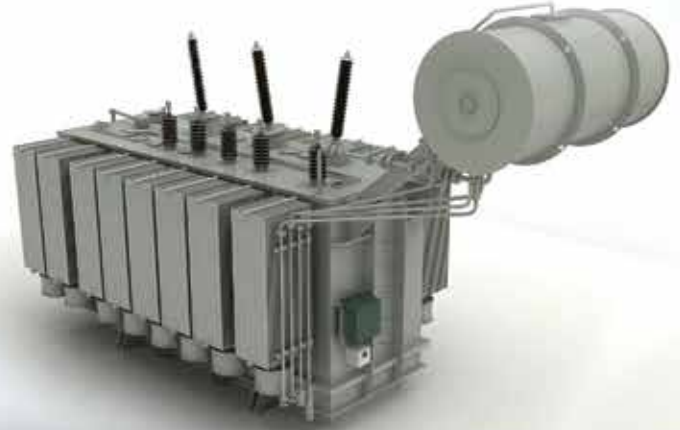




TCU Transformer Control Unit Transformer Monitoring Systems



specialist
staff



strong
communication



technical
support



solution
oriented



accurate
results

**MTE Services
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Functions

Transformers are amongst the most important equipment for electricity generation and transmission. The TCU Transformer Monitoring System provides the highest level of transformer management and allows the transformer operator to make the right decisions.

Benefits

- Prevents unplanned energy outages
- Improves staff safety
- Protects the environment
- Optimum transformer management
- Overload
- Current operating time
- Cumulative ageing
- Diagnostic and analysis

Attributes

- Can be applied to all type of transformers
- Can be used for new transformers and for retrofitting
- Ready for the integration of IEC 61850 IEDs
- Transformer information through improved sensors and models:
 - Bushings
 - Temperatures
 - Oil moisture
 - Dissolved gases (DGA)
 - Thermal resistivity
 - OLTC
- Configurable warning and alarm levels
- 10 year data and event memory
- Periodic reports
- Different accessibility options
- Email upon event function
- Transformer disconnection (optional)
- Partial discharge monitored (optional)



1. Transformer operation data



- Voltage (P-N/P-P) HV and LV side
- Current HV and LV side
- Power HV and LV side
- Overload capacity estimation
- Total operation time

5. Cooling



- Operation time
- Thermal resistivity
- Remote control of cooling system and pumps

2. Bushing



- Power factor (PF, tanφ)
- Capacitance
- Leakage current

6. Temperatures



- Top oil
- Bottom oil
- Ambient (shadow, sun)

3. Dissolved gas (DGA)



- Hydrogen (H₂)
- Carbon Monoxide (CO)
- Carbon Dioxide (CO₂)
- Methane (CH₄)
- Acetylene (C₂H₂)
- Ethylene (C₂H₄)
- Ethane (C₂H₆)
- Oxygen (O₂) (optional)
- Nitrogen (N₂) (optional)
- Moisture (H₂O)
- Duval Triangle

7. Log Messages



- Alarms
- Trips
- Interferences

4. OLTC



- Tap information
- Current position
- Tap changes (total)
- Tap changes (remaining)
- Tap changes (total capacity)
- Pre-selective switch count
- Selective switch count
- Tap maintenance duration
- Temperature
- Temperature difference between main tank and tap changer
- OLTC motor torque (optional)
- Current/Power consumption of motor drive (optional)

8. Analyses



- Multivisual

9. Settings



- Transformer informations
- Substation informations
- Email addresses
- Bushing informations
- Alarm levels
- Language
- User level
- Colour
- Hot spot (calculation according IEC 60076)
- Bubbling temperature (optional)
- Winding temperature (optional)

Technical Specifications

General Information

- Operating voltage 85...265 VAC 50 Hz
96...250 VDC
- Signal and control voltage 24 VDC
Tolerance 20,4...28,8 VDC
- Power consumption 120 W
- Cabinet painted iron plate
- Cabinet size 600 x 750 x 400 mm
- Weight 60,5 kg
- Operating temperature -30°C ... 85°C

Communication

- Interfaces: TCP/IP 10/100/1000 Mbits (fiber-optic or copper-wired)
RS 485, RS 422
- Protocols: MODBUS
IEC 60870-5
IEC61850
- GSM/Analogue modem (optional)

Standards

- Safety:
EN 61010-1
- Temperature and humidity:
EN60068-2-1; EN60068-2-2; EN60068-2-27; EN60068-2-30; EN60068-2-78
- Electromagnetic disturbance:
EN55011; EN61000-3-2; EN61000-3-3; EN61000-6-4
- Electromagnetic immunity:
EN61000-4-2; EN61000-4-3; EN61000-4-4;
EN61000-4-5; EN61000-4-6; EN61000-4-7;
EN61000-4-8; EN61000-4-9; EN61000-4-10;
EN61000-4-11; EN61000-4-12; EN61000-4-18;
EN61000-6-2; EN60255-5; EN61180;

Services

- Installation and operation
- Staff training
- Supervision
- Maintenance
- Product supply

