TRANSMISSION & INDUSTRIAL SYSTEM ANALYSIS

Harmonic Analysis | Power Flow | Short-Circuit | Transient Stability | Voltage Stability | And more...

CYMHARMO, Harmonic Analysis

CYMHARMO is the PSAF module designed to perform harmonic penetration analysis in electric power systems.

Program Features

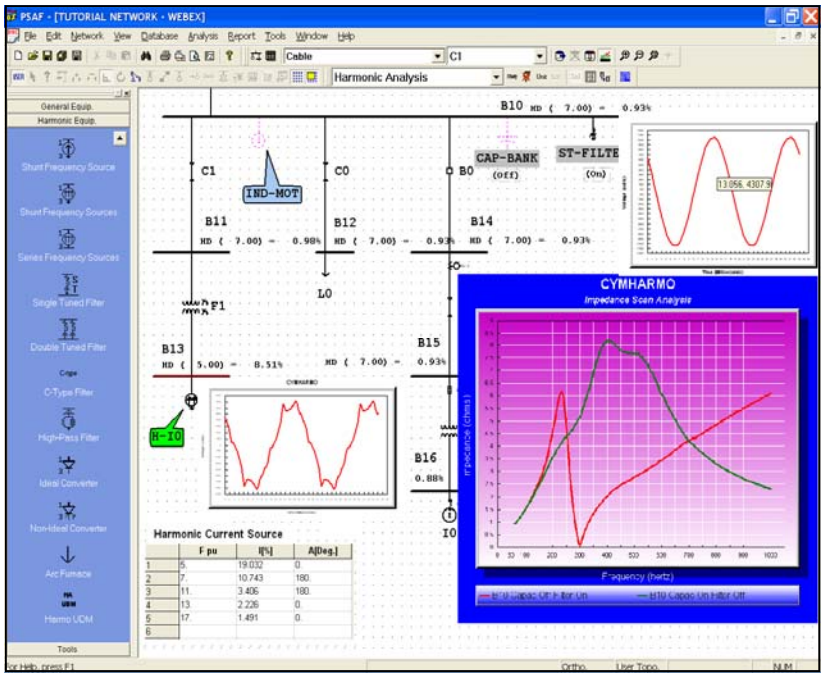
CYMHARMO features both single phase and full three-phase modeling capabilities. It can flexibly and easily be applied to utility-type grids, industrial power systems and distribution feeders of any configuration.

CYMHARMO utilizes state of the art sparse matrix/vector methods with a three-phase nodal admittance network matrix representation.

The program interfaces with CYMFLOW to obtain the fundamental frequency current and voltage system profile for harmonic distortion calculations and waveform display.

CYMHARMO includes an extensive library of equipment such as:

- Converter and generalized current source models.
- Arc Furnace model.
- Passive shunt filter models comprising single tuned, high-pass, double tuned and C-type.
- Library of Single phase and three-phase transmission line models.
- Induction motor models.
- Single phase and three-phase transformer models.
- Modeling harmonic sources of nonlinear loads.
- User Defined modeling (Filters, Sources, etc.)



Analytical Capabilities

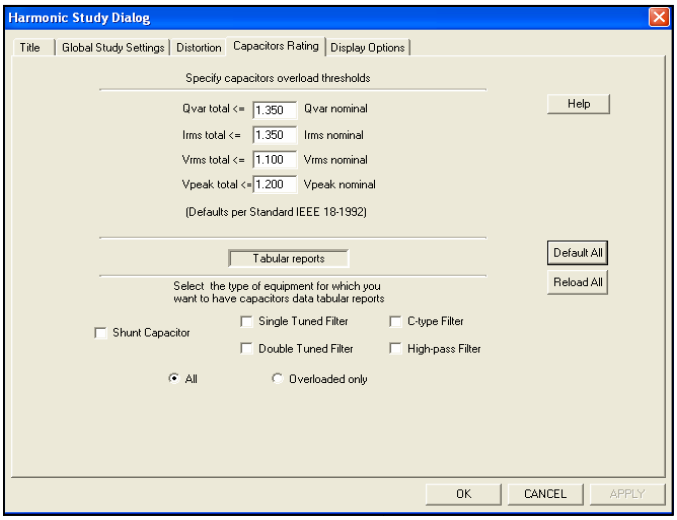
- Phase or sequence analysis.
- Driving point and transfer point frequency scanning analysis.
- Voltage and Current Harmonic distortion.
- Calculation of telephonic indices (TIF, IT, etc.).
- Sensitivity analysis.
- System equivalence.
- Noise to Ground analysis.
- Inductive coordination analysis.
- Communication Interference analysis with slanted-exposure power circuits.
- Harmonic cancellation analysis.
- System detuning analysis.
- Capacitor stress analysis.
- Skin effect modeling.

Capacitor Stress Analysis

CYMHARMO includes a module for the stress analysis of all power capacitors installed in the network, including those incorporated in Filters.

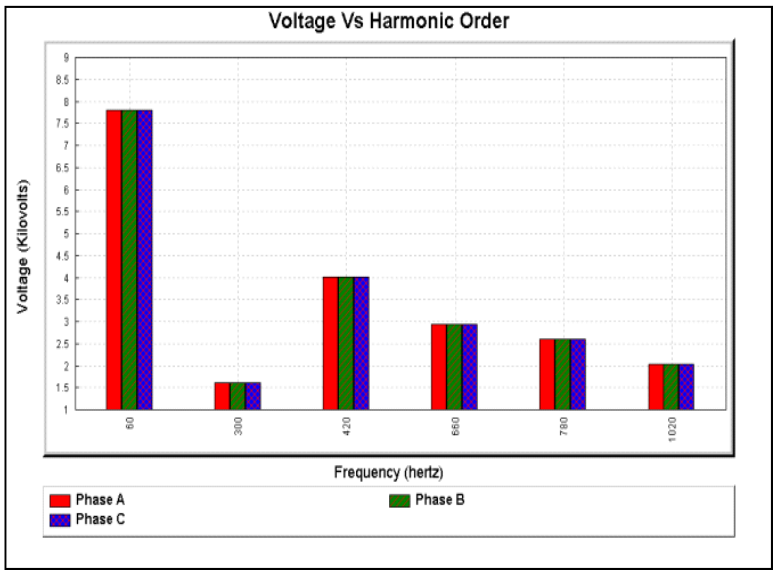
The analysis reports the harmonic currents and voltages of each Capacitor as well as the total reactive power, RMS current, RMS voltage and peak voltage.

These quantities will be compared to user defined limits and any capacitor that violates any of those limits will be reported and highlighted on the network one-line diagram.



CYMVIEW, Simulation Results Management

CYMVIEW, is common to all simulation modules that generate any kind of charts. CYMVIEW is capable of managing the outputs of the PSAF different modules including CYMHARMO.



This includes the following:

- Bar chart plots for voltage and current distortion versus Harmonic Order or Frequency.
- Time waveform plots.
- Impedance magnitude and phase plots versus frequency, for resonance and de-tuning analysis.
- R-X plots.
- Sensitivity Analysis Plots
- Possibility to plot multiple results on the same graph.

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