

Electrical substation

Monitoring system and alarm control system for transformer rooms

The correct operation of a MV/LV transformer in an electrical substation protects the user from service errors that could cause the production or machining lines to stop and not only.

An essential feature is the systemic and effective control of the operating temperature of a transformer, and of the room temperature of the cabin and of the electric parameters. Temperature is a direct indication of the transformer's load conditions and of its operating conditions. The thermal condition of a transformer depends on the current supplied, on the room temperature, on the auxiliary cooling ventilation conditions. Temperature is an element of stress for resin isolators and a chemical-physical alteration factor of the isolating mineral oil for oil transformers. These isolating elements in fact suffer a progressive aging process that could be strongly accelerated if the operating temperatures exceed certain set point values normally considered acceptable for a proper operating level.

To make a transformer operate at low loads means increasing the energy losses, as making a transformer operate at a power over 85% of its rated value means dissipating a larger quantity of active energy. Monitoring these situations means being able to make a series of considerations and interventions including a very important one: energy saving.

The monitoring system and the alarm and electric value control system of the X-Meter device enables to:

- > Measure and store the temperature of the trafo and activate a local indication of "trafo high temperature pre-alarm"
- > Activate a local indication for "trafo high temperature alarm"
- > Activate a remote indication for (pre-alarm/cabin alarms)
- > Activate an optical-acoustic indication in room
- > Activate the transformer block thus opening the main trafo feed MV switch on the cabin's average voltage panel
- > Measure and store the local trafo temperature and activate extra room ventilation on trafo (if available)
- > Activate the forced ventilation of the transformation cabin
- > Measure and store 60 electric parameters, harmonics and micro-interruptions on electric grid with a definition of 10 ms
- > Launch an SMS on pre-set numbers for cabin pre-alarm or alarm state
- > Send an e-mail on pre-set numbers for cabin alarm state
- > Activate a sequence of non-privileged load interruptions (pre-defined by user) when the high temperature pre-alarm set is reached.

