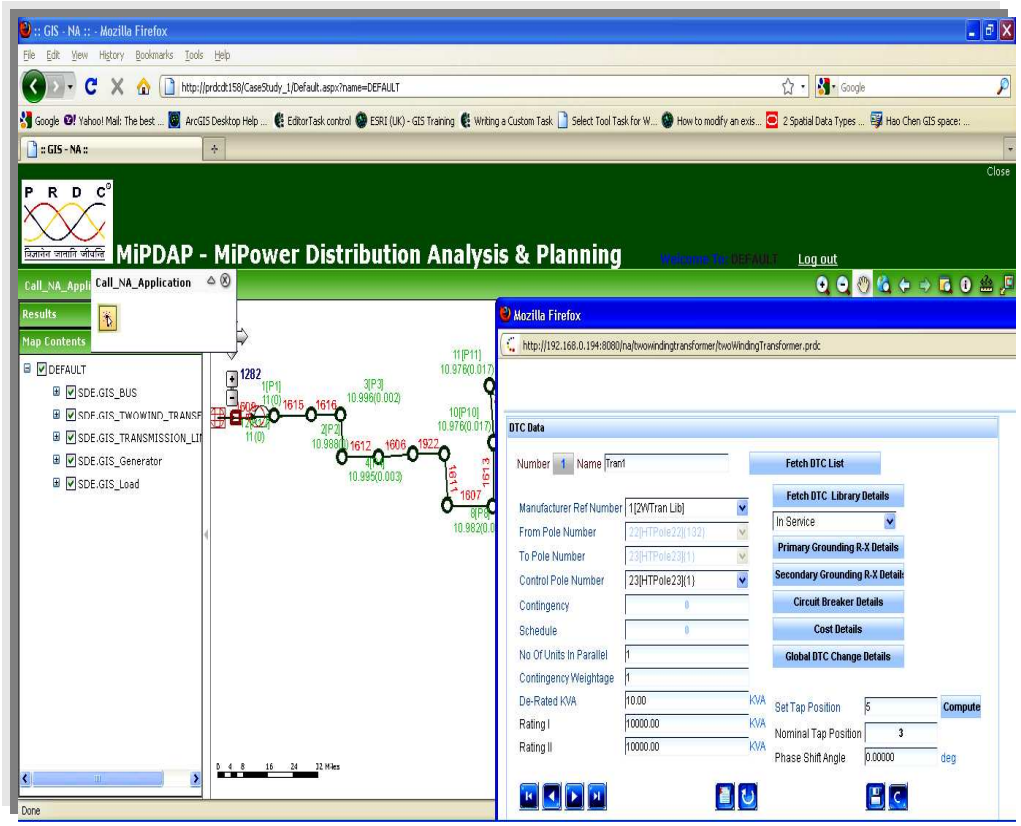
MiPDAP

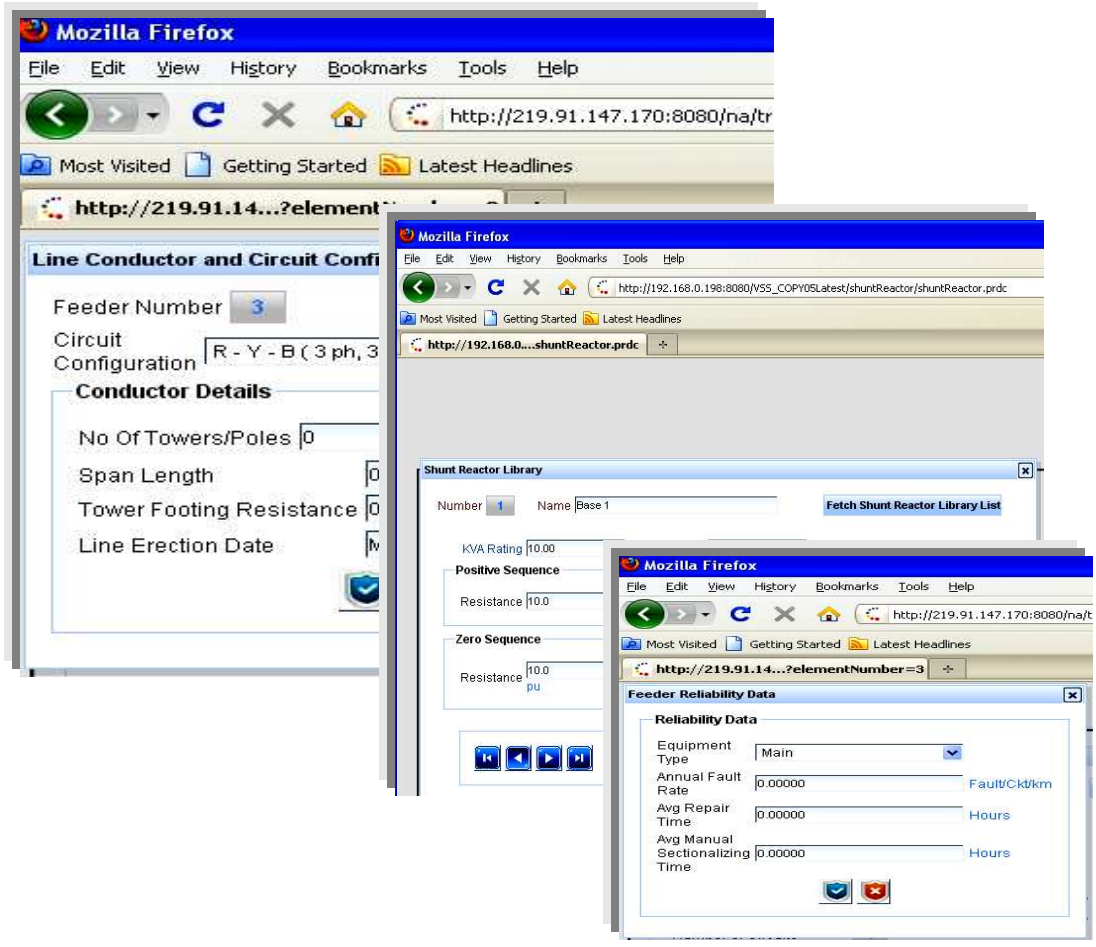
Web-based Network Analysis Software

Network Planning Tools

GIS Network Editor

- IEEE / IEC standard symbols
- Real-time Zooming / panning
- Single click Database Link
- Display of study results with SLD
- Dynamic load flow
- Creation of Contingencies
- Nested Networks
- Multi-Layers
- Save / Load snapshot
- Find a Bus / Node
- Element in-service / out-of-service
- User configurable base voltages
- Dynamic IEEE / IEC switch
- Object Z-Order control
- Integrated database
- Invoke any study - LFA, SCS...
- And more...





