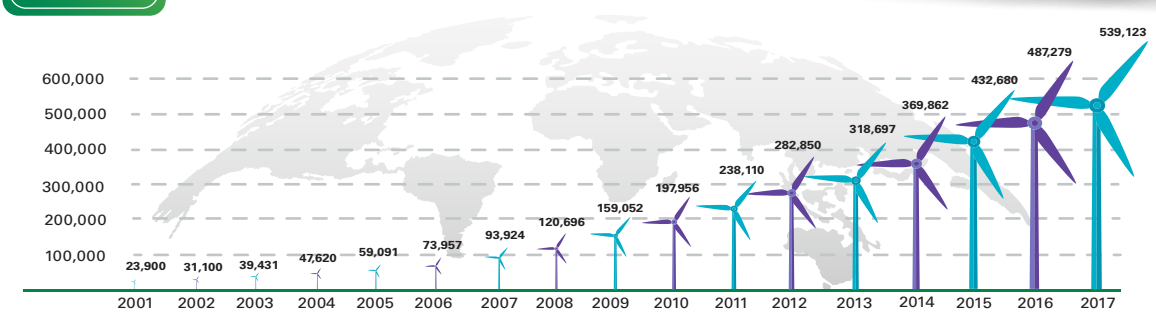
Littelfuse®
Expertise Applied | Answers Delivered

PROTECT YOUR WIND TURBINE FROM ARC-FLASH HAZARDS

Global Cumulative Installed Wind Capacity 2001-2017*



*Source: GWEC- Global Wind Energy Council http://gwec.net/global-figures/graphs/

Potential Areas Of Damage

- Induction Generator
- Transformer
- Gearbox
- Electrical Switchboard

What Causes Arc Flash?

- Insulation breakdown
- Equipment failure
- Phase-to-phase or ground faults

What Determines Severity?

SYSTEM VOLTAGE

Voltage as low as 120 volts produce enough current to cause an arc flash

INCIDENT ENERGY

Heat made up of a combination of the radiated heat and convection heat. The closer a person is, the more incident energy they will experience

ARC CHARACTERISTICS

The temperature is determined by the megawatts of power being consumed by the arc

Arc duration effects the amount of incident energy which is proportional to time

A longer arc length creates more incident energy than a shorter arc

Dangers From An Arc Flash

- **Hotter** than the sun
- Blast pressure exceeding **2000 psi**
- Shrapnel traveling over **700 MPH**
- **Fire hazards after the flash** (Concentration of flammable materials)

Wind Turbines are far from **medical** help/meters **above ground or sea level**

- Severe burns
- Lung damage
- Vision loss
- Eardrum ruptures
- Barotrauma
- Death

Cost Of An Arc Flash

- Equipment destroyed
- Downtime/ Loss of revenue
- Injury or death

Mitigation of Arc Flash

CURRENT-LIMITING FUSES

- Do not react as quickly or at all if the arcing current is less than their fault threshold

They can reduce the potentially damaging incident energy released. Different fuse classes affect how much current limitation they provide.

Learn more: Littelfuse.com/SafetyByDesign

ARC-FLASH RELAY

- Faster clearing time
- Trips in less than 1 millisecond

While relays cannot prevent an arc-flash, they can limit the damage to equipment, downtime for repairs, and injury to workers.

Learn more: Littelfuse.com/ArcFlash