

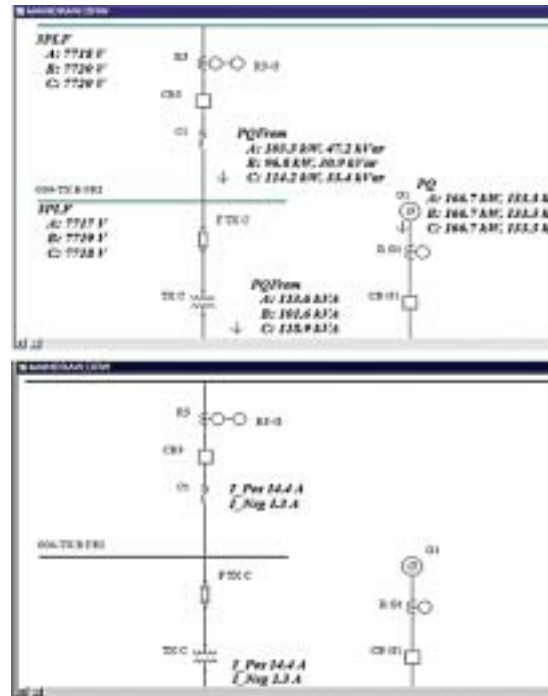
PTW Unbalanced Single Phase Studies

Unbalanced and Single Phase Studies

PTW Unbalanced Studies simulates systems with single-phase, two-phase and unbalanced three-phase load conditions. Phase and sequence currents can be displayed for different operating and load conditions including open-phase and simultaneous faults. Studies include demand load analysis, sizing, load flow/voltage drop and short circuit. Reports also include 3-phase and single-phase panel schedules. Modeling includes single-phase, two-phase and three-phase lines, transformers, loads, and capacitors as well as single-phase mid-tap transformers.

Benefits

- Design better systems where single-phase distribution and unbalanced conditions may exist.
- Identify undersized circuits caused by unbalanced loads before problems occur.
- Set negative sequence relays based on unbalanced fault and load simulations to identify problems that would otherwise go undetected until damage occurs.
- Communicate designs more easily with professional reports and graphs.
- Evaluate alternatives quickly and easily to establish an optimal design.



Interface Options

- Display phase or sequence values with magnitude, magnitude and angle, magnitude and power factor, or real and imaginary.
- Display individual phase values, maximum phase, or phase summation.
- Represent any combination of 1-phase, 2-phase and 3-phase systems including systems with mid-tap transformers.
- Shares common interface with balanced DAPPER studies, harmonic analysis, transient stability equipment evaluation, reliability and CAPTOR protective coordination modules.

Analysis Options

- Connected, demand and design load analysis for each phase.
- Cable and transformer sizing based on design load of largest phase.
- Load flow and voltage drop through each 1-phase, 2-phase and 3-phase branch.
- Representation of transformer automatic Load-Tap-Change (LTC) options.
- Representation of transformer no-load losses.
- Short circuit calculations including individual or simultaneous faults at different locations and on any phase combinations.
- Optional capacitance to earth representation.
- Unbalanced load representation in three-phase and single-phase panels and sub-feeds.
- Cable parameter calculator.
- Sequence to Phase and Phase to Sequence impedance conversions.
- Transmission line parameter calculator including multiple circuits, bundling, transposition and line sag effects.

Typical Applications

- City distribution systems with three-phase and single-phase feeds.
- Rural utility distribution systems with three-phase and single-phase feeds.
- Campus distribution systems.
- Industrial plants to identify normal and abnormal unbalanced conditions.
- Commercial and institutional buildings with three-phase and single-phase loads and panels.
- Setting negative sequence relays to detect abnormal unbalanced conditions.
- Sizing equipment to projected design loads on largest phase.
- Short circuit, voltage drop or equipment sizing calculations for any single-phase, three-phase, or mixed-phase power system.