Database Manager

- Centralized for Elements & Library
- User friendly, Interactive forms
- Solid validated library of Relays, Breakers, Generators, AVR, SVC, Fuse, Line & Cable etc.
- Distinct element & connectivity data
- Entry in Per Unit [PU] or own rating
- Unlimited number of contingencies
- Invoke any study - LFA, SCS...
- Apply global multification factor
- Apply global reduction factor
- Integrated AVR, PSS, TG, SVC
- Custom HVDC, AVR, PSS, TG SVC
- User defined unlimited branch filters
- User defined load characteristics
- Present worth calculation
- Generator capability curves
- Standard & Custom reports
- Additional MIS reports
- Creation of sub-DB from master DB

and more.....

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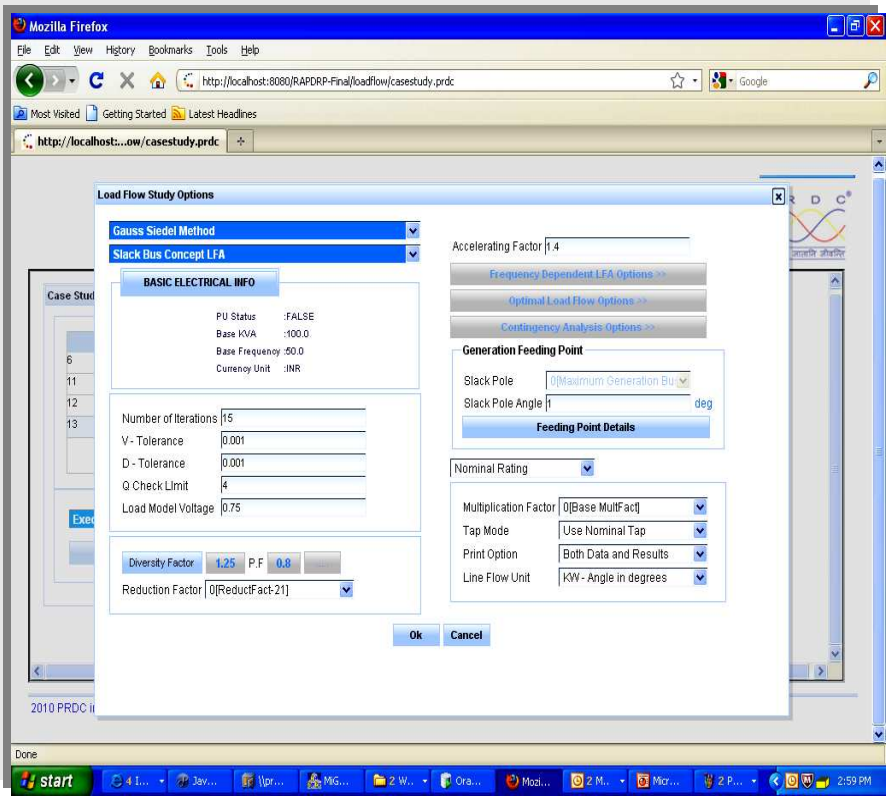
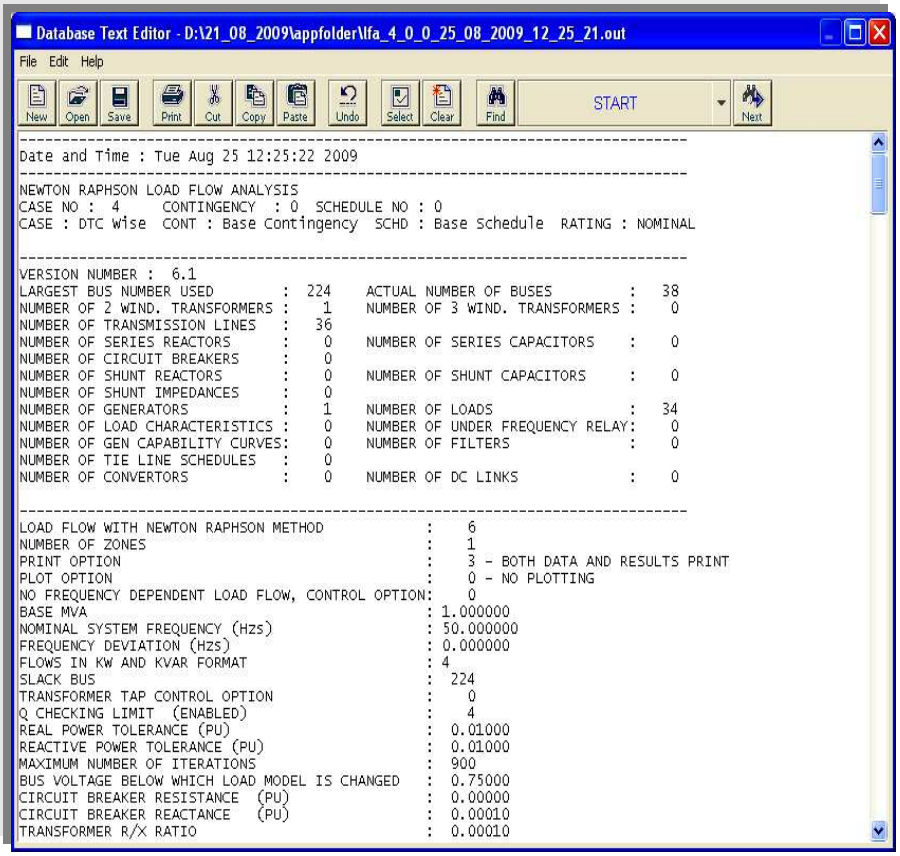
Load Flow Analysis

Feature Highlights

- ☑ Efficient memory management using sparsity technique.
- ☑ Slack bus, Frequency dependent, Optimal and contingency ranking
- ☑ Fast-DeCoupled, Newton - Raphson and Gauss - Seidel methods
- ☑ Frequency dependent with Flat Tie-Line, Flat Frequency and Flat Tie-Line Frequency Bias Control
- ☑ Active / Real Optimal load flow
- ☑ Reactive Optimal load flow
- ☑ Active/Real and Reactive load flow
- ☑ AC-DC load flow
- ☑ Looped, radial and Multiple Isolated systems
- ☑ User-defined number of contingencies, cases
- ☑ User-defined filters, load characteristics, Generator capability curves
- ☑ User-defined frequency and base MVA
- ☑ Distribution line can be opened at one or both sides
- ☑ Representation of shunt elements in admittance /impedance
- ☑ Two / Multi - terminal HVDC systems
- ☑ Modeling six/twelve pulse monopolar / bipolar HVDC converters with constant voltage/current/power controls.
- ☑ Modeling two and three winding transformers with auto tap, off nominal fixed tap and phase shift
- ☑ Grouping buses zone/area wise
- ☑ Load values, scheduled generation, reactor and capacitor values can be changed globally or zone wise using reduction factors.
- ☑ Generator Q - check limit violations after a specified number of iterations.
- ☑ Changing the load model from the given type to impedance type automatically, when the voltage magnitude at load bus goes below specified value to have better and realistic convergence.
- ☑ MVAR compensation
- ☑ Load shedding during under frequency to maintain the frequency at desired value.
- ☑ Standard and Custom reports

