



LV DISTRIBUTION TRANSFORMER MONITORING

Low Voltage Networks represents the largest part of the electrical distribution system. Yet these distribution businesses know very little about how these assets are performing. Relying on customers to report faults or power quality issues.

The public perception and the real importance of electrical power have increased. And with more digital and sensitive equipment, Power Quality is becoming a bigger issue.

With the changes in loads and the increase in local power generation, the early failure of network and customer equipment is on the rise. With the expected increase in Electric Vehicles and Solar generation. Relying on customers to tell you, you have a problem is no longer acceptable. Electrical distributor needs to become proactive, addressing problems before the customer rings.

WMAAC LV monitoring products are designed to address the need of the electrical distributor, with cost-effective hardware, reporting software designed to bring the problems to the staff attention.

WMAAC solution uses the latest IoT technology, Cloud Computing, with edge processing to sort through all the data and collect the interesting bits.

WMAAC hardware is purpose-built to monitor the 4 currents and the 3 voltages, voltage and current harmonics, power factor, frequency, phase angle, temperature, audio and ultrasonic. (Optional electrical feeder support with up to 8 additional sets of 4 CTs).



In its simplest form, the WMAAC DTM connected MDIs, providing 1/2 hourly current data so monthly, weekly and daily current demand is always available. The DTM also provides alarming for voltage loss and over-temperature of the transformer oil.

Additionally the DTM monitors Voltage Harmonics and Power Factor so the electrical distribution businesses can affordably monitor large commercial customers for Power Quality infringements.

The DTM is available for pad mount installation and a separate pole top version is also available

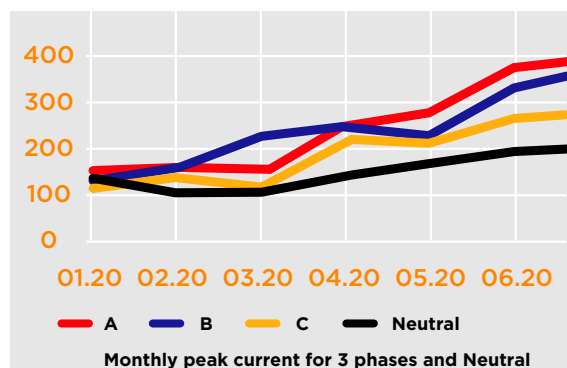
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Authorities announced that the 2017 Thomas fire was caused by Southern California Edison power lines.

(Mike Eliason / Associated Press)

Max Current



DTM FUNCTIONALITY

ALARMS

Alarms events are considered urgent and are sent via e-mail, text message and or connected directly to the SCADA systems via OPC or web services.

Voltage Alarm	Loss of Voltage	Immediate message when voltage on 1 phase drops continuously below 150V for 1 minute
Voltage Alarm	Voltage re-established	Message when all 3 voltages return above 190V for 1 minute after a voltage loss alarm
Temperature	Oil Temperature	When oil temperature exceeds 110C for 5 min.

REPORTS

Reports are information sent from the sensor on a regular basis. This information is stored and reported via daily or weekly via emails. These reports are user-configurable to ensure only useful information is brought to your attention.

Current	Report to the cloud service the 30min average currents for the 3 phases and neutral
Temperature	Report the hourly oil temperature
Over & Under Voltage	4 hourly event base reporting, based on over & under voltage thresholds. With Vmax and Vmin numbers for each phase
Voltage Harmonics	Event base reporting, based on voltage harmonic thresholds, daily reports on the number and duration of voltage harmonic events
Current Harmonics	Event base reporting, based on current harmonics thresholds, daily reports on the number and duration of current harmonic events
Power Factor	Event base reporting, based on power factor thresholds, reports on the number and duration of power factor events
Current Direction	Monitor and report daily total current follows per phase as a value in both directions based off 10 min averages (total import and export values).
Phase Angle	Event base reporting, the thresholds yet to be set
Audio & Ultrasonic	30 values which are monitored for change over time with voltage and current

RECORDS:

Data Set	Every 10 mins the following is stored to the sensors: 3 voltages, 4 currents, THD voltage and current. Total and for each phase plus 3, 5, 7, 9 and 11 harmonics, power factor, total and each phase, phase angle and frequency. Up to 14 months of 10 minute data can be stored on the DTM and accessed via the Android App.
Event Data Set	Each event's start and end times are stored along with the full data set at trigger, and then every 10 min data.