Lightning will strike your turbines and structures! Experience shows that acknowledging this fact and adapting the necessary protection measures can change the consequence from a down time failure, to a ride through incidence. The PolyTech Lightning Card System provides vital data that can be used actively in the preventive maintenance work thus improving uptime of your systems.

Introduction to the system

Safe, simple and reliable. The PolyTech Lightning Card System is the most simple lightning registration available in the market. Great emphasis has been put on safety, simplicity, and reliability in the development of the Lightning Card System. When a lightning strikes and is conducted to earth, a magnetic field is created around the down conductor. The strength of the magnetic field is proportional with the peak of the lightning current and decreases with the distance to the conductor.

The Lightning Card is installed onto the down conductor and the magnetic field generated by the lightning will then be registered onto the card. By assessing the registered magnetic field, the peak amplitude of the lightning current can be concluded.

SUMMARY OF LIGHTNING CARD ADVANTAGES

✓ Avoid unnecessary and expensive inspections and downtime
✓ Event based decision making on continued operation or need for immediate service
✓ Timely planning of maintenance
✓ Increased production
✓ Incident documentation based on facts
The system consists of three components

1 **Lightning Card** The card measures lightning current in the down conductor by registration of the magnetic field due to the current. The measurement is purely a magnetic field registration and the process is irreversible so a registered lightning current is stored and can only be overwritten by a higher lightning current. Either by routine exchange or on expectation of a lightning strike, the card is replaced and taken out for reading. The card should not be re-installed if a lightning strike is registered.

A lightning Card can register lightning strikes in the range of 6 - 300kA with an accuracy better than 20kA. The card is operational regardless of the humidity, in a temperature range of -30°C - 80°C and can even withstand submersion in water over longer periods without effecting the card measurement performance.

Each card has a unique serial number.

2 **Card Holder** The Card Holder is intended to be installed onto a lightning down conductor with cable ties. The holder supports the Lightning Card in a well defined position to the down conductor. The holder is not influenced by lightning and will only need replacement if it has been mechanically damaged.

3 **Lightning Card Reader** The Lightning Card Reader is converting the Lightning Card measurement to a value of the lightning current in Ampere [kA]. The Lightning Card Reader scans the Lightning Card and the included software is storing the reading data in a database and is automatically generating a PDF report that can be used for documenting the reading. The software is easily downloaded from PolyTech homepage.

In the software it is possible to type in user defined data as the turbine/blade ID, location and initials. This data is included in the PDF report.

The Card Reader is powered by 230V/110V/12Vdc and can thereby be supplied via a service car or simply via a normal socket in an office or in the wind turbine.

**Lightning Card Readout Service**

PolyTech offers to read out and analyze the measurements stored on your Lightning Cards. Please contact Kim Bertelsen on kbe@poly-tech.dk, phone +45 30 63 68 84 or Anne Osberg on ao@poly-tech.dk, phone +45 41 99 93 53 for further information.