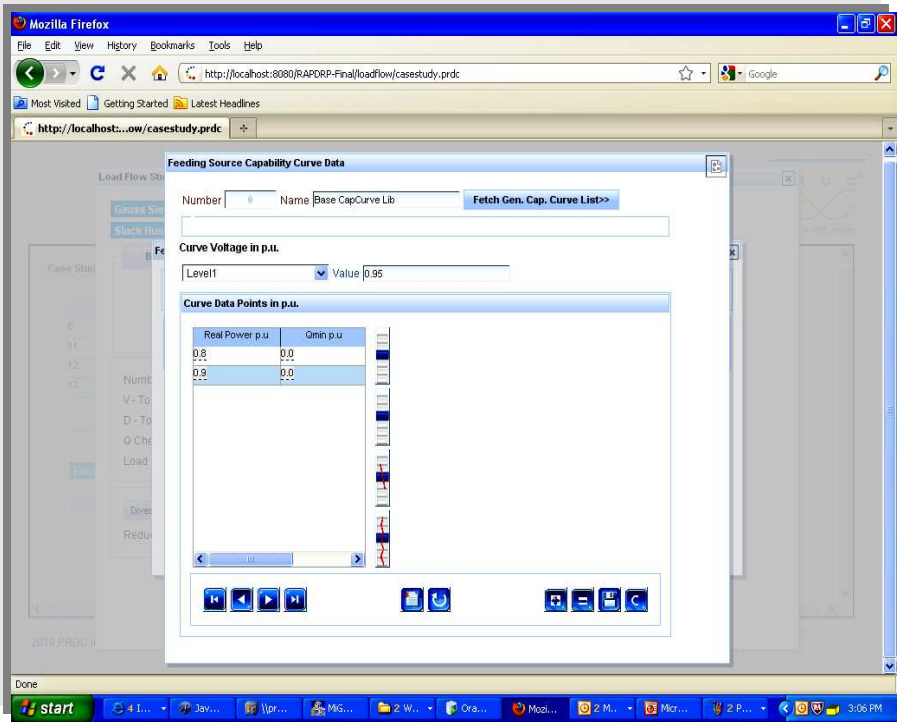


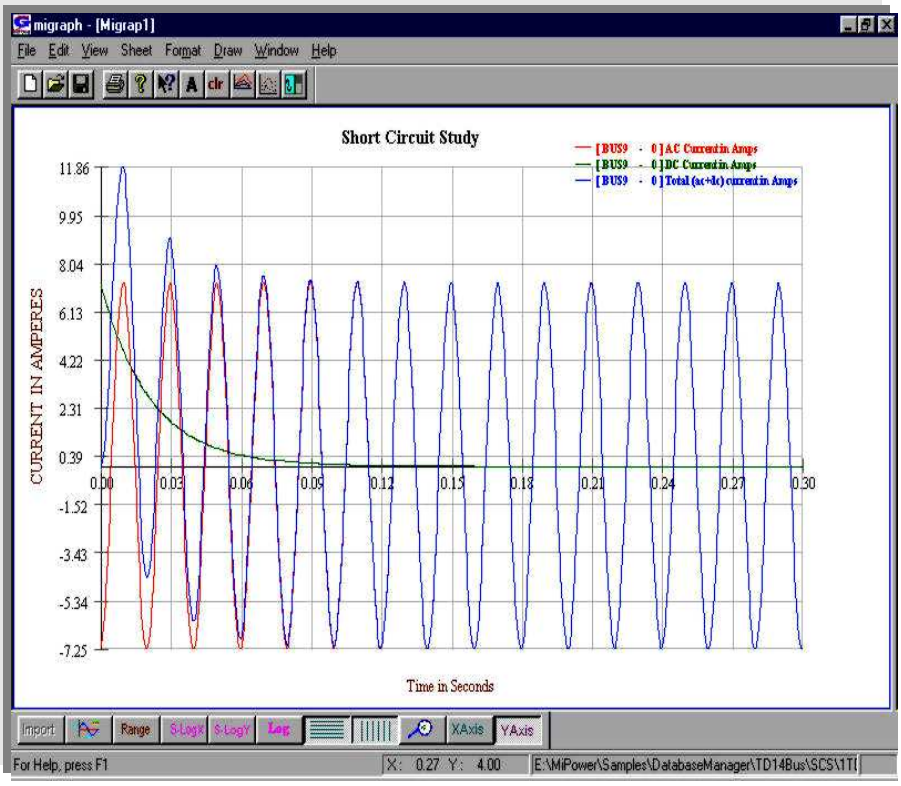


Short Circuit Studies

Feature Highlights

- ☑ ANSI / IEEE standards
- ☑ IEEE Std 141-1986[4]
- ☑ IEEE C37,010-1979[1]
- ☑ IEEE C37.5-1979 [3]
- ☑ IEEE C7010-1979
- ☑ IEC 363
- ☑ IEC 909
- ☑ Symmetrical and Asymmetrical faults
- ☑ Faults with and without impedance
- ☑ Loop, radial systems
- ☑ Multi islanding
- ☑ Multi generation
- ☑ Multi cases and contingencies
- ☑ Open conductor faults
- ☑ Travelling shunt faults
- ☑ Fault at all / selected buses sequentially
- ☑ Fault at selected voltage level/s
- ☑ Earthing & Zigzag transformers
- ☑ First cycle and interrupting fault rating
- ☑ Reactor Sizing
- ☑ Alerts breaker capacity violation
- ☑ Motor contribution to faults
- ☑ HVDC system contribution to faults
- ☑ Pre-fault voltage condition from the load flow/flat start
- ☑ Multiplication factors for unknown zero and negative -sequence parameters
- ☑ Positive, negative, zero sequence current & fault-MVA
- ☑ Phase A, B, C current and fault MVA
- ☑ Peak Asymmetrical current, Fault impedance R/x ratio
- ☑ Post-fault bus voltages, currents and impedance as seen at the relay positions
- ☑ Breaker fault interrupting capacity selection
- ☑ User defined Output units
- ☑ Custom reports





