

Addressing Lightning Risk

A shocking case study on how a wind farm lost insurance for lightning strikes and got it back again!



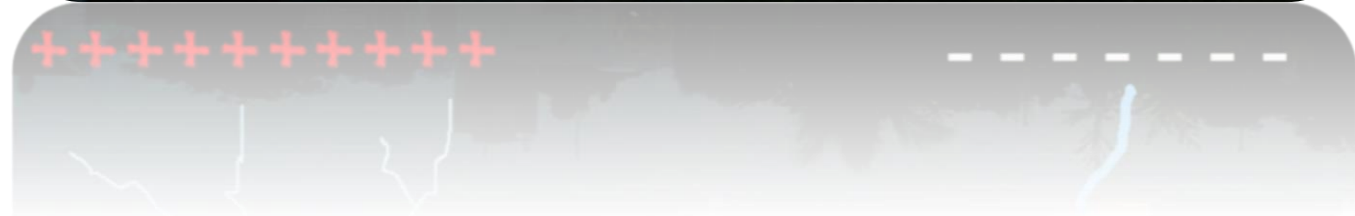
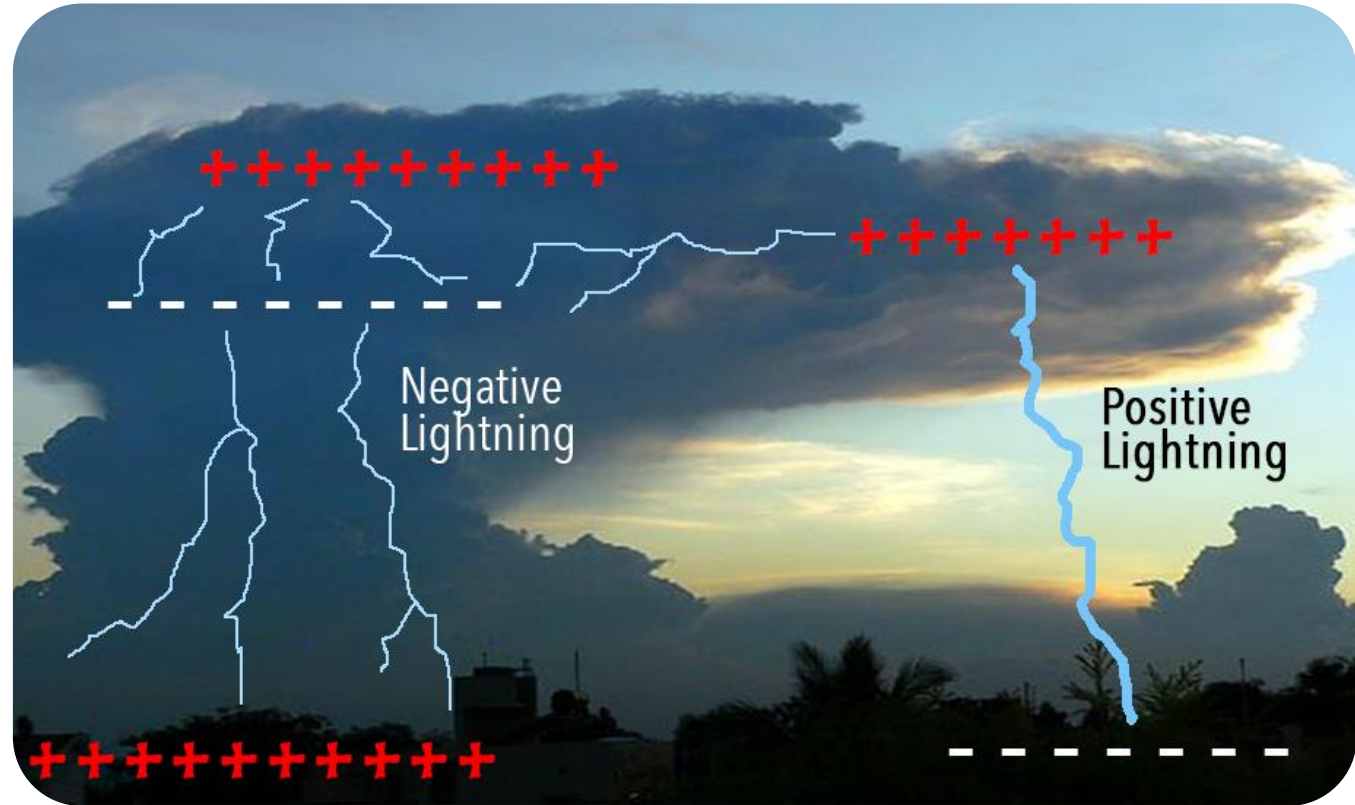
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Courtesy: Lachlan Ross

