OMICRON Monitoring Solutions

Partial Discharge Monitoring - moved to a new level of precision and reliability.

OMICRON Monitoring Solutions

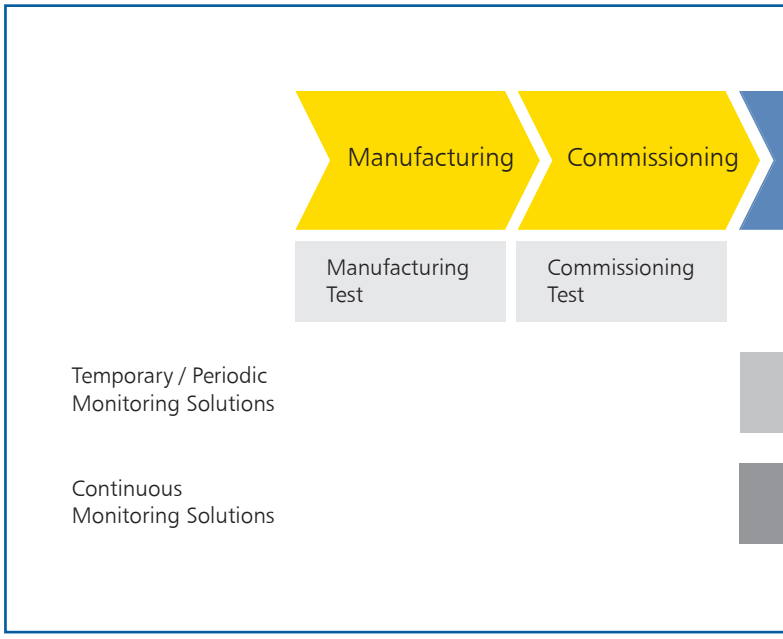
Why monitoring?

Expensive HV (high-voltage) apparatus tends to degradation during its service life. Various maintenance and refurbishment policies help with predicting severe failure and extending the lifetime of this expensive equipment.

In asset management there is a clear trend away from expensive time-based maintenance to cost effective condition-based maintenance:

- continuous or periodic monitoring of HV equipment is an essential tool for effective maintenance management
- exact knowledge of the state of insulations at any time saves money, as maintenance schedules can be specifically optimized and an extended life of the assets can be reached
- monitoring answers questions about the present condition of the equipment and its future performance
- monitoring supports overall investment planning
- the large amount of real-time data gathered by monitoring systems can be used for precise insulation condition assessment
- effective comparison of historical data via an easy-to-use and extendable database solution

OMICRON's PD technology across the complete asset life cycle



Monitoring - can prevent serious damage

Why partial discharge monitoring?

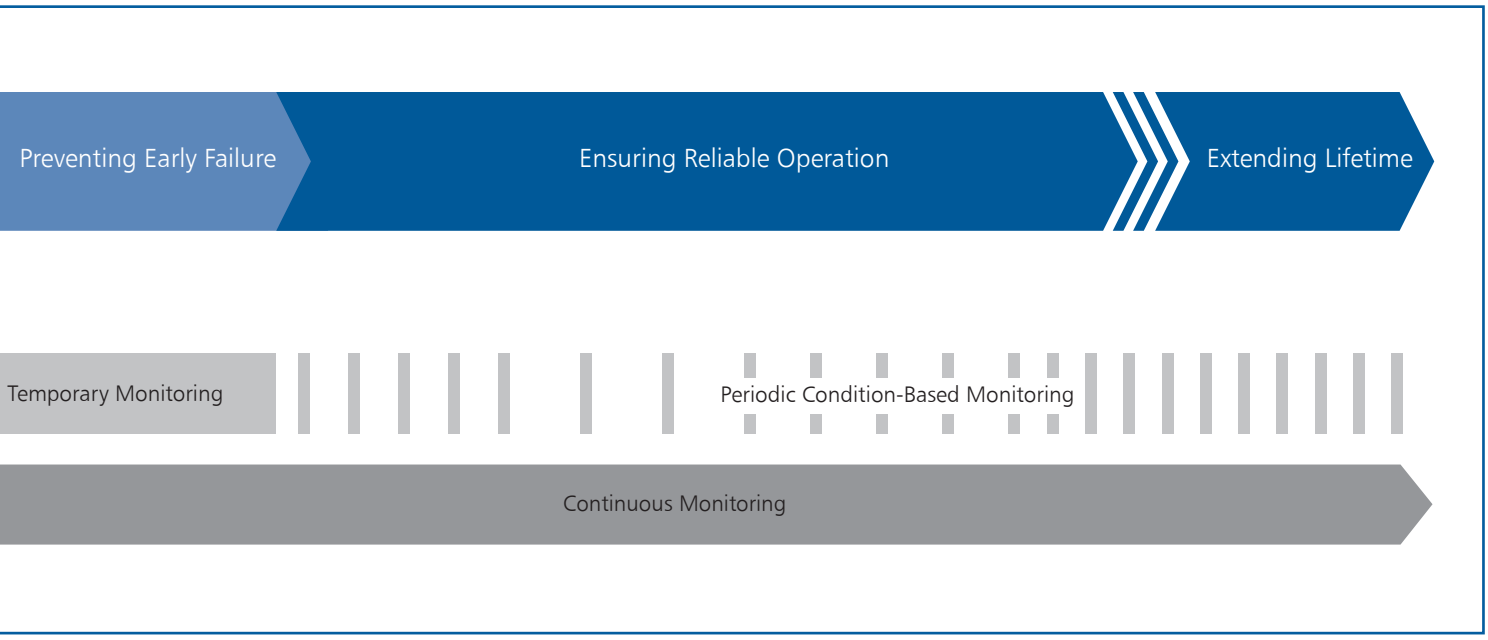
Partial discharge (PD) phenomena are a consequence of local electrical stress concentration in electrical insulations.