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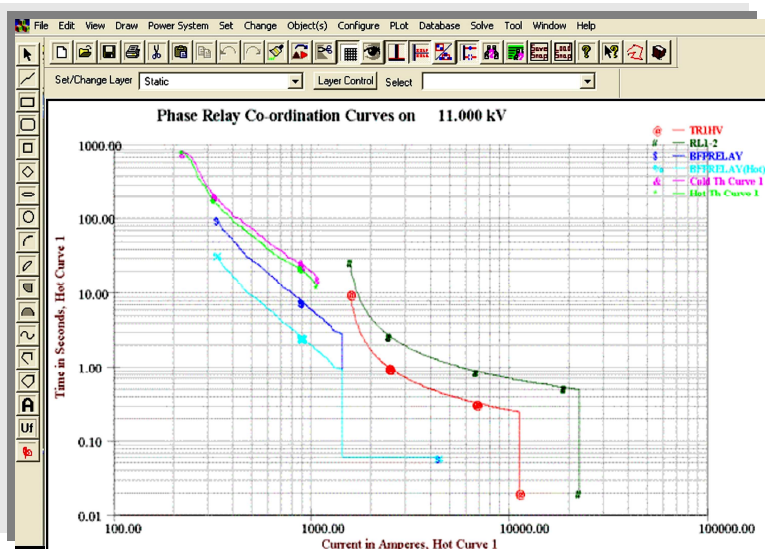
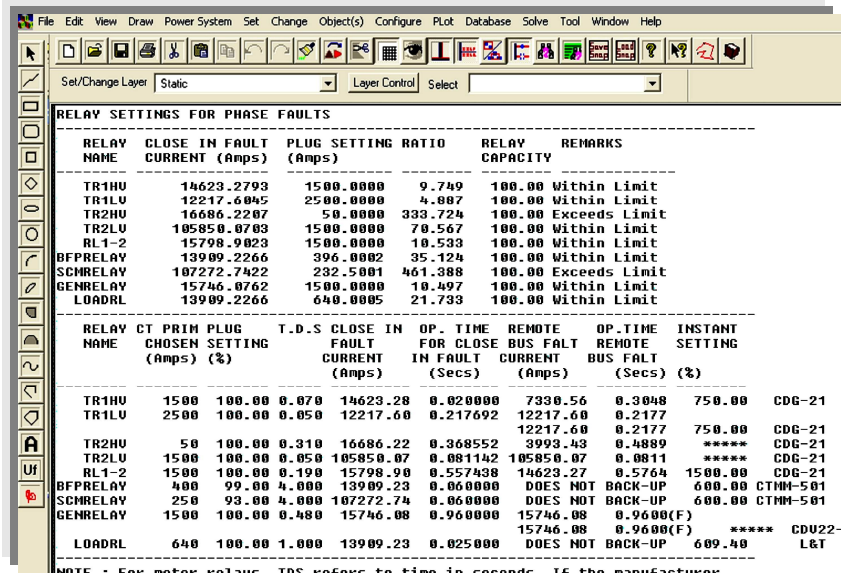
Relay Co-ordination

Feature Highlights

- ☑ Inbuilt discrimination time calculator
- ☑ Optional inclusion of motor contribution during fault simulation
- ☑ Zone 1, zone 2 and zone 3 setting for distance relays
- ☑ Hot and cold curves considered
- ☑ Phase and Earth relay co-ordination
- ☑ Automatic / Interactive / Manual Primary-back-up relay pairs generation

- ☑ Text and Graphical Output
- ☑ Export to AutoCAD
- ☑ Thermal curves for each equipment
- ☑ Optional Voltage input from load flow or flat start
- ☑ Overload factor, unbalance factor and discrimination time for each relay
- ☑ Extensive database of relays
- ☑ Radial and mesh networks
- ☑ Automatic / Interactive / Manual Primary-back-up relay pairs generation
- ☑ Save and retrieval of selected relay pairs
- ☑ Embedded fault calculation
- ☑ Phase and Earth relay co-ordination
- ☑ Optimum setting for Motor relays
- ☑ Hot and cold curves considered
- ☑ Extensive database of relays
- ☑ Extensive fuse data
- ☑ Easy adding of new relay to library
- ☑ Graphical co-ordination
  Pick, drag and drop relay curves
- ☑ Verification of existing relay settings
- ☑ Fault simulation and relay trip sequence
- ☑ Text and Graphical Output
- ☑ Export to AutoCAD
- ☑ Thermal curves for each equipment
- ☑ Optional Voltage input from load flow or flat start
- ☑ Overload factor, unbalance factor and discrimination time for each relay
- ☑ Choice of transient / Sub-transient for Fault calculation
- ☑ Fault through impedance
- ☑ Fault on bus / node/ Transmission line
- ☑ Optional inclusion of motor contribution during fault simulation
- ☑ Inbuilt discrimination time calculator
- ☑ L-G, L-L-L, L-L, L-L-G fault simulation
- ☑ Zone 1, zone 2 and zone 3 setting for distance relays
- ☑ Impedance seen by the relay for faults

