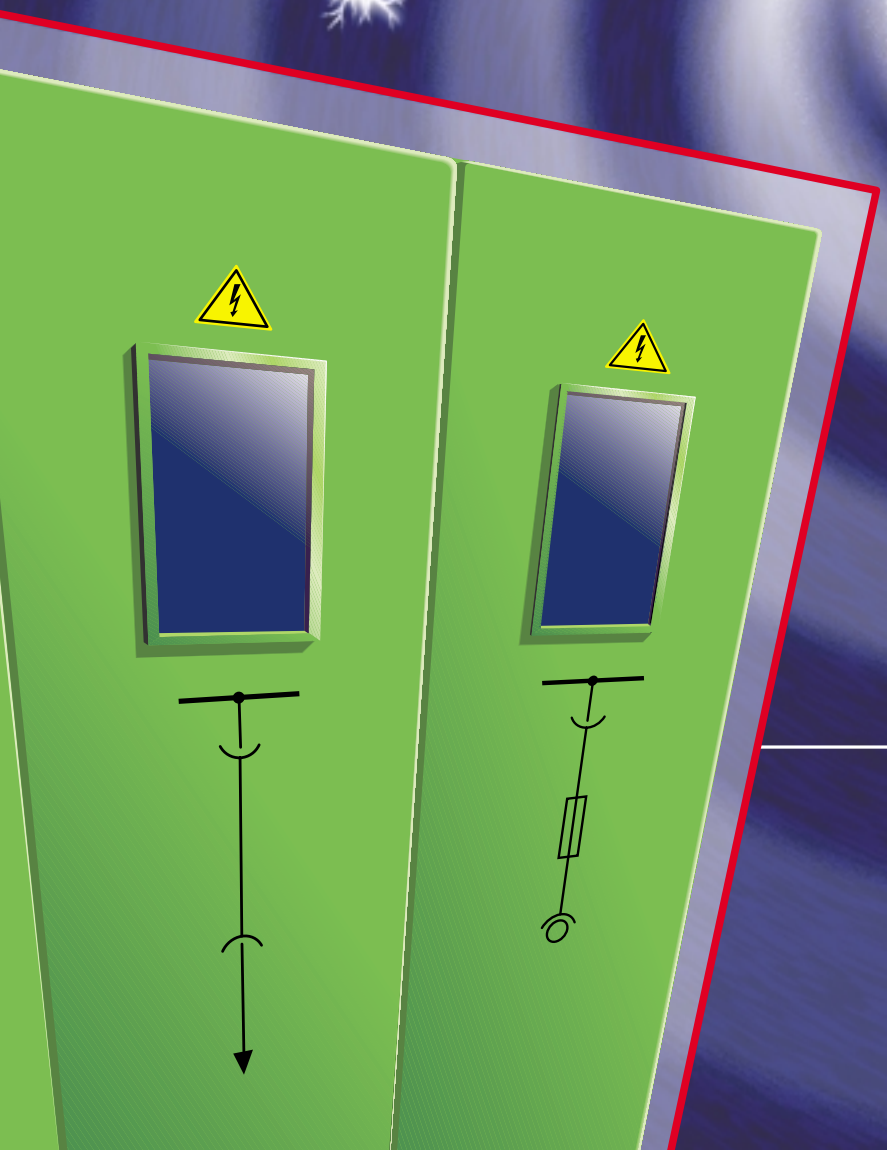
INDIPARD tracks down insulation damages

INDIPARD

Partial Discharge Indicator



Watchdog

MAY ELEKTRONIK GMBH

The problem

Maintaining switchgear

Operating equipment used to provide electrical power supplies must maintain a high level of availability throughout its service life.

Various factors, such as for example

- **Material fatigue**
- **Moisture**
- **Manufacturing defects**
- **Invasive foreign bodies**
- **Contamination**

can cause the quality of the insulation to deteriorate, thus increasing the risk of disruptive discharge.

If developing faults are not detected in good time, the consequential damage which results is generally far greater.

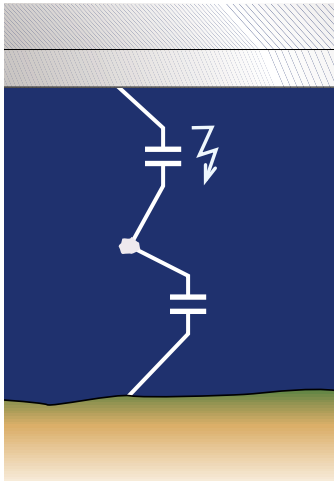
To counteract such risks, it is imperative to adopt appropriate maintenance strategies and take suitable action.

At the same time, the progressive deregulation of the electricity market is forcing energy suppliers to optimize operating and maintenance costs.

The cause

Partial discharges, "the electrical equivalent of rust"

Damaged insulation can lead to partial discharges (PD's) which bridge only part of the insulation clearance.



To begin with, these PD's are not dangerous, but over time they cause ever greater damage to the insulation and their intensity and frequency both increase.

If these occurrences are not detected in good time and the cause eliminated, the progressive PD's will inevitably lead to a disruptive discharge, causing a complete failure of the operating equipment.

The time scale from the first occurrence of a PD to a disruptive discharge generally ranges from several weeks to a few months.

