

Did it strike ?



Jomitek energy

We know, when the lightning strikes any tall building.

Vision for lightning is important to reduce damage on technical installations in wind turbines, antenna systems and meteorological measurement stations.

If you want to know about lightning strokes into specific buildings, use the Jomitek lightning sensor system.

By use of a lightning sensor you will

- Reduce damage on the technical installation by immediate action
- Obtain full understanding of the relation between lightning and damage

For wind turbines the immediate action could be automatic stop of the individual turbine, reduced interval of inspection, inspection of the wings etc.

Lightning sensor requirements

- Detection of all lightning shocks, big and small
- Full function during general power failure
- No detection by high generator current
- Only detection of direct strikes into the individual tower
- Very reliable construction

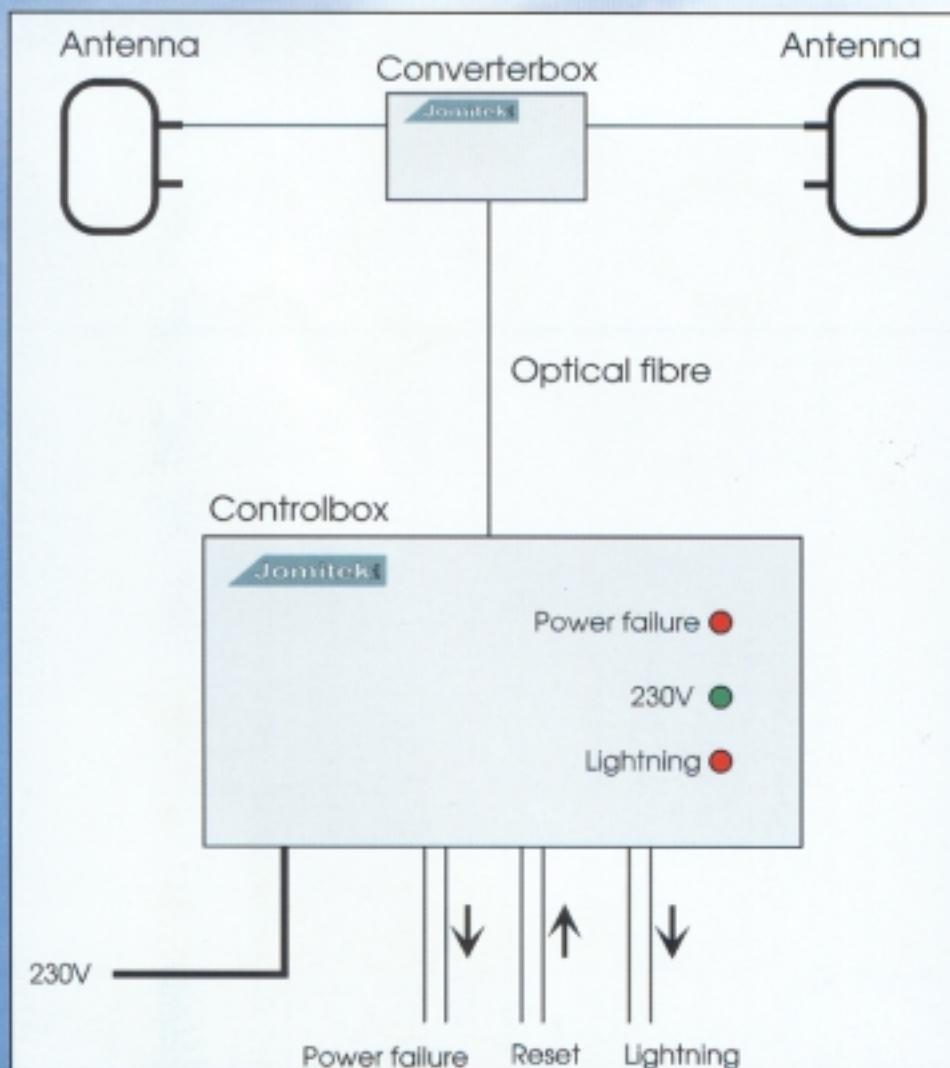


Technical function

The lightning field is observed as a magnetic signal in the two antennas.

The magnetic signals picked up by the two loop antennas are fed via coax cables to a small converter box placed on the inside wall of the turbine at the height of the loops. In the converter box the signals from the loops are combined, filtered and converted into an optical signal. The lightning current itself provides the power necessary for generating the optical signal, hence no power supply is needed.

An optical fibre is used for transmitting the optical signal to a receiver box, which interfaces to the wind turbine control system. The receiver box may conveniently be placed in the wind turbine control cabinet. By using an optical fibre for transmitting the signal, complete galvanic separation and very good noise immunity are achieved. This means that lightning striking the wind turbine can be registered by the lightning sensor system without any risk of damaging the wind turbine power and control systems.



Technical details:

The electronics in the receiver box are powered by 230 V from the normal wind turbine power supply. Furthermore a battery is built in for backup power supply, as the most common type of lightning damage to modern wind turbines is damage to the control and communication systems (50 % of reported damages) followed by damages to the power system (20 %).

The lightning sensor system is therefore able to detect lightning even when the wind turbine is without power. The electronics in the receiver box retain the lightning alarm signal until acknowledged by the wind turbine control system or manually reset. In the not unlikely event that a lightning stroke upsets the wind turbine power or control system the backup battery enables the electronics in the receiver box to retain the lightning alarm signal for several weeks. The alarm will then indicate when power and control are restored, and furthermore a diode on the receiver box will give a signal indicating lightning strike, which is useful to personnel inspecting the wind turbine.

All parts of the lightning sensor system are made of high quality materials and components in order to ensure high system reliability, high mechanical strength and long lifetime even under the harsh environmental conditions off-shore. The loop antennas are made of stainless steel and IP67 sealed, and all cables, connectors and boxes are RFI/EMI shielded and IP55 sealed.

The antennas are placed at the bottom of the tower, normally 1 meter above entrance door.



More information:

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