

# SOLUTION

Wind power plant

Surge protection



Nowadays, there is a big development in renewable energy sources. A large group of these renewable sources are wind power plants. Using such types of systems brings several problems and risks, which need to be solved. Due to the design solution of wind power plants, the main topic of this issue is lightning protection system.

## Why to Protect?

Direct and indirect lightning strikes produce overvoltage pulses (LEMP) up to several thousand volts in the grid, which can be induced or spreaded by direct galvanic connections to the wiring of any nearby building. Similar lower-energy overvoltage phenomena also arise from switching operations (SEMP) of inductive loads.

These overvoltage pulses have the potential to destroy important electrical components. Due to costs of these components and losses of energy production, it is convenient to use a surge protective devices.

## What to Protect?

- Generator
- Frequency converter
- Driver control
- Auxiliary circuits (e.g. warning lights)
- Signal lines (e.g. from meteostation)

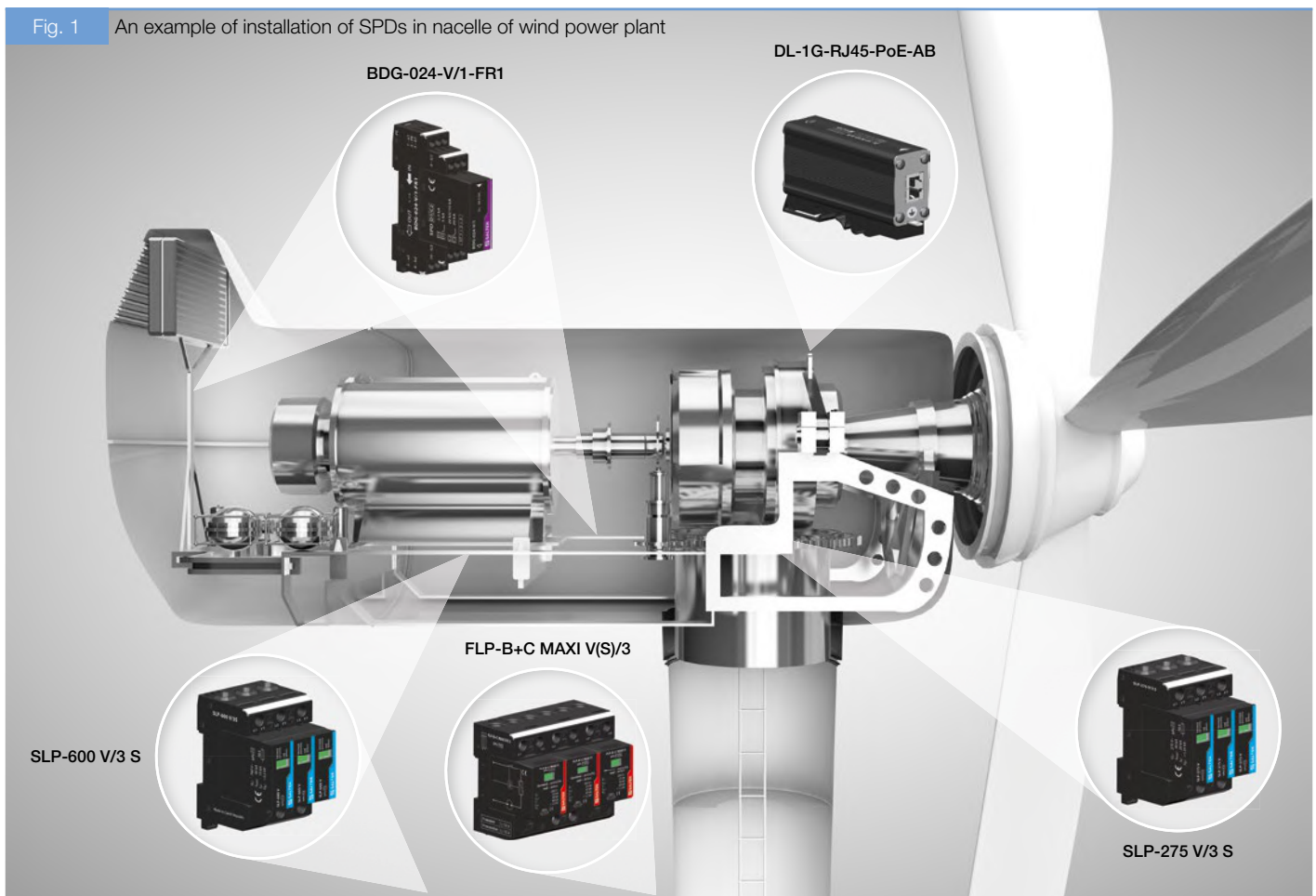
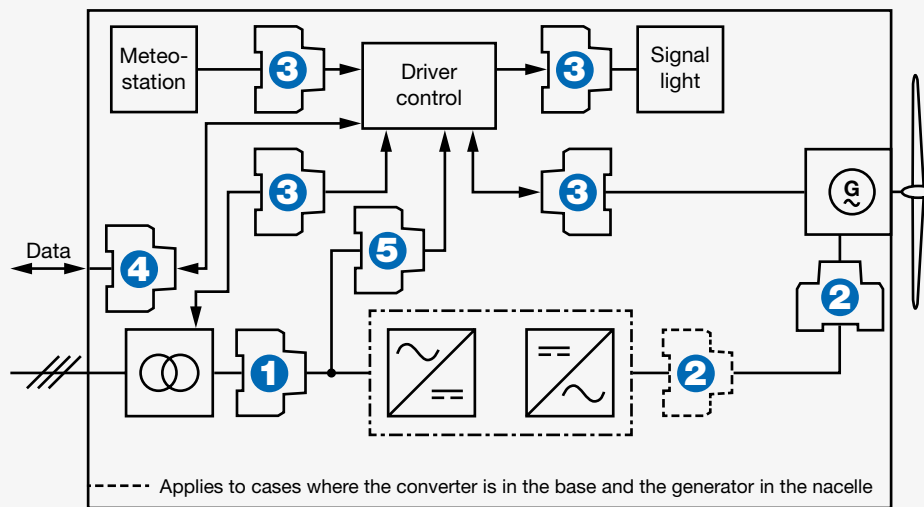


