



# POWER QUALITY MEASUREMENTS

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## OBJECTIVE

Energy and power quality measurements aim to characterize the behavior of an electrical circuit (transformer, feeder, motor) in terms of the following electrical variables: power consumption, power factor, energy consumption and power quality (current and voltage imbalance, harmonic pollution and flicker). Also, transient events such as sudden rises and falls in voltage are recorded.



Fig. 1 Meter installation in distribution board.

## MEASUREMENT REPORT

Once the measured information has been processed, the following graphic and tabular trend results are presented:

- Characteristic voltage and current phasors.
- Characteristic waveforms of voltage and current.
- Characteristic Fourier spectra of voltage and current.
- Voltage and current.
- Real, Reactive and Apparent Powers.
- Power factor.
- Imbalance of voltage and current.
- Total harmonic distortion of current and voltage.
- Individual harmonic distortion from 1 to 50 (direct current, even and odd) of current and voltage.
- Recording of transient voltage events (peaks, depressions, effect of starting loads, etc.).
- CBMA graph to relate damage and output of equipment operation with transient voltage events).
- Record of the flickering of the light (Flicker).

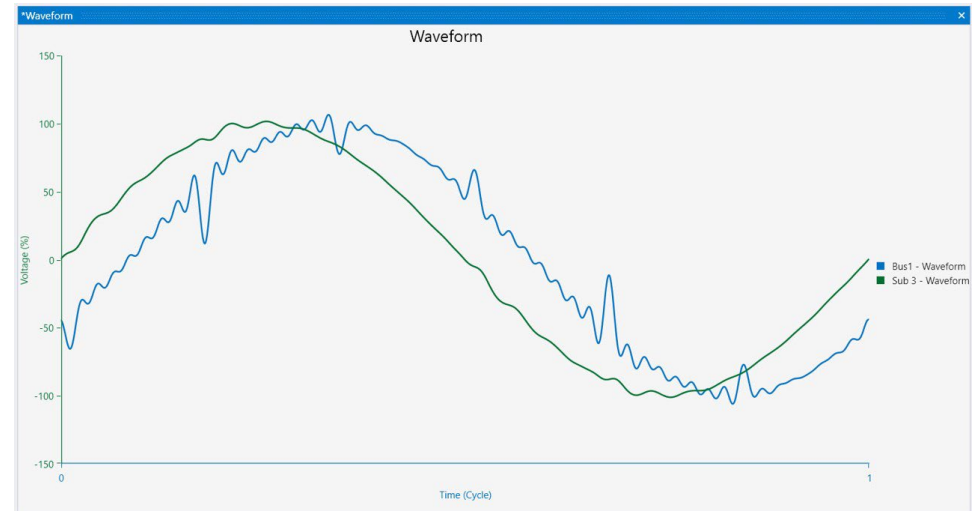


Fig. 2 Waveforms of the measured voltage.

## ANALYSIS REPORT

As part of the analysis of the results, the following activities are carried out:

- Evaluation of harmonic contamination against the IEEE-519 standard.
- Evaluation of the presence of flicker [flicker (IEEE-519)].
- Conclusions and recommendations. In this section, recommendations are made for subsequent engineering studies for the calculation of capacitor banks, harmonic filters, transient voltage suppressors and other solutions to improve power quality.

## POWER QUALITY METERS

At Radthink we use **DRANETZ** brand Class A power quality meters.

Class A meters record all electrical variables cycle by cycle and can graph in 5-minute format, where the maximum, average and minimum value of the variable is shown every five minutes of the measured period.



Fig. 3 DRANETZ Mod. HDPQ Guide Plus power quality meter.



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