

Lightning **Protection**

Protect your fleet against the main cause of blade damage and reduce lightning damage repair costs by 96%*

BENEFITS

- Protect against blade damage and expensive repairs or replacement
- Reduce the risk of turbine downtime
- Reduce insurance costs

TURBINE PLATFORMS

V52-0.85MW**
V80-1.8/2.0MW**
V90-1.8/2.0/3.0MW
V100-1.8/2.0MW
V100-2.6/3.0MW
NM82-1.5/1.7MW**

*Results based on extensive field testing

**Only copper caps

Lightning is the main cause of damage, and can, in the worst scenarios, cause structural damage. Such damage results in costly repair solutions and lost energy production during turbine downtime. Unfortunately, lightning is unavoidable, but new upgrades can help you protect your blades.

Copper caps

The copper cap is an upgrade that can be installed uptower on the tip of each blade of your turbine. The conductive shield provided by the copper cap, and its ability to control the electrical field enhancement, reduces the occurrence of damages by up to 80% and repair costs by up to 96%.

Copper strips

For turbines in high lightning-density areas, Vestas also offers copper strips to augment the protection given by the copper caps.

Get in touch with us today

Visit vestas.com or contact your local Vestas service office to get to know more about how lightning protection and our other service solutions can improve the performance of your turbines.

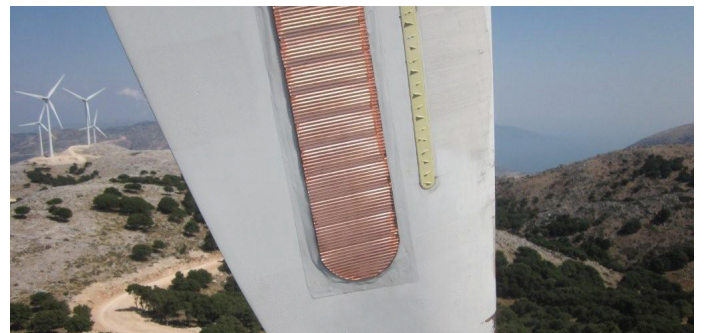
Our **lightning protection** upgrades meet the 'Protection Level I' requirements in accordance with the IEC 61400-24 standard. By choosing the Vestas lightning protection upgrades you can improve the protection of your turbines, while benefitting from lower insurance cost.

TECHNICAL DESCRIPTION **COPPER CAPS**

- The cap is a 2 mm press-welded copper plate.
 - Shaped in accordance with aerodynamic tip profile.
 - Mechanically bonded to the blade tip surface by means of a two component adhesive.
 - Electrically, the copper plate is bonded to the blades' internal down conductor by means of two special M16.4 spherical bolts.
 - These bolts also secure the mechanical fixation between the cap and the blade structure.
 - The tip is painted in the blade's colour.
 - The receptors generate a higher electrical potential than the material around the receptor, which leads lightning to the receptors.
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TECHNICAL DESCRIPTION **COPPER STRIPS**

- The copper strips measure 2.65 meters long, 0.5 mm high, and 100 mm wide.
 - The strips are attached to the blade surface along the direction of the spar.
 - If applicable, the strips are placed next to the vortex generators.
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Top: Copper strip installed on blade



Left: Copper cap installed on blade