Asset Services | Monitoring and Diagnostics

Assetguard TXM
Monitoring for transformers

General Approach
Online condition monitoring is a widely accepted supporting measure. It provides an undisturbed operation of power transformers as a key element of energy transmission and distribution. Nevertheless it is often discarded because of the required investment costs. Therefore Siemens offers a cost effective transformer monitoring product without reservations in diagnostic quality.

Assetguard TXM
Assetguard TXM is collecting data from sensors on the transformer, covering the most important measures to get a clear indication of the transformer’s condition. All input data are measured by parallel electronics to ensure perfect data quality and to provide a self-checking mechanism for the data acquisition.

All customizations for different transformers are done via parameterization of the system, thus no programming or engineering of the system is needed. The setup can be executed in a few minutes. This standardization is cost effective and the product can be ordered by its MLFB order code. All needed functionalities are concentrated in one box which eases the handling for retrofit. No additional hardware like power supplies or Ethernet switches is needed.

Additionally there is also no need to install any software in the existing IT environment. The HMI is provided by an integrated web server which can be visualized in standard web browsers. Even if the system is operating as stand-alone Assetguard TXM can be connected to SCADA systems via communication protocol providing all important data.

Finally Assetguard TXM can be fully integrated into ISCM - Siemens solution for Integrated Substation Condition Monitoring. ISCM provides a comprehensive view of all monitored assets.

Your Benefits
Assetguard TXM
- Reduces the probability of unexpected outages
- Supports condition based maintenance
- Provides instant diagnosis and data for condition assessment
- Is a cost effective solution especially for medium and low power transformers
- Has low overall investment due to product customization with parameterization
- Has a compact layout and a minimum of installation costs - perfect for retrofit

- Does not intervene with existing IT infrastructure because of web HMI
- Is ready for integration into SCADA and ISCM
- Is compliant to rugged EMC standards for operation in harsh environments
- Has a MLFB order code

The benefits apply to
- Transmission & Distribution Substation
- Power Plants
- Industry customers
- Transformer manufacturer - Quality control

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Assetguard TXM – the central component of comprehensive and cost effective transformer monitoring

Methodology of Assetguard TXM

Assetguard TXM analyzes all important influences on transformer aging.

The degradation of the paper insulation heavily depends on the hottest temperature in the transformer. According to standards Assetguard TXM calculates the hotspot temperature at each time to provide gentle operation in normal and temporarily overload conditions.

Another main contributor to transformer aging is the moisture content in the insulation. Next to accelerating the degradation process in cellulose, moisture in the paper insulation is a risk for transformer operation by compromising the dielectrically strength. Assetguard TXM determines the moisture in the insulation system and calculates the reduced maximum safe operation temperature.

Existing or developing transformer faults can be detected by the widely accepted method of analyzing the dissolved gas in oil (DGA). A feasible and cost-effective method is to use a single or combined gas sensor. When observing an abnormal trend, further analysis and diagnosis can be done.

Maintenance-intensive parts of the transformer are observed to support condition based maintenance strategies.

The tap changer operation is supervised to detect changes in the mechanical behaviour by measuring the consumed power of the motor drive.

Additionally Assetguard TXM performs further maintenance-related measurements like oil level and pressure relief supervision.

Retrieving data from sensors with enhanced functionality like bushing monitoring, multi-gas analyzers or partial discharge devices is available as integrated part of ISCM.

Technical data

Assetguard TXM is designed to withstand the harsh electrical, mechanical and climate environment at the transformer while providing the necessary demands of comprehensive hardware and software for a monitoring device.

- Electrical safety according to EN 60529, EN 61010-1 and EN 60255-5
  - 2.5kV for 1 min.
  - 5kV impulse (1,2/50µs)
- Electromagnetic compatibility (EMC) according to EN61000 and EN 55011
  - Level 3 electrostatic and electromagnetic immunity
  - 4 kV surge immunity
- Environmental strength according to EN 60068
  - Operation temperature -25°C to 70°C
  - Humidity 10% - 95%
- Protection class IP 20 without cubicle, IP 55 with cubicle (higher protection on request)
- Measurement resolution
  - 12 Bit @ 10kS/s (10.000 Samles per second)
- Available communication protocols
  - IEC 60870-5-104, others on request
- Data storage
  - 6 Gb
  - cyclical structure (oldest data is dropped first)
- Visualization
  - Web HMI as stand alone
  - ISCM HMI as integrated system
- Dimensions w / h / d
  - 265 / 210 / 125 mm

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