

DISTRIBUTION TRANSFORMER MONITORING AND ALARM

- Monitor Distribution Transformer Parameters
- Prevent failure of distribution transformers
- Monitor and provide alarm for low transformer oil level
- Monitor transformer winding temperature
- Monitor and provide alarm for high oil or transformer winding temperature
- Provide alarm on transformer phase failure
- Reduce distribution losses



*Image show for description purpose only

DISTRIBUTION TRANSFORMER MONITORING

Distribution transformers are the main backbone for any power distribution network. Distribution transformers fail due to following :

- Transformer overload
- Load unbalance
- Low transformer oil level
- High oil temperature or transformer winding temperature
- High harmonics
- Phase failure

It is also essential to monitor operating electrical parameters including energy. These parameters are then used to determine transformer and distribution losses.

All transformer operating parameters should be reported to control center at periodical intervals. Any alarm events should be reported immediately to control center.



SATEC EM133 with Cellular Modem

DISTRIBUTION TRANSFORMER MONITORING AND ALARM SYSTEM

Distribution transformer monitoring system is based on SATEC intelligent MFT EM133 and Expert Power software. Communication is via public cellular network (2G, 3G or 4G). General scheme for the system is shown in figure –1 on the next page.

SATEC intelligent MFT EM133 with two digital inputs, one analog input and one relay output and cellular modem is used to monitor distribution transformer parameters.

Two digital inputs are used to monitor transformer low oil level via level switch and transformer oil temperature monitoring thermostat. One analog input can be used to monitor transformer winding temperature.

Oil level switch is installed on the transformer oil breather tank. Transformer oil temperature monitoring thermostat is installed in transformer oil tank. If required transformer winding temperature can also be monitored.

SATEC EM133 has sixteen configurable set-points. These can be used to monitor alarm conditions such as current unbalance, high harmonics, phase failure or other alarm conditions.

DISTRIBUTION TRANSFORMER MONITORING & ALARM SYSTEM (CONT.)

SATEC MFT EM133 will collect required parameters from the distribution transformer and transmit the same to control center via cellular modem at set periodical intervals. Alarm events will be transmitted immediately.

SATEC eXpertpower software shall be used at the control center. User shall login the Expert Power using any standard web browser.

STEC eXpertpower will provide following from all distribution transformers :

- Geographical location of transformers
- Real time parameters via tabular and trend graphs
- Energy parameters via tables and trend graphs
- Alarm events
- Reports via email at set times
- Loss calculations
- Link to SLDC SCADA via IEC-104 slave service.

The system pre-warns against any transformer failures resulting in better as-set management and savings in transformer maintenance costs.

Real time monitoring of transformer electrical parameters result better man-agement of distribution losses which directly effect operation of any distribu-tion company.



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