Fig. 2 Block diagram of SPDs in a wind power plant



## Recommended SPDs for wind power plant

### 1 FLP-B+C MAXI V(S)/3

Combination of lightning current and surge arrester for three-phase system TN-C.

Connection	Suitable networks	$U_c$	$I_{imp}$ (10/350 $\mu$ s)	$I_n$ (8/20 $\mu$ s)	$I_{max}$ (8/20 $\mu$ s)	Remote signalling	Ordering number
3+0	TN-C	260 V AC	25 kA	30 kA	40 kA	Yes	8595090535706

### 2 SLP-600 V/3 S

Varistor surge arrester, suitable for 3-phase TN and IT systems with non-sinusoidal voltage.

Connection	Suitable networks	$U_c$	$I_n$ (8/20 $\mu$ s)	$I_{max}$ (8/20 $\mu$ s)	Remote signalling	Ordering number
3+0	TN, IT	760 V AC	15 kA	40 kA	Yes	8595090563051

### 3 BDG-024-V/1-FR1

Coarse and fine surge protection for signalling lines (e.g. signal from meteorological station).

Location	Number of lines	$U_c$	$I_L$	$I_n$ (C2)	$U_p$ (C3) core-core	Floating	Ordering number
ST 1+2+3	1	36 V DC	1 A	10 kA	46 V	Yes	8595090557067

### 4 DL-1G-RJ45-PoE-AB

Combination of coarse and fine protection of Ethernet line with PoE.

Location	Network type	$U_c$ (line/power)	$I_L$ (line/power)	$I_n$ (C2)	$U_p$ (C3) core-core	$U_p$ (C3) core-PE	Ordering number
ST 1+2+3	1G	8.5 / 58 V DC	0.5 / 1.5 A	0.15 kA	60 / 90 V	500 V	8595090561484

### 5 SLP-275 V/3 S

Three-pole varistor surge arrester for protection of driver control power supply.

Connection	Suitable networks	$U_c$	$I_n$ (8/20 $\mu$ s)	$I_{max}$ (8/20 $\mu$ s)	Remote signalling	Ordering number
3+0	TN, IT	275 V AC	20 kA	40 kA	Yes	8595090517610

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