Types of lightning





Meet the wind farm Lightning Valley



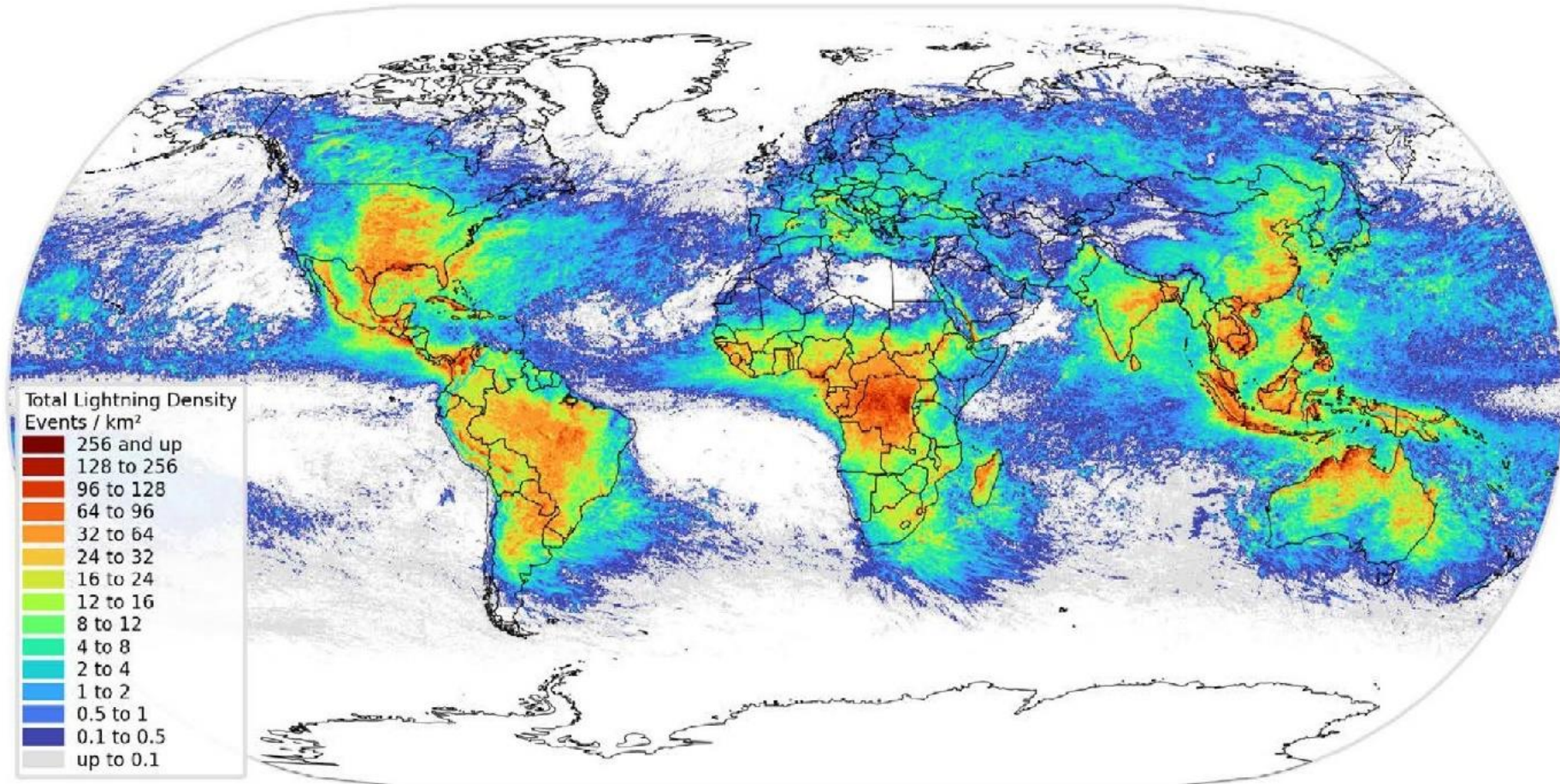
Lightning protection system certifications limits

Lightning parameter certification limits for LPL 1 of the IEC standard*.

| | |
|-------------------|-----------------|
| Peak current | -100 to 200 kA |
| Average steepness | 200 kA/ μ s |
| Specific energy | 10 MJ/ Ω |
| Total charge | 300 C |

