Maximising system availability
VARITECTOR surge protection solutions
Let’s connect.

Lightning and surge protection
In the first half of 2018, the electricity generation from renewable energy resources exceeded coal energy generation for the first time with over 118 billion kWh. According to the estimates of the BDEW, the share of renewables was 36.3 percent. The main reason for the increase was the strong growth in wind and photovoltaics.¹

The wind industry is one of the most demanding industries in terms of system availability and operational reliability. For offshore wind turbines, high availability is essential as losses resulting from downtime are even higher. That’s why reliable protection solutions have to protect all systems against damages caused by lightning and overvoltage.

VARITECTOR surge protection solutions deliver the best protection throughout all kind of systems that ensures the safe operation of wind turbines. Energy generation and transmission, measurement and signalling and even data communication lines are reliably protected.

¹ Source: Bundesverband der Energie und Wasserwirtschaft, www.bewa.de
Damage by lightning effects on wind turbines in the past decade have shown that in northern Europe about 4-8% of wind turbines a year experience a lightning current-related disorder. From these lightning related disorders, about 30% arise from a direct lightning strike and 70% of due to indirect lightning damage. To ensure a reliable lightning protection, the wind turbine is divided into lightning protection zones to ensure that the individual components like rotor blades, hub, electronic systems, bearings, etc. are adequately protected.

When designing the protection concept, the international standards IEC 61400-24 and the guidelines of DNV GL should be considered.

Best application fit
Tailored solutions based on standard products

Reliable power protection
VARITECTOR PU

Plugable signal protection
VARITECTOR SPC

Terminal design signal protection
VARITECTOR SSC

Nacelle
The nacelle unit of a wind turbine contains multiple systems that require dedicated protection concepts. Generator lines need to be protected with powerful 400/690 V protection units e.g. with a 3 pole 400/690 V VPU type I and II classified protection unit. Sensor box equipment requires power line protection for 230 V supply as well as signalling and data line protection e.g. for the incoming signals from the weather station. VPU 280 V power components, VSPC for measurement signals and VDATA for ethernet lines ensures that the equipment is safely protected.

Hub
The hub contains the sensitive electronics of the pitch control systems. Malfunction of these systems could cause a total breakdown of the turbine. Protection concepts for the power supply, monitoring systems and data communication systems have to ensure a complete protection and system availability. VPU 280 V, VSPC and VDATA deliver total protection solutions for these kind of elements.

Bottom box
The bottom box equipment is connected to the top box equipment via long wires dependent upon the turbine type. This require protection of power lines as well as signal lines at both ends. The same is true for the power lines between generator and inverter: VPU 400/690 V products and VSPC protect the lines reliable and if needed, with real time status monitoring included.
The continuous increase in limit values within the standards, put great emphasis on the need for all-round, reliable surge protection. In response to these growing requirements the VPU, VSPC and VSSC lightning and surge protection series offer standard exceeding protection for all kinds of applications. Based on a combined varistor gas discharge technology the VPU series is a future orientated series of products that protect your energy grid and power supply at the highest level. However, you will not just be protecting your plant, but also your planning processes. Conformity with standards for at least five years means that you can minimise your planning iteration steps and the redesigns associated with them.

Many intelligent product features help installers during installation and maintenance specialists during their servicing of the lightning and surge protection system. Equipped in this way, the VPU series provides a long-lasting, safe and future-proof lightning and surge protection solution for your system.

Our pluggable VSPC surge protection is characterised by the highest protective functions with compact dimensions. The arrestors of the modules can be removed, measured or exchanged during running operation impedance-neutral – without interrupting the measuring circuit. These features make this product the ideal secure protection mechanism for interfaces within instrumentation and control circuits.

Advantage Status Indication (ASI)
The VPU AC II Y series is equipped with ASI – Advanced Status Indication technology. The yellow status signal indicates that the product is approaching its performance limit due to frequent overvoltages. Your system is still protected because the arrester units are redundant with two varistors. If a varistor fails, full protection is still available. This status window and at the remote signaling contact. Only when showing the red status the arrester is completely disconnected from the power grid.

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Weidmüller – Your partner in Industrial Connectivity.

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