PD activity can lead to failure and consequently to serious damage and finally to a fault in critical elements of the power network.

Therefore it is mandatory to identify the presence of partial discharge activities and monitor partial discharge tendencies.

The large variety of PD signals makes PD measurement and detection a challenging task. Nevertheless, PD is a widely accepted measuring parameter for insulation diagnosis and the PD measurements are specified for type, routine and on-site tests for most HV assets.

The introduction of digital technology created new opportunities for improving the sensitivity, significance and reproducibility of PD measurements by far exceeding the capabilities of older analog systems.



Why OMICRON technology?

For more than 10 years OMICRON has already delivered PD measuring solutions for manufacturing and commissioning purposes. Now this leading-edge digital technology is also available for in-service monitoring applications.

OMICRON's solution covers all requirements from periodic to continuous monitoring of HV apparatus. The flexible modular system can now grow with the customer needs in monitoring data analysis.

Your benefits:

- OMICRON's well-known and proven PD technology now also available for periodic and continuous PD monitoring
- Reliable and accurate PD monitoring results give high level of transparency about insulation conditions
- Exact knowledge about insulation condition helps optimizing your asset management and investment planning
- Optimized asset management and investment planning saves your money and guarantees a longterm safe operation
- OMICRON's flexible modular system will assist you across the complete asset life cycle, will grow with your needs and, due to interfaces, is open to different management systems

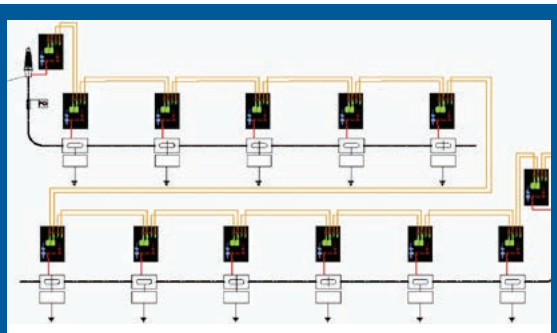
OMICRON Monitoring Services

Why OMICRON Monitoring Solutions Are Different?

At OMICRON knowledge experts are working for you and support you in all stages of a monitoring project. It starts with customer-specific design and will end up with a process of continuous improvement of your monitoring system.

In simple words: We provide you with a peace of mind while matching the actual needs of your HV equipment over its operational lifetime.

Flexibility



Project-specific monitoring system design

High-Quality Support at Every Stage of Your Project

OMICRON's monitoring solution is not only a set of excellent components. Its combination with OMICRON's expertise in partial discharge diagnosis is making the difference. OMICRON will be your knowledge provider in data evaluation and a long-term partner supporting your decisions.

Experience

Support in condition assessment decisions and data evaluation

Competence in monitoring services means:

- Project-specific monitoring system design
- Preparation of technical specifications and tender documents
- Dielectric failure analysis, diagnostics of HV asset insulation status
- PD field testing on HV cables, GIS, transformers, rotating machines
- Integration of monitoring system into existing IT structure
- Installation, commissioning and calibration of the monitoring system
- Monitoring system and data evaluation training
- PD-Expert hotline assistance for clarification of critical or difficult PD events
- 24/7 customer service

