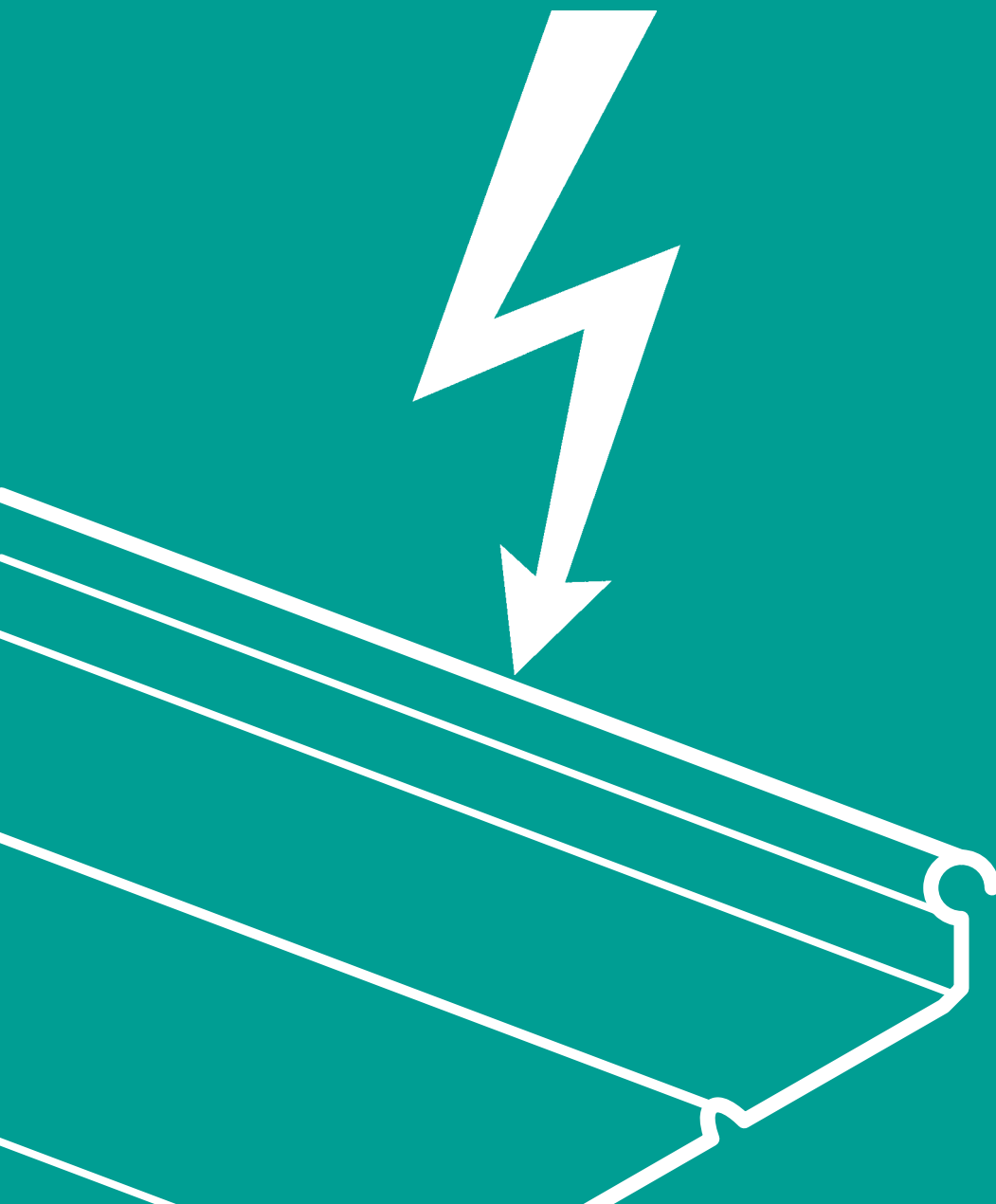

Kalzip® as a lightning conductor

Aluminium profiled sheets provide lightning protection



Lightning conducting and protective screening of buildings

Kalzip® flexible in both form and function

Kalzip® aluminium roof and wall cladding systems have the flexibility to meet the architectural and technical requirements of all kinds of building – industrial, commercial, public and private. Whatever the size of the building or the design geometry, the innate versatility of both the material and the system engineering allows ever more adventurous architectural concepts to be executed with precision whilst at the same time offering high levels of performance. In addition, the Kalzip® system offers safe and effective protection against lightning strikes on the structure and protects against their electromagnetic

effect on both plant and equipment. Modern industrial plants, administration and financial centres are all dependent on electronic equipment such as:

- Communication systems connected to mains power supplies
- Computers and data networks
- Production control systems

It is essential that all such systems have protection against the electromagnetic effects of lightning.



Bosch industrial plant Bari/Italy, Robert Bosch GmbH

Lightning protection using Kalzip® aluminium profiled sheet envelopes

Economic and efficient protection against lightning strikes and their effects can be achieved by using Kalzip® systems:

- As a lightning arrest or conducting device to prevent lightning strikes affecting the structure
- As a protective screen to counter the electromagnetic effect of lightning strikes

When installing Kalzip® roof or wall cladding systems there is generally no need for dedicated or additional lightning protection devices. The calculated probability of structurally damaging lightning strikes is once in every 500 years. Such a strike hitting a Kalzip® clad building would cause, at worst, no more than a small hole in one of the sheet seams. Damage of this nature would lie above the line of weathering and could be easily sealed again with no risk of damage to either the sub-structure or to the rest of the Kalzip® cladding.

Kalzip® as a conductor of lightning

Kalzip® aluminium profiled sheets can be regarded as natural components of a lightning conducting system as per DIN EN 62305-3, as the crimped seams of the sheets give a permanent electric connection. An essential prerequisite is, of course, that the profiled sheets are conductively connected to earth. (Figure 1)

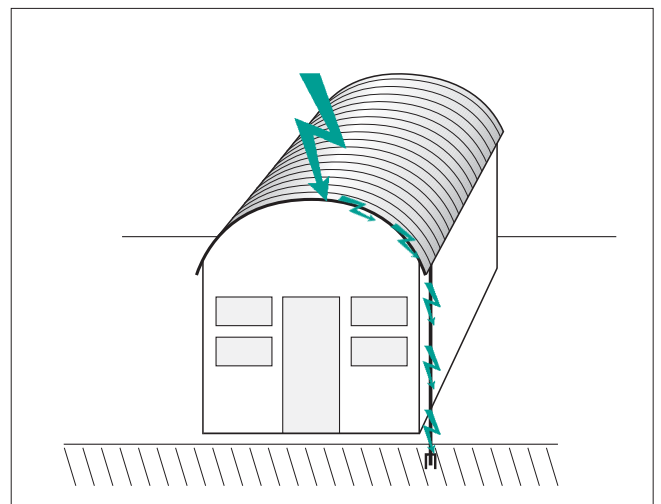


Figure 1. Kalzip® as a conductor of lightning

Technical requirements for lightning conducting devices

- The Kalzip® sheets must be conductively connected to earth
- The seams of the Kalzip® sheets must be fully zipped to ensure contact
- There must be conductive connection of the roof sheets to:
 - a conductive wall cladding (metal)
 - a steel or aluminium sub-structure
 - any concrete sub-structure must be reinforced

Note: construction details relating to these requirements should be checked with a lightning protection specialist.

Kalzip® as protective screening

If the complete building envelope consists of aluminium (Figure 2), i.e. Kalzip® systems used for both the roof and wall cladding, the envelope will halt and collect the electrical energy from lightning and safely conduct it to earth thereby preventing dangerous voltages from affecting the power supplies.

IT networks and electronic control systems connected to the mains power supplies will be safely protected from damage and in most instances there will be no need for additional protective devices.

For optimum screening, the Kalzip® profiled sheets right across the building envelope should each be conductively connected to earth and any larger openings in the building should be by-passed. Tests on Kalzip® installations have shown that, depending on the design of the screening, the electromagnetic field inside the system, corresponding voltages and strength of current, are reduced by a factor of more than 100.