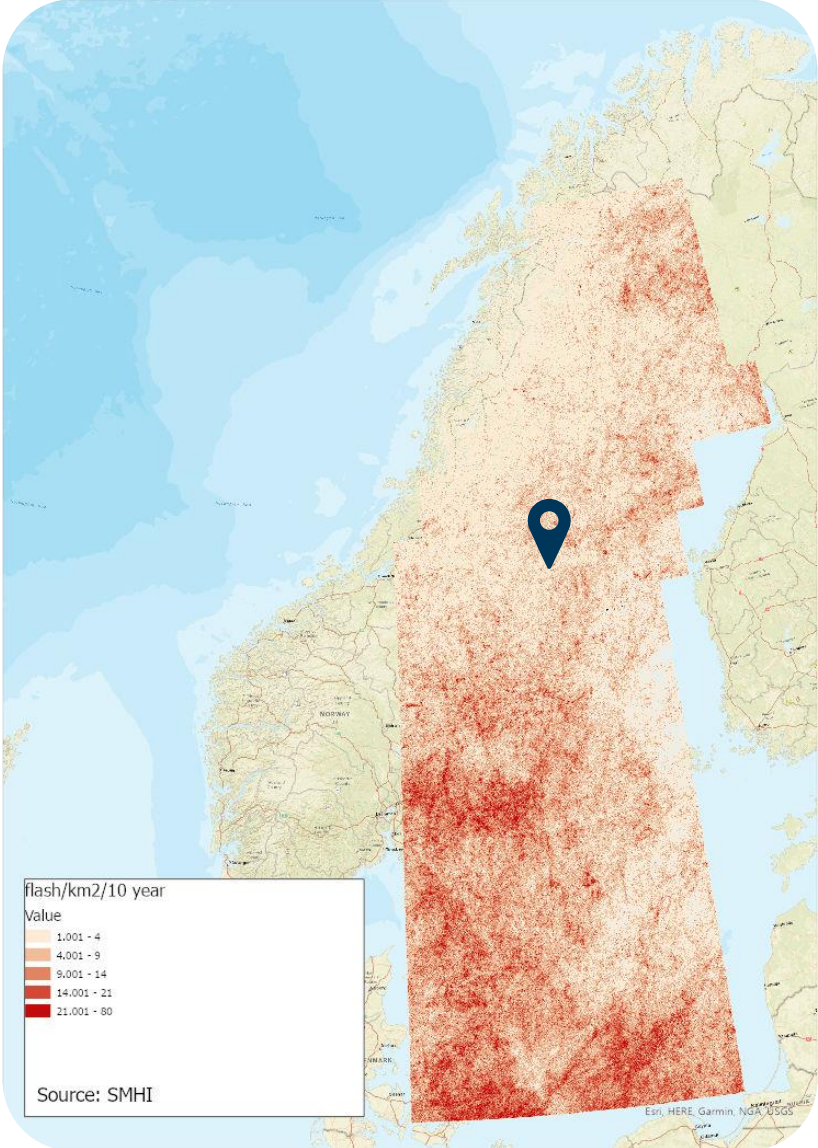
Source: * IEC 61400-24: Wind turbines – Part 24: Lightning protection

