

## Insulation monitoring

in earthed wind powered energy plants with the isoNAV685-D-B



# Detecting faults in time using insulation monitoring

The goal of every operator is to detect faults in time and to economically eliminate the causes in order to achieve optimum plant safety and operational reliability.

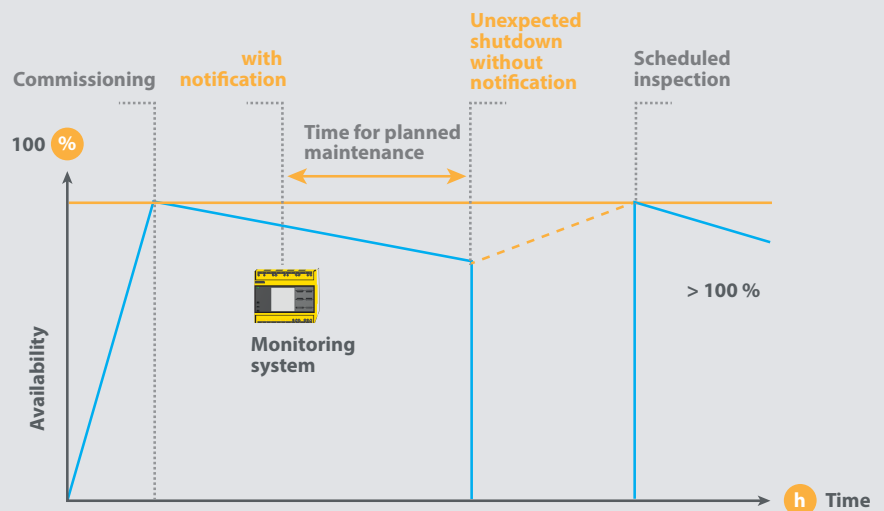
A simple and effective solution is insulation monitoring with the isoNAV685-D-B. Because the insulation value can be regularly monitored via an interface, the deterioration of the insulation levels are detected very early. This in turn enables planned maintenance so that unscheduled stoppages can be reliably prevented. Not only this but it is also possible to determine the fault location.

**Increasing the availability of your system.**



## Benefits

- Increased availability
- Increased revenue
- Predictive maintenance through trend analysis
- Reduced downtime
- Safeguarding of investment



*Higher plant availability due to insulation monitoring*

## How to we measure?

In earthed wind energy plants, our solution uses the times when the system is switched off to monitor the insulation resistance of the system. With our new insulation monitoring devices, we measure insulation resistances of several MΩ. Thus, fault detection is possible, which is 15-20 times more sensitive than with installed residual current monitoring in the mA range.

## KNOW HOW

### For your information:

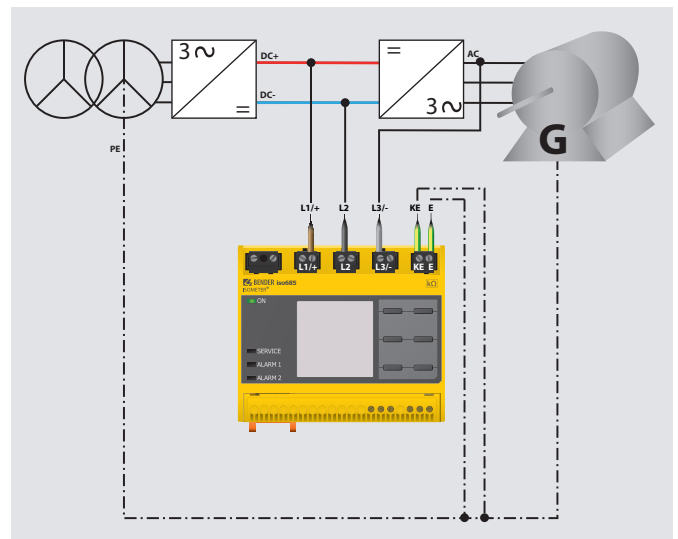
Unearthed systems (Recommended by the IWES Fraunhofer Institute) are continuously monitored (i.e. in operation and when they are switched off) by our ISOMETER® iso685. More information can be found on [www.bender.de](http://www.bender.de)

## Integration into an existing plant

The diagram shows the monitoring of a frequency converter connected to a generator in the off state. The insulation resistance is measured between the frequency converter DC link and the frequency converter output circuit. The isoNAV685-D-B then measures all three measurement paths consecutively and records three insulation resistances. In doing this, the deterioration of the plant condition can be detected at a very early stage. With this information advantage, maintenance of the plant can be performed before it comes to a standstill or there is a total system failure.

The isoNAV685-D-B can be installed during times when there is little or no wind. It is not necessary to shut down the plant and there are no losses. To connect the device in the plant, the DC link (DC + and DC-) and the frequency inverter output side are connected to the isoNAV685-D-B. Furthermore, two connections to earth are necessary for insulation monitoring. To turn the device off when the frequency converter goes into operation, a free contact or a PLC output signal from the controller is needed. This signal is then applied to a digital input of the isoNAV685-D-B.

The installation of the isoNAV685-D-B may be supervised by our service staff upon request.



Integration of the iso685 into an existing plant

## Electrical safety with Bender

The Bender Group is headquartered in Gruenberg in the federal state of Hesse in Germany. It has offices in more than 60 countries and is the market leader for monitoring systems for electrical safety. For more than six decades, the company has been producing top quality products which enjoy an excellent reputation and are used all over the world in every sector for the measurement and monitoring of unearthed and earthed electrical systems.

In addition to a wide range of products, Bender offers industry-specific solutions for hospitals, mining, the automation and chemical industries, engineering, ships, rail technology, electromobility as well as wind and solar technology. These are complemented by power quality devices, and display, reporting and operating units for the control of complex plants.





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