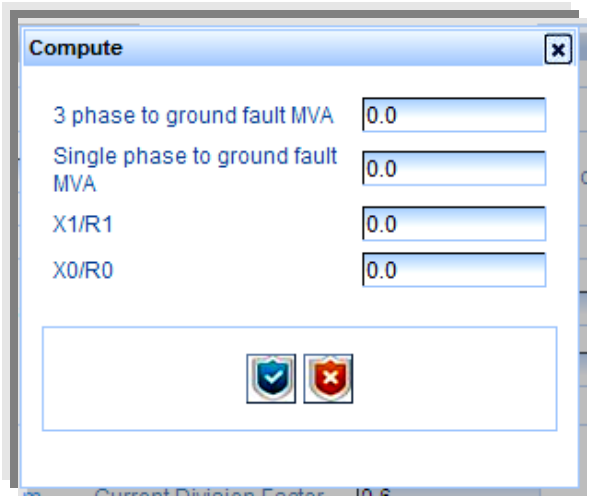


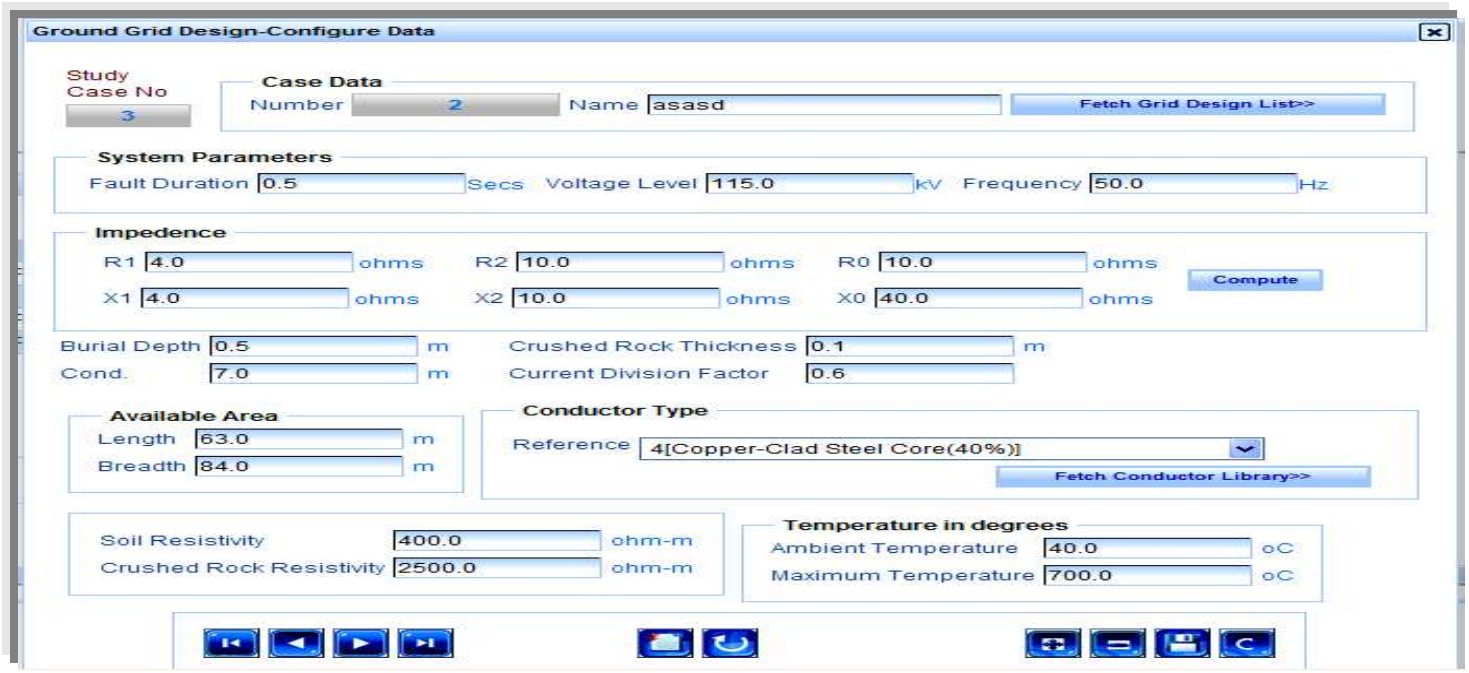


Ground Grid Studies

Feature Highlights

- ☑ Dialog based interactive program.
- ☑ Program based on ANSI / IEEE Std 80-1986 IEEE Guide for Safety in AC Substation Grounding
- ☑ Program gives Mesh voltage, Touch voltage and Step voltage
- ☑ library for material constants.
- ☑ Provides the ground grid layout diagram





Conductor No	Conductor Name	% Conductivity	Thermal Coef. at 2...	Thermal Coef. at 0 ...	Resistivity of Gnd ...	TCAP factor effect
2	Standard Annealed	100	.00393	234	1.7241	3.422
3	Commercial Hard Dra	97	.00381	242	1.7774	3.422
4	Copper-Clad Steel C	40	.00378	245	4.397	3.846
5	Copper-Clad Steel C	30	.00378	245	5.862	3.846
6	Commercial EC Alum	61	.00403	228	2.862	2.556
7	Aluminum Alloy wire	53.5	.00353	263	3.2226	2.598
8	Aluminum Alloy wire	52.5	.00347	268	3.284	2.598
9	Aluminum Clad Steel	20.3	.0036	258	8.4805	2.67
10	Zinc Coated Steel Co	8.5	.0032	293	20.1	3.931
11	Stainless Steel No 3	2.4	.0013	749	72	4.032

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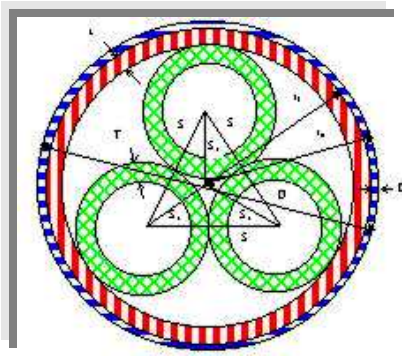
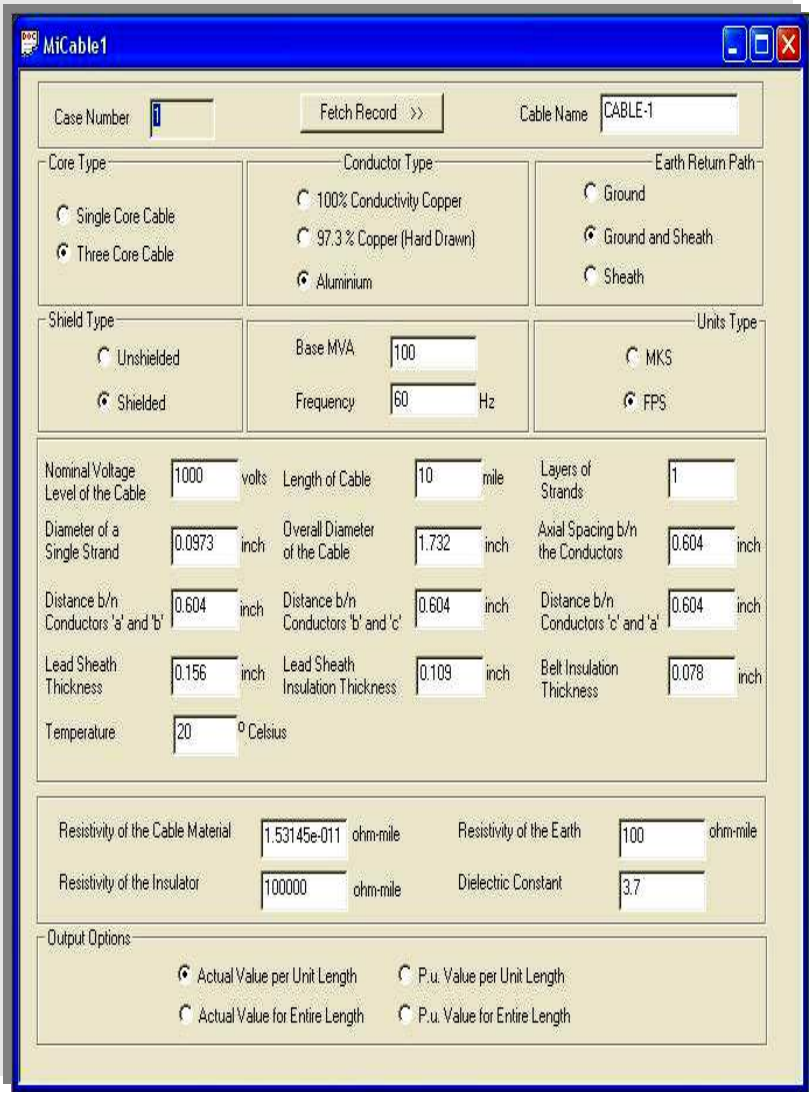
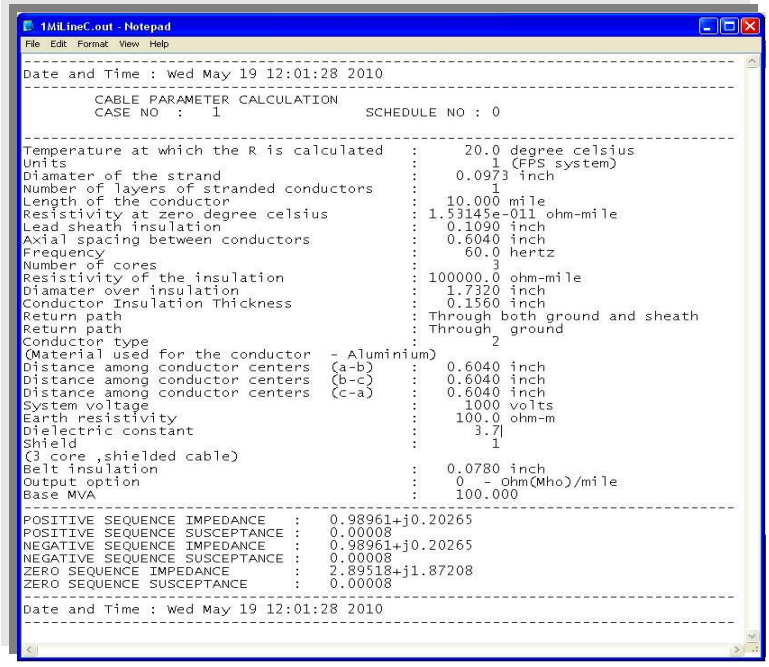
Line & Cable Parameter Calculation