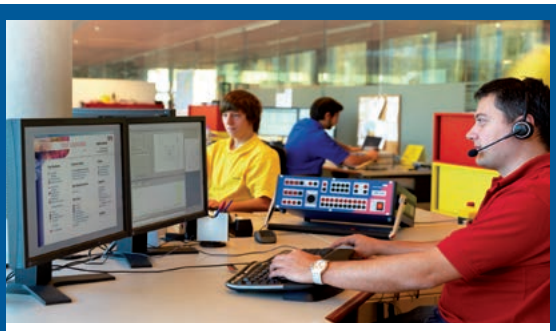
Competence

System installation,
commissioning & calibration

Knowledge

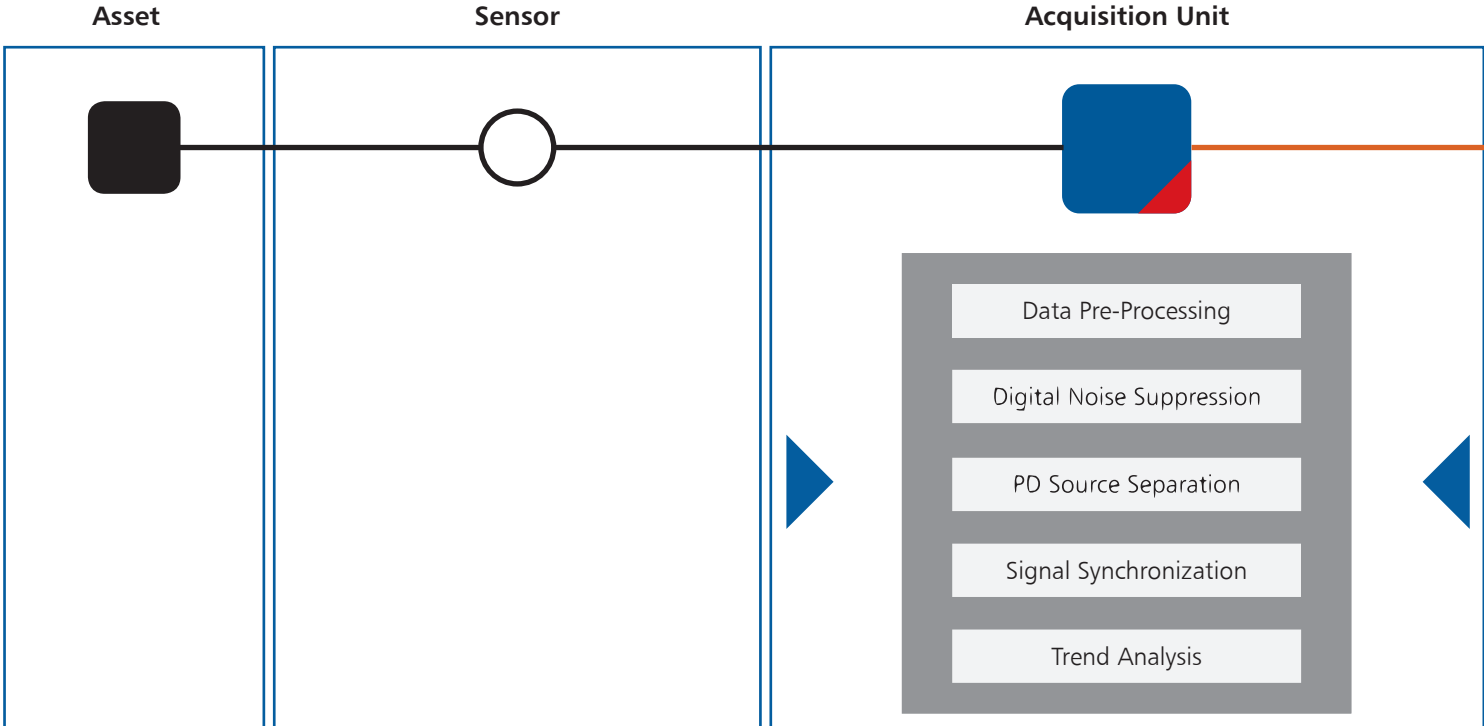
Customer training in system
operation and basic data analysis

Availability



24/7 customer support, system
upgrades, HW / SW maintenance

OMICRON Monitoring Components



HV assets

- HV cables
- rotating machines
- power transformers
- HV GIS/GIL

OMICRON's sensors are especially designed for decoupling of the PD signals on different HV assets. OMICRON offers a broad range of PD sensors.

