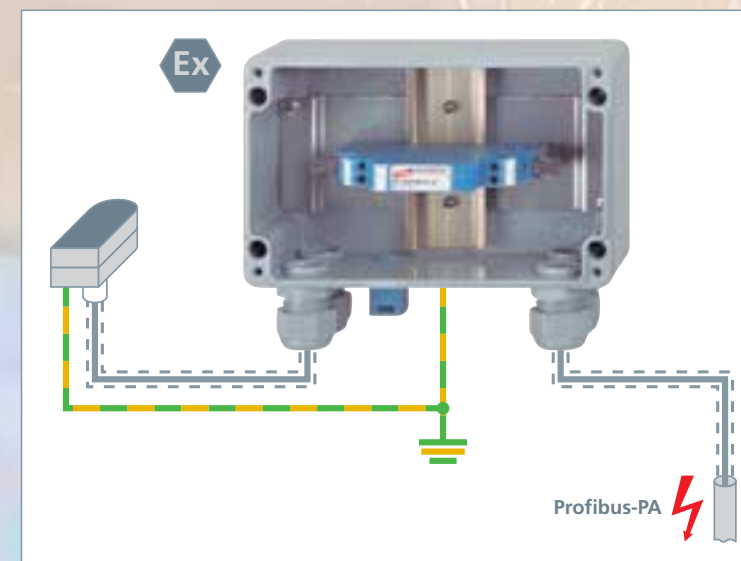
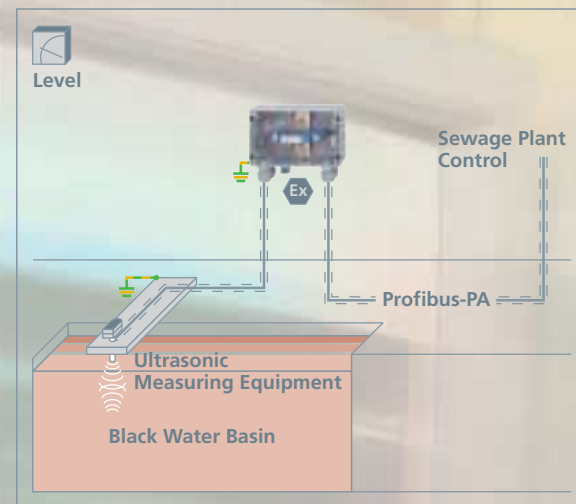
Example 4:

- 1 x BLITZDUCTOR® CT MD HF 5 Part No. 919 506 + 919 570
SPD, 2-part unit, Coordination Characteristics X/1, 12 Mbit/s
- 2 x EFK BCT Part No. 919 508
Accessories - EMC-Spring Terminal for Shield Connection
- 1 x SLK 16 Part No. 910 099
Accessories - PE Terminal
- 2 x DEHNguard® T 275 Part No. 900 650
SPD Class II, pluggable
- 1 x MVS 1 4 Part No. 900 610
Accessories - Busbar for DEHNguard®

Example 5: PROFIBUS-PA Ex (i)

Surge Protection of the Level Measuring Equipment.

- The level measuring sensor in the Ex-Zone is connected with the sewage plant control via an intrinsically safe PROFIBUS-PA
- As there is no external power supply, only the bus connector has to be protected
- SPDs in Ex (i)-versions have to be installed in metal enclosures upstream the measuring sensor
- The shield of the bus cable has to be led continuously and earthed at low impedance both at the sensor and the SPD



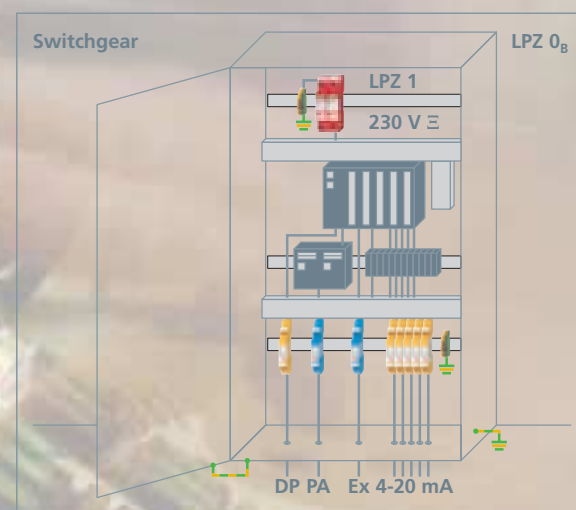
Example 5:

- 1 x BLITZDUCTOR CT® MD EX 30 Part No. 919 506 + 919 581
PTB 99 ATEX 2092 II 2 (1) G Eex ia IIC T6, FISCO
- 1 x ALGA 5 X Part No. 906 058
Accessories - Aluminium Enclosure, IP 65, sealable
- 2 x EFK BCT Part No. 919 508
Accessories - EMC-Spring Terminal for Shield Connection

Example 6: Switchgear with Programming Logic Control (PLC)

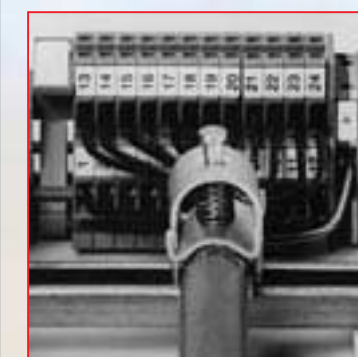
Surge Protection of the Sewage Plant Control.

- Lines between parts of the plant have to be protected with the same SPDs as the connected measuring points
- At the entry of the switchgear the cable shields have to be earthed at low impedance and lines have to be equipped with SPDs
- The SPDs have to be installed properly in order to avoid installation mistakes
- If lightning current arresters for the service systems are installed centrally, e.g. in the main distribution board, the switchgears have only to be equipped with surge arresters
- Building internal lines of the sewage plant control have also to be integrated in the protection concept



LPZ = Lightning Protection Zone

Further products for the application environment:



Shielding Terminal



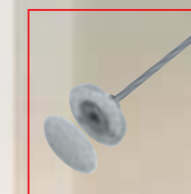
DEHnrail
for Power Supply
24 V up to 230 V



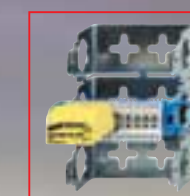
DEHNguard®
TNC / TNS / TT
multi-pole for
three-phase
systems



BLITZDUCTOR® VT
for 4-wire interfaces



Fixed Earthing
Terminal



DEHNrapid® in
space-saving rct-
Version



Earthing Busbar