So if the occurrence of PD's can be detected with the aid of suitable sensors, adequate advance warning can be given to allow countermeasures to be taken.

Partial-discharge measurement technology offers a solution to the problem!

Effects of partial discharges

Advanced deterioration

The solution

INDIPARD uses partial-discharge measurement technology for the early detection of insulation damage

Thanks to the use of INDIPARD continuous monitoring is guaranteed. This early warning system allows equipment to be cleaned and damaged components replaced before it is too late. The generally far greater damage resulting from a disruptive discharge can thus be prevented.

INDIPARD detects partial discharges long before you see, hear or smell them.

INDIPARD, the low-cost measuring device for partial discharge monitoring

The device consists of small, active search coils linked to a central evaluation unit. The search coils are installed in areas of the operating equipment which are likely to be at risk. They are then connected to the evaluation unit via coaxial cables.

The search coils detect the high-frequency electrical fields produced by partial discharges and pass the information to the evaluation unit.

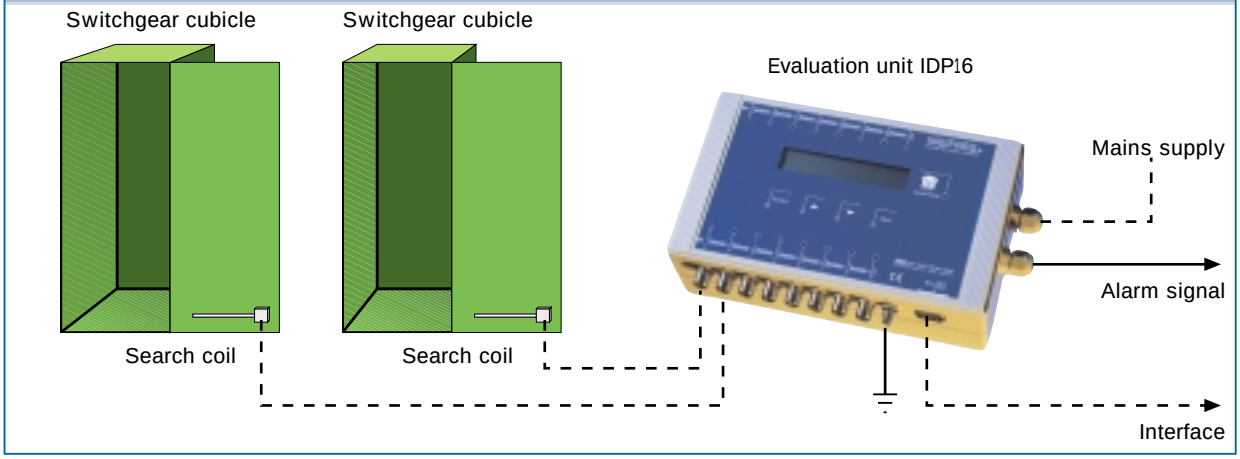
At the evaluation unit a micro-controller monitors each search coil to detect excursions beyond a given limit value. If the limit value is exceeded, INDIPARD displays the measuring point and triggers an alarm via a floating contact. The evaluation unit can also be equipped with a display to indicate the measurement values.

The measurement values can also be transmitted via an interface, e.g. to a control system (for monitoring purposes).

INDIPARD is simple to install and can be retrofitted to existing plant.

Small search coils (antennae) are installed in the individual switchgear cubicles, generally on the inside of the door or in the floor area.
The evaluation unit is mounted in an easily accessible position adjacent to the switchgear, often directly on the wall.

Typical installation at air-insulated switchgear



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The arguments

In favour of using INDIPARD:

- Online monitoring, supervision and diagnosis of partial discharges
- Preventive maintenance
- Alarm given when limit value exceeded
- Active search coils for non-contact interfacing
- Pos. measuring ranges 40, 400, 4000 pC
- Can also be connected via coupling capacitors instead of antennae
- Up to 8 search coils per evaluation unit
- Designed as an industrial measuring instrument for continuous use
- Compact design and practical installation system
- Self-monitoring with alarm in the event of failure
- Digital interference suppression
- Optional partial discharge diagnostics via PC interface
- Low in cost and simple to use

IDP16 with display

Low-cost version: IDP16 without display

INDIPARD reduces operating and maintenance costs

Thanks to the use of INDIPARD

- **sudden total failures can be restricted,**
- **regular inspections can be reduced,**
- **cleaning intervals can be matched to the actual degree of contamination,**
- **overall plant service life can be extended**
- **and downtimes can be avoided.**

The technology

Search coil	IDPS-A
Length	Antenna 500 mm
Overall height	40 mm
Weight	approx. 150 g
Nominal measuring	400 pC range
Connection	F-connector
Installation	via 2 spacer brackets, directly on an earthed surface inside a cubicle
Connecting cable	RG59U, up to 50 m in length per search coil

Evaluation unit	IDP16
Scanning	peak value detection pulse resolution time < 40 µs
Dimensions	200 · 120 · 60 mm (W · H · D)
Weight	approx. 800 g
Mains supply	230V/50 Hz, optionally 115 V/60 Hz
Wattage	max. 7 W
Inputs	3, 4 or 8 F-connectors for search coils
Outputs	2 floating contacts max. 120 V/20 mA
Optional display	LCD display
Interface	RS-232
Installation	On wall or mounting rail

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