Feature Highlights

- ☑ Calculates the positive, negative and zero sequence parameters of overhead lines
- ☑ Calculates the positive, negative and zero sequence parameters of Under Ground Cables
- ☑ Single and multi phase configurations
- ☑ Wide range of user defined frequencies and temperatures
- ☑ Calculates the mutual impedance between power and communication lines
- ☑ Supports 6 circuits for 3 phase line and 3 circuits for 6 phase line
- ☑ DC line parameter computation
- ☑ Transposed and untransposed Line parameters
- ☑ MKS and FPS units
- ☑ Impedance in Ohms per km or Ohms
- ☑ Impedance for entire line length or pu per km or pu for the entire line length
- ☑ Frequency varied from minimum to maximum value at user defined step
- ☑ Cable parameter calculation for both single core and 3 core cables
- ☑ Earth return path through ground or through ground and sheath or through sheath





1MiLineC.out - Notepad

File Edit Format View Help

```
------------------------------------------------------------------------------
Date and Time : Wed May 19 12:01:28 2010
------------------------------------------------------------------------------
        CABLE PARAMETER CALCULATION
        CASE NO  :   1                SCHEDULE NO : 0

------------------------------------------------------------------------------
Temperature at which the R is calculated   :     20.0 degree celsius
Units                                      :        1 (FPS system)
Diamater of the strand                     :   0.0973 inch
Number of layers of stranded conductors    :        1
Length of the conductor                    :   10.000 mile
Resistivity at zero degree celsius         : 1.53145e-011 ohm-mile
Lead sheath insulation                     :   0.1090 inch
Axial spacing between conductors           :   0.6040 inch
Frequency                                  :     60.0 hertz
Number of cores                            :        3
Resistivity of the insulation              : 100000.0 ohm-mile
Diamater over insulation                   :   1.7320 inch
Conductor Insulation Thickness             :   0.1560 inch
Return path                                : Through both ground and sheath
Return path                                : Through  ground
Conductor type                             :        2
(Material used for the conductor  - Aluminium)
Distance among conductor centers  (a-b)    :   0.6040 inch
Distance among conductor centers  (b-c)    :   0.6040 inch
Distance among conductor centers  (c-a)    :   0.6040 inch
System voltage                             :     1000 volts
Earth resistivity                          :    100.0 ohm-m
Dielectric constant                        :      3.7
Shield                                     :        1
(3 core ,shielded cable)
Belt insulation                            :   0.0780 inch
Output option                              :    0  - Ohm(Mho)/mile
Base MVA                                   :   100.000
------------------------------------------------------------------------------
POSITIVE SEQUENCE IMPEDANCE    :   0.98961+j0.20265
POSITIVE SEQUENCE SUSCEPTANCE  :   0.00008
NEGATIVE SEQUENCE IMPEDANCE    :   0.98961+j0.20265
NEGATIVE SEQUENCE SUSCEPTANCE  :   0.00008
ZERO SEQUENCE IMPEDANCE        :   2.89518+j1.87208
ZERO SEQUENCE SUSCEPTANCE      :   0.00008
------------------------------------------------------------------------------
Date and Time : Wed May 19 12:01:28 2010
------------------------------------------------------------------------------
```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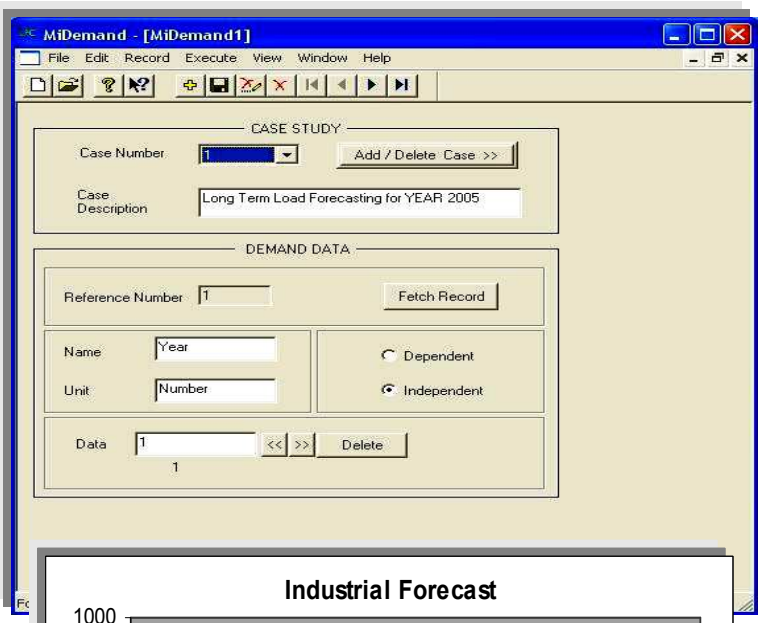
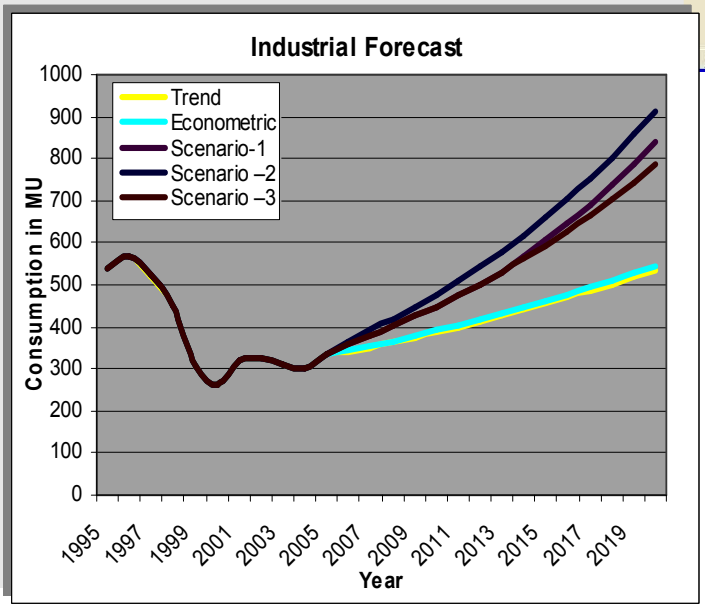
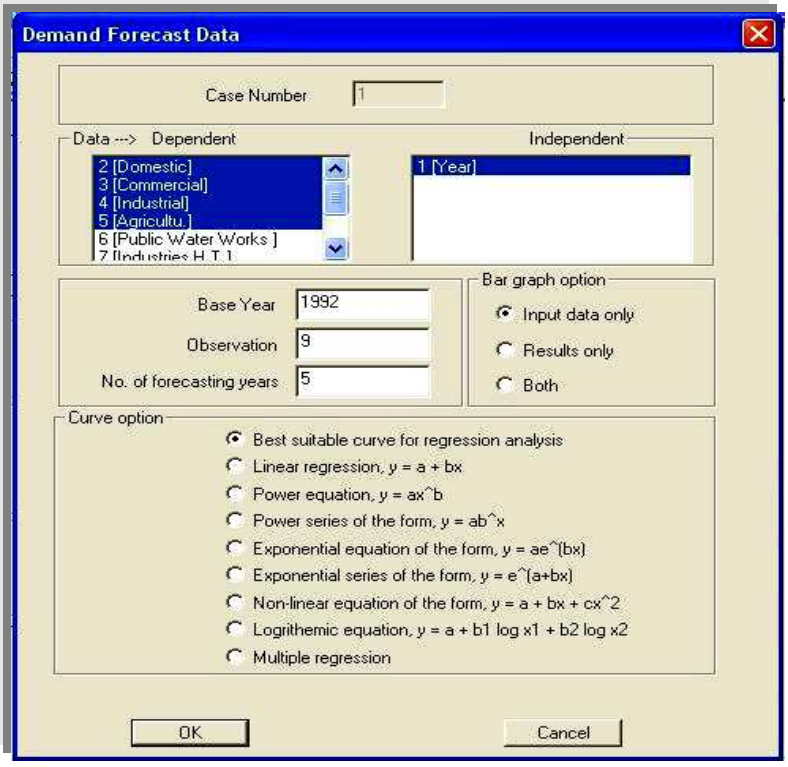
Load Forecasting