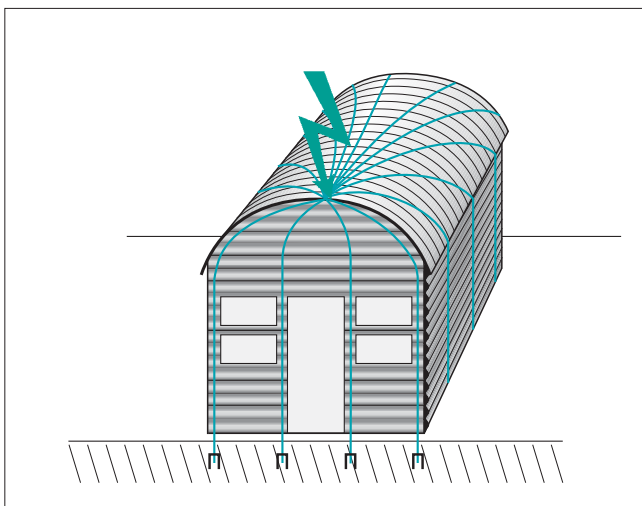


Figure 2. Kalzip® as protective screening

Technical requirements for protective screening

- The envelope of the building must be completely conductive at all points and connected to earth (Figure 3).
- Kalzip® must have a metal finish (stucco-embossed, AluPlusZinc® or mill finish).
- Where coated Kalzip® sheets are used:
 - the ST Clips must be secured to a metal substructure
 - on timber substructures, the ST Clips must be connected with aluminium strips (minimum 60 mm wide and 0.7 mm thick) below the sheeting.
- At the Interface between roof and walls, each and every profiled sheet must be connected using short aluminium strips (minimum 50 mm wide and 1.0 mm thick).
- Window openings should not exceed 1.5 m x 1.5 m. Larger openings must be by-passed using aluminium strips (minimum 50 mm wide x 1 mm thick) or must be connected to the wall substructure by means of aluminium frames, in which case no other conductive structural connections are required.

Note: construction details relating to these requirements should be checked with a lightning protection specialist.

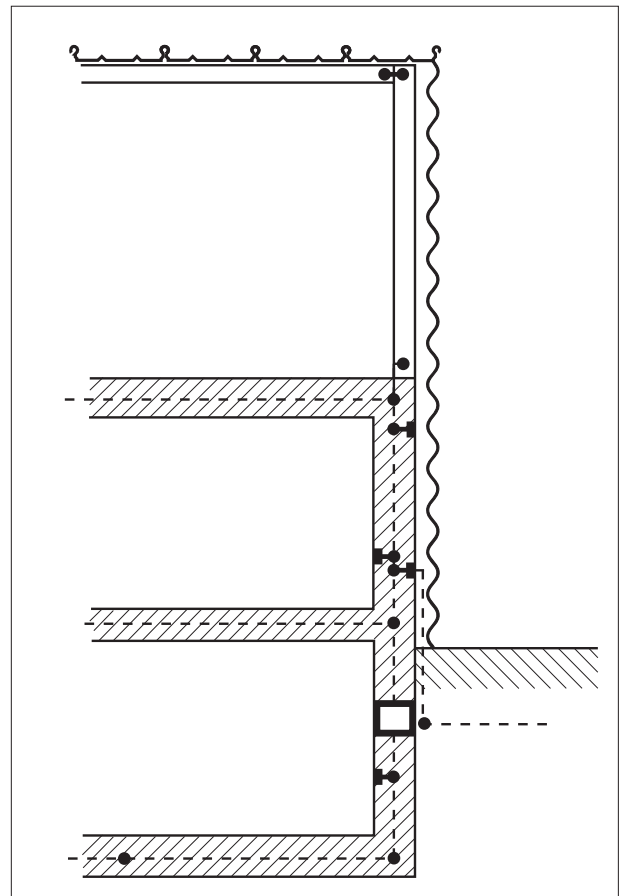


Figure 3. Cross section showing connection and earthing across the structure.

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