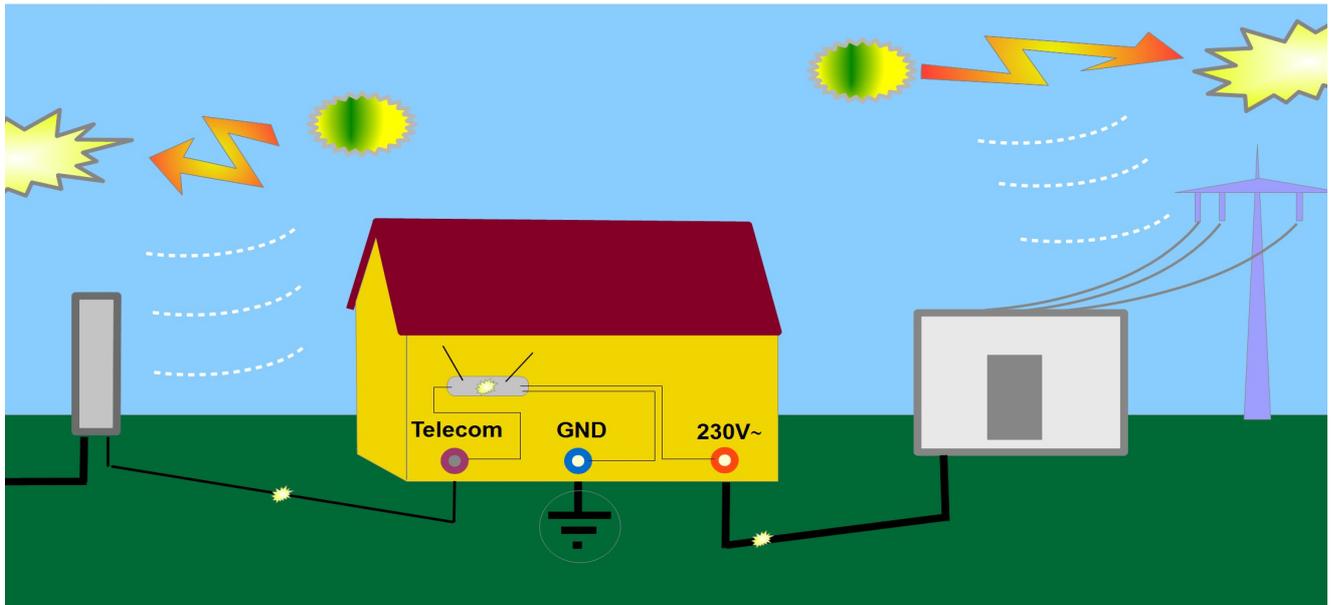


Achieving Certainty

Surge Protection Components
 are worn down by the steady exposure to electrical surges travelling through the
 electricity grid and the telephone network.

Visual inspection does not reveal their reliable function. Only electrical test does.

Today Buildings are connected to two networks, to the power grid and to telecoms network,
 which brings many advantages but as well involves some danger.



High voltage surges come online.

A common case:

A sophisticated system connected to the power grid and to telecoms network has been installed and approved. Everything is OK. During the next lightning season failures and service calls accumulate. Enforcedly, the system is fitted with surge protection. Everybody is content - at first. Some time later (approximately 2 years), trouble starts again.

Well-versed network operating companies

as EON or TELEKOM (formerly known as "Deutsche Bundespost") have experienced these problems for decades and have pursued straight strategies concerning maintenance. Many newcomers have to learn the hard way: Electrical nets are like a troubled sea with waves and interference voltages. Sometimes, especially during thunderstorms, electrical freak waves appear or even an electrical tsunami destroying all connected devices at a single stroke.

**Protective devices have a limited lifetime,
 which can be substantially reduced
 by heavy or frequent load.**

Maintenance has to make provisions against surge protection devices losing their protective function.

Different strategies

<p>Level 0: do nothing Protection devices once installed remain inside the system without any maintenance. Saving power is evidently part of human nature - mostly comes automatically. Besides high maintenance costs an unreliable and vulnerable system is not acceptable.</p>	<p>Level 3: Estimated overload The surge protection devices are exchanged in consequence of an estimated overload. Sensors acquire and assess the impacts of pulse loads. The easiest method is to use a fuse activating a LED or a signal contact. There are also sophisticated systems to collect peak currents.</p>
<p>Level 1: Repair Due to damages the surge protection devices involved will be exchanged. Avoiding repetitive damages there has to be a first damage to start action.</p>	<p>Level 4: Test The surge protection components are tested</p> <ul style="list-style-type: none">→ on the basis of an inspection schedule and→ after special incidents (heavy thunderstorms).
<p>Level 2: On schedule The surge protection devices are exchanged on a firm schedule. A lot of parts in good condition will be exchanged and some failures during operation will be recognized too late.</p>	<p>Appropriate equipment enables the operator to determine deviations which indicate a weakening of the component and it is possible to exchange the surge protection device before failure.</p>

Certainly, we recommend Level 4, provided that testing is possible at reasonable expense.

We (MIKRO-M GmbH) know **how to test** and provide appropriate **devices** for testing surge protection.

When testing of electrical appliances is on schedule, it's a good time to check transient protection as well.

The final decision on the strategy implemented will be taken by the user after analysing his costs and risks.

Often small additional efforts help to reduce high risks and resulting costs.

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