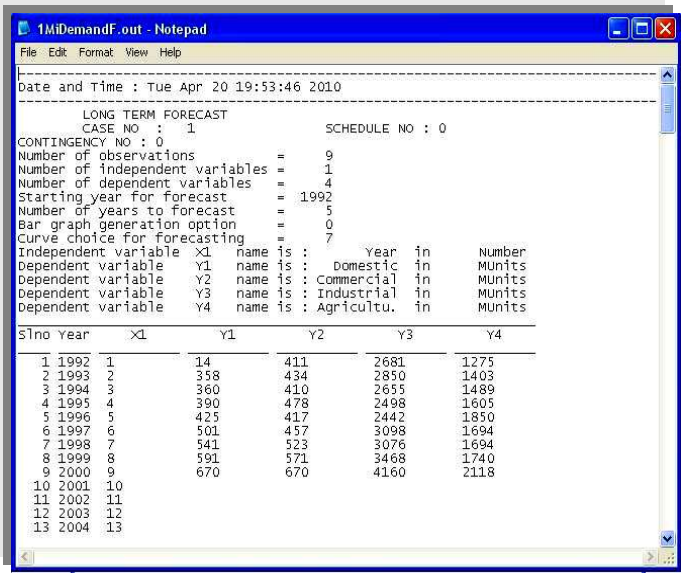
Feature Highlights

- ☑ Forecasts the energy demand during the planning stages of a power system.
- ☑ Can be applied for any type of load data.
- ☑ Can accommodate any number of independent variables.
- ☑ Multivariate regression techniques for the forecasting.
- ☑ Uses the past data for the estimation of dependent variables with least error.
- ☑ Based on the user input value, the forecasting model is selected.
- ☑ Facility to accommodate more than one independent variable (maximum 18) like, population, per-capita income, number of consumers, etc.
- ☑ In the same data file it is possible to define more than one dependent variable (maximum 18) for example total electricity consumption by different categories like, domestic, commercial, and agriculture etc.
- ☑ Capable of selecting the best model out of various models.
- ☑ Facility to accommodate maximum of 48 observations for each category.
- ☑ Output includes reports and bar graph files.