A global outlook - Lightning density map

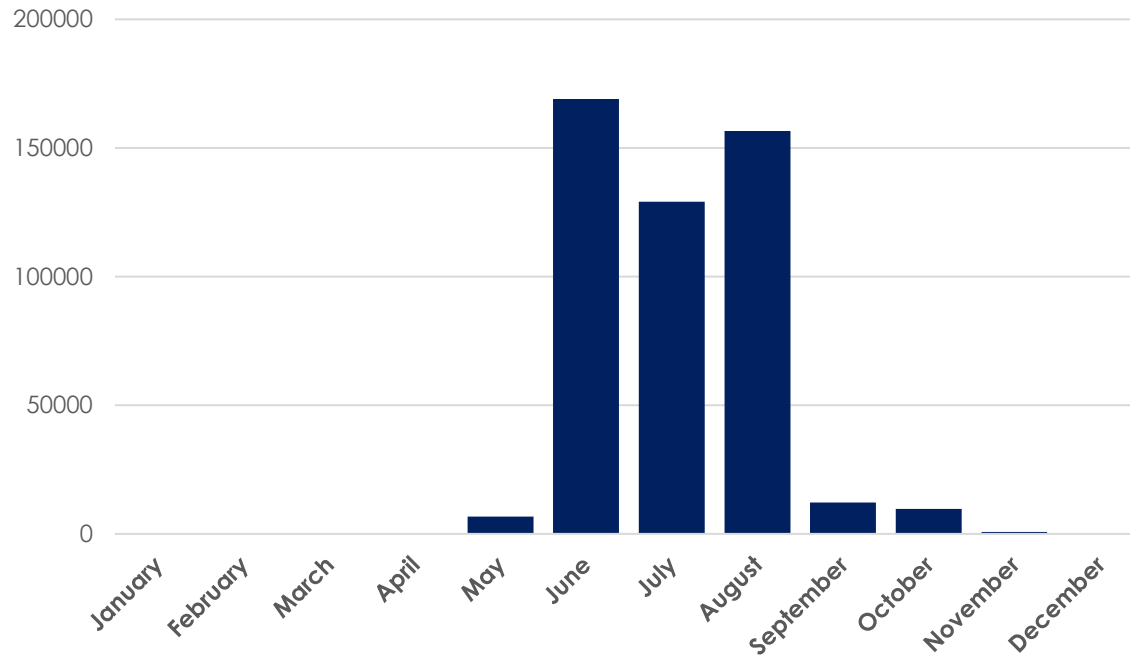


Source: Vaisala

Lightning from a swedish point of view



Number of strikes in 2022



Seasonal variation of strikes



Strikes in Sweden during 2022



484,555

Amount of strikes



1426

Peak current < -100 kA

6

registered as cloud to ground



54

Peak current > 200 kA

1

registered as cloud to ground





Insurance often negotiated on a yearly basis

Increase in payouts related to blade damages caused by lightning

Source: news.northeastern.edu

Examples of damages caused by strikes

**FLASH OVER DAMAGE RELATED TO
DAMAGED DOWN CONDUCTOR CABLE**



SPLIT TRAILING EDGE



DELAMINATION



FLASH OVER DAMAGE



Lightning surveillance
Notifications
Targeted inspections
Act in time

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LASSIE

Portfolio

Jump to windfarm

Windfarms that require immediate attention

- Lightning Valley**
6 Turbines require attention
- Sheerwood Win...**
1 Turbine requires attention

Turbines at risk

Search...

- T40** Lightning Valley
High risk 2023-02-08
- T26** Lightning Valley
High risk 2023-02-09
- T43** Lightning Valley
High risk 2023-02-09
- To6** Lightning Valley
High risk 2023-02-09
- 2183-V-001-027** Sheerwood Wind farm
Medium risk 2022-11-21

Manage risk

Pending inspection

Search...

- To8** Lightning Valley
High risk 2023-01-15
- To9** Lightning Valley
High risk 2023-01-15

Manage pending turbines

Low risk turbines

Search...

- T44** Lightning Valley
Low risk
- T20** Lightning Valley
Low risk
- To1** Lightning Valley
Very low risk
- To2** Lightning Valley
Very low risk
- To3** Lightning Valley
Very low risk
- To4** Lightning Valley
Very low risk
- To5** Lightning Valley
Very low risk
- To7** Lightning Valley
Very low risk

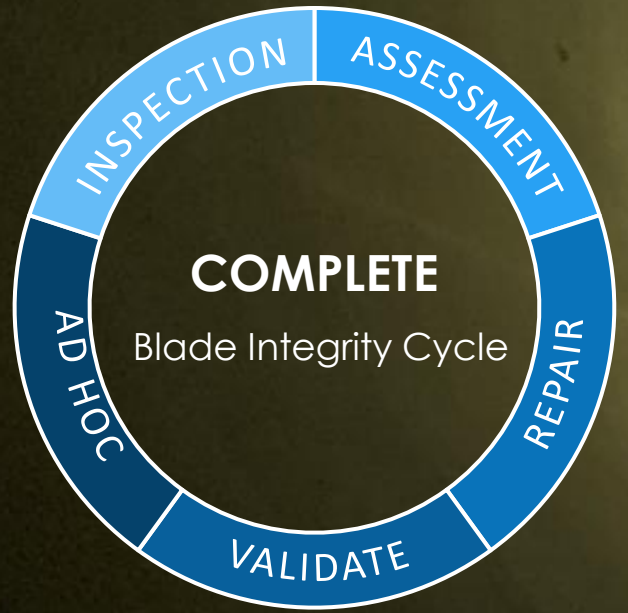
Details



Prudent Operator



Thank You!



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