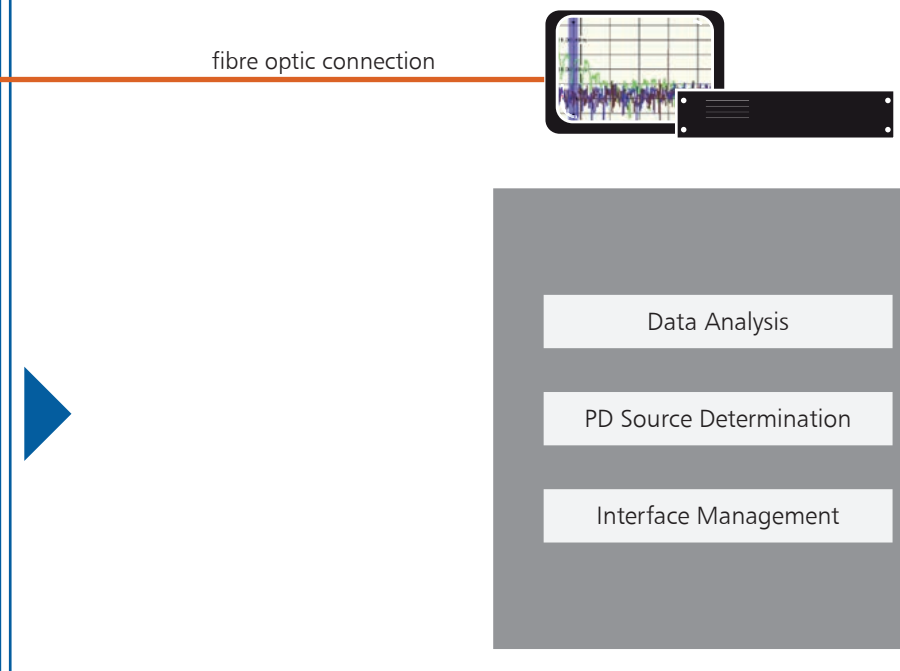
Inductive, high frequency current transformers (HFCT) are designed for PD detection on HV cable accessories like cross-bonding joints and terminations.

For PD monitoring on rotating machines capacitive couplers of different rated voltages are available.

PD acquisition unit characteristics

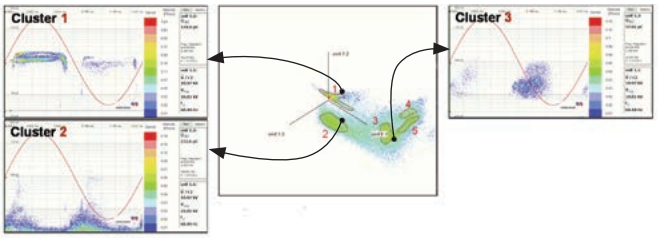
- clear discrimination between PD and external interference and efficient separation of multiple PD sources using 3PARD and 3CFRD
- reliable fault localization and fault-type recognition
- wide bandwidth of PD measurements
- fully digital PD monitoring in one compact enclosure
- synchronous processing of PD signals
- designed for rough environments
- extremely reliable, maintenance free, no moving parts
- reliable power protection for long-term field application in substation and cable tunnel environments

Monitoring Server and Software



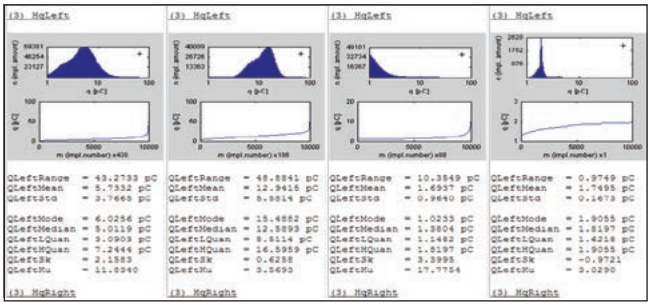
The monitoring server – as the heart of OMICRON's monitoring system is a reliable server with a state-of-the-art data base system future-proof and highly scalable in order to handle huge amounts of monitoring data.

Based on customer specifications OMICRON offers a variety of server configurations.



Separation of PD sources by 3CFRD

Analyzed data provided by OMICRON's monitoring server system help the utility maintenance teams and asset managers to take valuable decisions based on comparable and reliable data. PD data are visualized and evaluated with the highly sophisticated and unique OMICRON PD source separation and pattern recognition algorithms.



PD pattern recognition

In the pattern recognition algorithm OMICRON combines available PD expert knowledge with automatic extraction methods including statistics, shape and wavelet analysis. OMICRON's pattern recognition algorithm uses verified PRPD patterns derived from laboratories and field PD measurements.

OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products provides users with the highest level of confidence in the condition assessment of primary and secondary equipment on their systems. Services offered in the area of consulting, commissioning, testing, diagnosis, and training make the product range complete.

Customers in more than 140 countries rely on the company's ability to supply leading edge technology of excellent quality. Broad application knowledge and extraordinary customer support provided by offices in North America, Europe, South and East Asia, Australia, and the Middle East, together with a worldwide network of distributors and representatives, make the company a market leader in its sector.

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