IntelliSAW

Comprehensive Monitoring for critical MV and LV assets

- ✓ Real-time, continuous monitoring of Contact Temperature, Ambient Temperature and Humidity, and Partial Discharge
- ✓ Wireless and battery-free Contact Temperature sensors
- ✓ MV Applications: switchgears, bus ducts, generator circuit breakers, transformers, rectifier stacks, capacitor banks
- ✓ Improve safety by monitoring limited access areas
- ✓ Increase profitability by reducing manual interventions and minimizing downtime
- ✓ Extend life of the asset

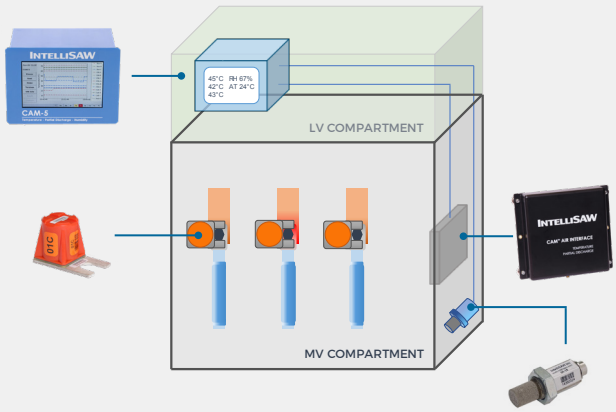
Continuous monitoring of:

- Contact Temperature
- Ambient Temperature and Humidity
- Partial Discharge

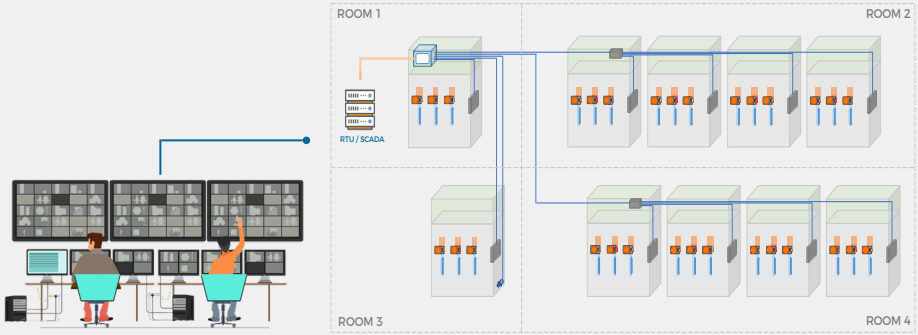
IntelliSAW

Comprehensive Monitoring for critical MV and LV assets

MV switchgear with a single panel



MV switchgear with multiple panels



Control room

MONITORING SYSTEM'S COMPONENTS

SENSOR
for the contacts temperature

SENSOR
for humidity and ambient temperature

ANTENNA
for wireless temperature sensors and partial discharge detector

READER
measurement concentrator

CAM 5
Local HMI with built-in Reader

Contact temperature, ambient temperature and humidity, and partial discharge monitoring, on medium voltage and low voltage assets, can translate into better efficiency in asset management and a reduction in asset failures.

POSSIBLE CAUSES OF ASSET FAILURE

1. Thermal breakdown: caused by loose connections, improper racking, or a high current load
2. Loss of insulation: caused by age, environmental conditions, or defects in the insulating material
3. Air dielectric breakdown: caused by excess humidity and moisture, which can lead to the onset of corona and discharges between the high voltage terminal and ground.

MONITORING SYSTEM'S COMPONENTS

- **Contact temperature sensors:** multiple designs to accommodate physical contact inside most MV + LV assets
- **Ambient temperature and humidity sensors:** provide environmental parameters of the monitored asset
- **Antenna:** for wireless sensor comunications and the detection of partial discharge
- **Reader**: the local concentrator of asset measurements
- **CAM-5:** local HMI interface that performs data analysis and displays measurements and trends that are being detected in monitored asset.

PRINCIPLES OF MEASUREMENT

1. Contact temperature sensors

Contact temperature is measured through free-battery wireless sensors rated to operate up to 125°C matching IEC standards for the assets monitored, including Type Testing to IEC 62271-100. With no battery, sensors are designed to be maintenance free for the life of the monitored asset.

2. Measurement of partial discharges

Partial discharges are broad-spectrum and high-frequency signals, which radiate into the environment causing UHF emissions which are detected by the Air Interface (antenna). The antenna design and electronic filtering are used to sample signals in three frequency bands:

- 300 MHz (270 - 330 MHz)
- 600 MHz (550 - 650 MHz)
- 1200 MHz (1050 - 1400 MHz)

The system is configurable to enable / disable bands to accommodate external interference.

FEATURES OF THE MONITORING SYSTEM

1. System Installation and configuration

The system must be installed by a certified IntelliSAW installer.

Once installed, the sensors and antenna located in the electrified cabinet do not require any further service for the life of the asset.

The data concentrators are configurable by a PC, using a dedicated software that allows a user to set alarming thresholds and communications interfaces. These settings can be updated at any time allowing the system to be serviceable when the monitored asset is powered.

2. Data trending and storage

The trends of the measures are represented both numerically, through tables showing the daily values, and through graphs for an analysis of the trend over time. The data is stored locally to a USB in a CSV format and can be physically or remotely retrieved.

3. Alarms

Configurable alarms can be sent directly from the CAM-5 by e-mail or SMS, and can also be delivery over enabled communications protocol and/or dry contacts.

4. Communication protocols

Between the antenna and the Reader, we have a coaxial RF cable. The Reader communicates via MODBUS RTU protocol (RS-485).

From the CAM-5, MODBUS DNP3 and IEC 61850 can be used to communicate directly to RTUs or SCADA systems.

In the case of partial discharges analysis, it is necessary to use the local CAM-5 interface to analyze the phenomenon.

ALTANOVA GROUP

www.altanova-group.com

TECHIMP - ALTANOVA GROUP

Via Toscana 11,
40069 Zola Predosa (Bo) - ITALY
Phone +39 051 199 86 050
Email sales@altanova-group.com

ISA - ALTANOVA GROUP

Via Prati Bassi 22,
21020 Taino (Va) - ITALY
Phone +39 0331 95 60 81
Email isa@altanova-group.com

IntelliSAW - ALTANOVA GROUP

100 Burtt Rd
Andover, MA 01810 (USA)
Phone +1 978-409-1534
Email contact@intellisaw.com

DS INTELLISAW EN - REV. 02/2021