SIEMENS
Ingenuity for life

Assetguard MVC

Medium Voltage Switchgear Monitoring

Monitoring & Diagnostics

Introduction

The reliability of MV circuit breakers is generally high, but, due to life time extension trend and changed maintenance policies, care should be taken to keep an acceptable reliability level also in those situations. This is a challenge when the components, like the drives, are exposed to hazardous and severe environmental conditions. Especially when the circuit breakers are not operated for a long time, mechanical parts can present bad behavior due to dirty and stuck conditions.

Siemens Assetguard MVC takes care of the service reliability of the circuit breakers monitoring also the tripping and closing functionalities and main contacts wear.

Features

The main features for Assetguard MVC are:

- Transmission of alarms in case of anomalies and warnings in case the switchgear needs maintenance, informing if circuit breakers are losing functionalities.
- All components integrated in a single housing (power supply, data acquisition, fiber optic communication, data storage and a webserver inside a central node unit).
- Two versions (basic and extended) to satisfy all customer needs.
- One Assetguard MVC node unit is able to monitor up to 12 circuit breakers. If more than twelve circuit breakers have to be monitored, MVC is provided as one master plus some slave units. Each additional slave node unit can host monitoring up to 60 circuit breakers on top.
- Predefined or customized measuring kits are supplied to be installed in each circuit breaker cabinet.
- Combined hardware and digital filter for better noise immunity performances. The cutoff frequency of digital filters can be configured to for all environments.
- Integration into SCADA (if required)
- Base product can be enriched with several options such as coils monitoring and channel redundancy functionality.

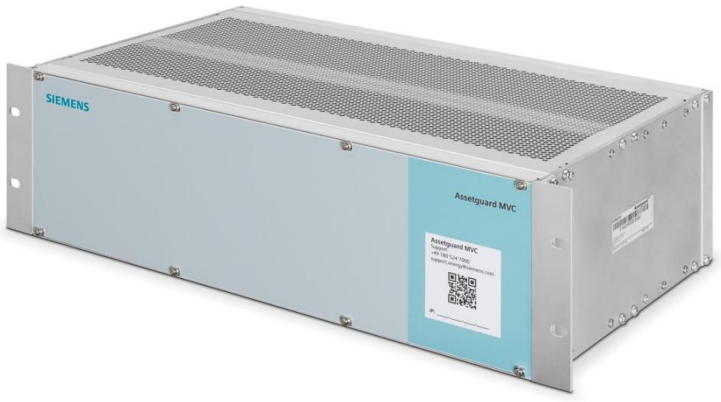
Benefits

- Supports circuit breakers to overreach their assigned technical life;
- Reduction of risks for consequential damages;
- Reduction of probability for unexpected outages;
- Reduction of intensive periodical and manual measurements;
- Safe operation of monitoring system guaranteed due to no change of protectional wiring or concepts;
- Supports condition based maintenance;
- Instant diagnosis and data for condition assessments;
- Cost effective solution;
- Low installation costs: suitable solution for retrofit & self installation.

Scope of Work / Deliverable

Each Assetguard MVC comprises:

- External sensors included (e.g. current transducer, current transducer hall effect);
- Optional external sensors on request (e.g. for measurement of humidity or temperature and for SF6 Gas monitoring);
- Turnkey installation and communications services;



Assetguard MVC

- Expert analysis of monitoring data and customer support;
- On-site training courses for operation and maintenance of our systems;
- Design, installation and commissioning of all necessary equipment

The methods of Assetguard MVC
At each switching command, a measurement is started. The measurement ends when the switching operation has been completed. Data are recorded internally in the memory of Assetguard MVC node unit. Data are diagnosed by comparing recorded data with customer's configured thresholds. Any alarm is communicated via the integrated web-server, via hard-wired contacts and with the integrated protocols.

Both Assetguard MVC versions (basic and extended) guarantee the monitoring of the auxiliary circuit voltage, the closing coil and the tripping coil currents by means of high resolution waveforms.

This info are elaborated within the Main Data Unit (MDU) using dedicated Knowledge Modules in order to detect defects in coils behavior, to suggest maintenance needs in the mechanical drive, to evaluate contact wear (Arcing I2t) and incorrect operations due to operating voltage problems.

The MVC extended version offers additional software functionalities as coil current waveforms history and plotter with zoom functionalities. In addition, also fast acquisitions can be exported in excel.

Finally, optional extensions are available for the rack extended version:

- SF6 Gas density
- Environmental temperature & humidity data inputs
- Customizable digital inputs

Technical data
Assetguard MVC is designed to withstand the harsh electrical, mechanical and climate environment at the substation, 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
- Power supply port and each channel has a dielectric withstand capability of 3 kVRMS for 60 s and 5 kV 1.2/50 µs impulse
- 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
  - Operating temperature -25°C to 70°C
  - Humidity 10 - 95%
- Protection class IP 20
- Measurement resolution 12 bit at 10 kS/s (16 bit version available upon request)

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