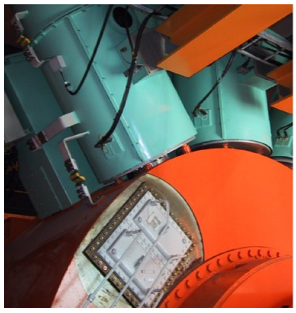
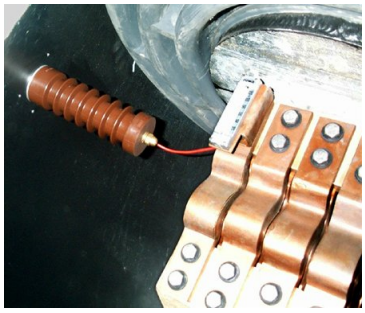
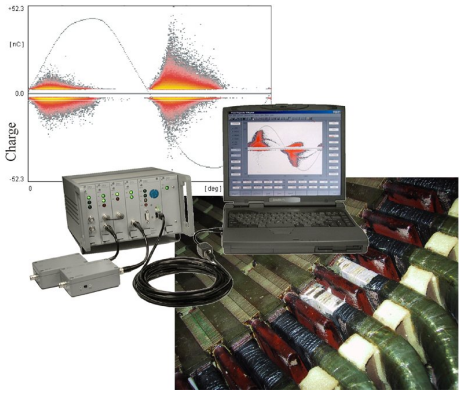
Applications - Rotating Machines


The typical epoxy-mica insulation system of rotating machines is a 'forgiving', i. e. a comparably stable insulation system. Due to this electrical stability, partial discharge activity acts as an indicator for a variety of defect mechanisms. Besides the mere electrical aging, further problems, such as contamination, vibration, or mechanical aging find their expression in the phase-resolved partial discharge pattern.

PD Measurements
Power Diagnostix offers various instruments for continuous monitoring, schedule-based routine testing and in-depth analysis of rotating machines. The instruments and their control software were continuously improved, based on more than ten years of testing numerous generators and motors.



PD activity acquired with the ICMsystem showing the non-symmetrical discharge pattern of a heavily deteriorated slot-exit field grading.

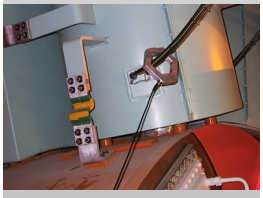
Permanently installed partial discharge couplers greatly simplify on-line testing using the ICM*system* without any interruption or downtime. Continuous on-line monitoring of the discharge activity with a permanently installed ICM*monitor* helps optimizing maintenance intervals and reducing costs, while improving the level of equipment dependability.

Tan Delta Measurements
The TDA*compact* is a digital tan delta and power factor analyzer for off-line dielectric testing to assess the overall health of the insulation system. Its fiber optic signal transmission simplifies connection even on grounded equipment. The unit comes with reference capacitor and can be combined with any external high voltage source.

TDA*compact*

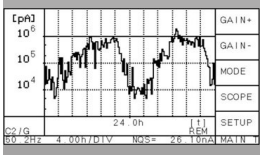
ICM*monitor on-site*

Stator coil



CT100

Coupling units CC20



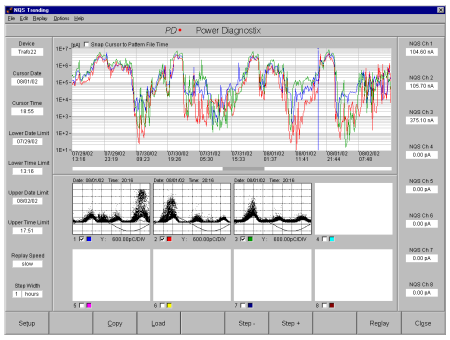
ICM*monitor display*

Partial Discharge Monitoring

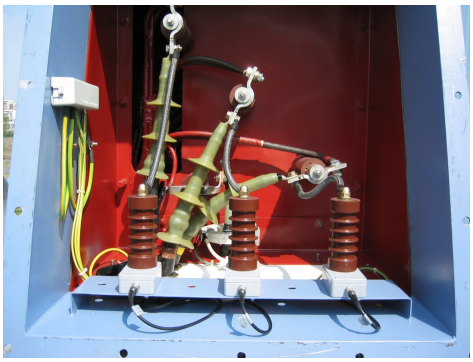
Based on the stand-alone ICM*monitor* unit connected to an individual machine, larger networks supervising a multitude of generators in combined-cycle thermal power plants or pump-storage hydro power plants have been realized. Such networks include full control of the local instrument via global Intranet access as well as visualization of the monitoring data in monitoring centers. The ICM*monitor* software offers automated scanning, pattern acquisition, and analysis of the trending data. Additionally, the ICM*pilot* software serves to condense the information gathered from multiple plants on one overview screen, while having the full data history close at hand.

Large Motors

High voltage motors are key-components in refineries and the production of technical gasses according to the *Linde* process. Here, unplanned outages can cause immense losses. Further, such motors serve in thermal and nuclear power plants to run the (emergency) cooling system, for example. Here, failure of a motor stator winding can cause critical subsequent damage. Installing specially suited coupling capacitors offers schedule-based measurements as well as continuous monitoring for the assessment of the insulation condition.



ICM*monitor trending display*



Couplers CC14B installed on a motor terminal box

Typical Packages

Portable acquisition unit:
- 1x ICMsystem (opt. MUX8)
- 1x ICM*system* software
- 1x GPIB interface
- 2x Preamplifier RPA1
- 1x Preamplifier RPA2
- 1x Voltage converter HST1B
- 1x CT1 or CT100 (optional)
- 1x Impulse calibrator CAL1B
- Set of cables
- Transport case

List of material per machine:
- 3x Coupling capacitors, type CC14B or CC20B
- 1x Mounting kit, MKB

Partial discharge testing and monitoring on generators and large motors offers the assessment of the condition of the stator winding. This helps avoiding unplanned outages as well as scheduling efficient maintenance outages.

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