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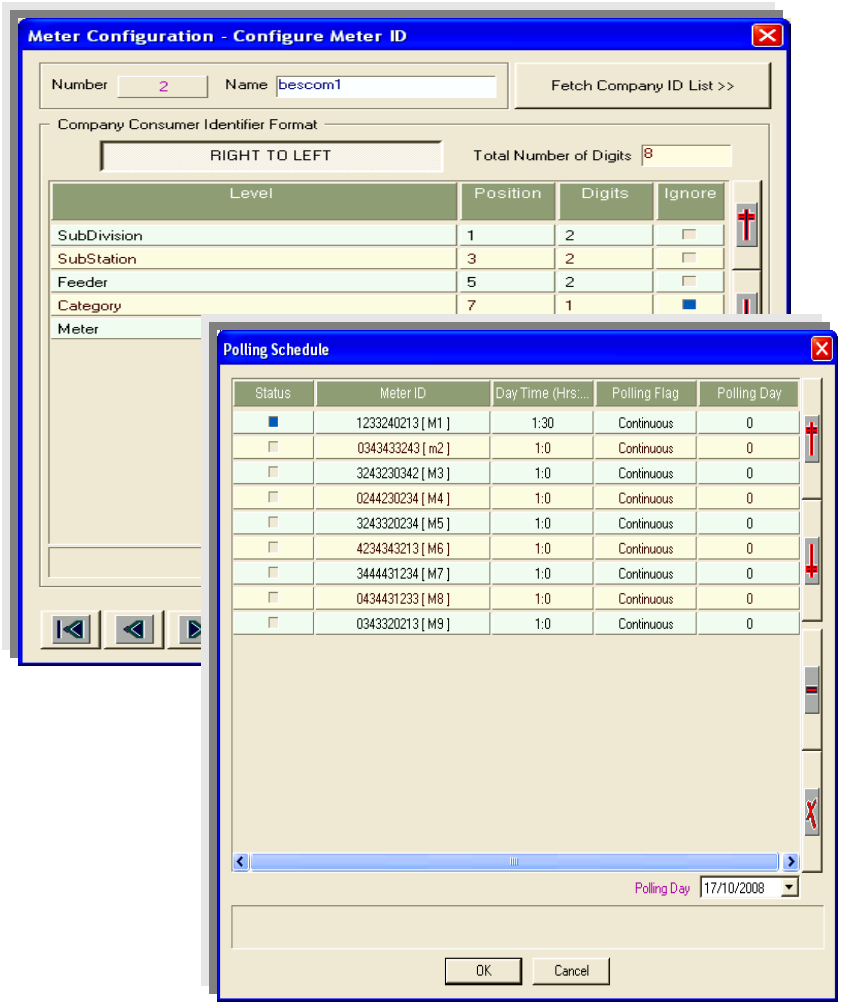
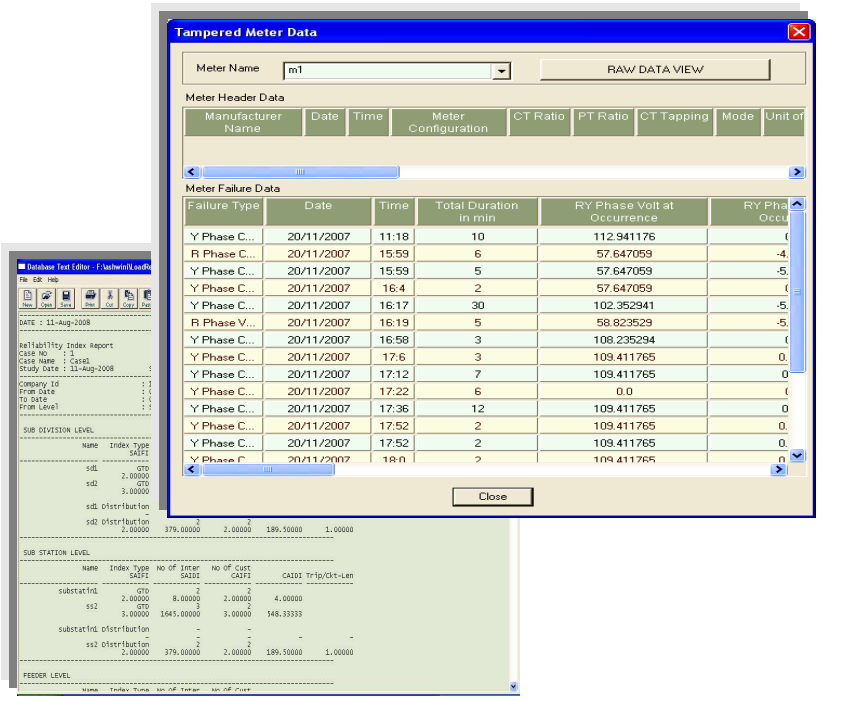
Reliability Analysis

Feature Highlights

- ☑ RI Calculation
  SAIFI - System Average Interruption Frequency Index
  SAIDI - System Average Interruption Duration Index
  CAIFI - Customer Average Interruption Frequency Index
  CAIDI - Customer Average Interruption Duration Index
- ☑ Polling the tamper data from the ETV meter, daily, weekly, monthly or yearly
- ☑ Segregation data in to Header & Tamper Data – Parsing
- ☑ Parses hexadecimal to decimal
- ☑ Updation of the Data to Database
- ☑ UI screens for -Meter configuration and polling schedule
- ☑ No Of Tripping per n KM of Line for Sub Division
- ☑ Level, Sub Station Level, Feeder Level and Meter Level
- ☑ Subdivision Level Report
- ☑ Index calculations for the subdivision level
- ☑ Substation Level Report
- ☑ Index calculations for both subdivisions and substations
- ☑ Feeder Level Report
- ☑ Index calculations for subdivision, substation and feeder
- ☑ Meter Level Report
- ☑ Index calculations for subdivision, substation feeder and meter
- ☑ Meter Reading wise Report
- ☑ Index calculations for subdivision, substation, feeder, and meter contains the failure type, Date and time of failure occurrence, duration of failure, RY voltage, BY voltage, RY Current and BY Current





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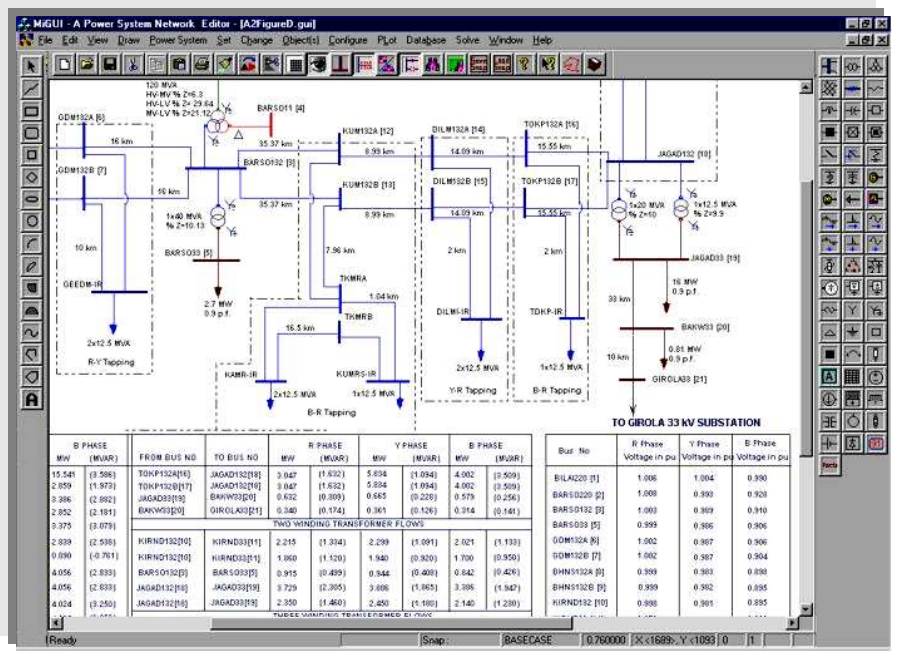
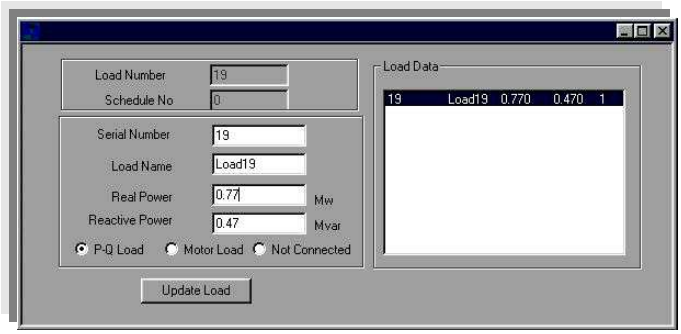
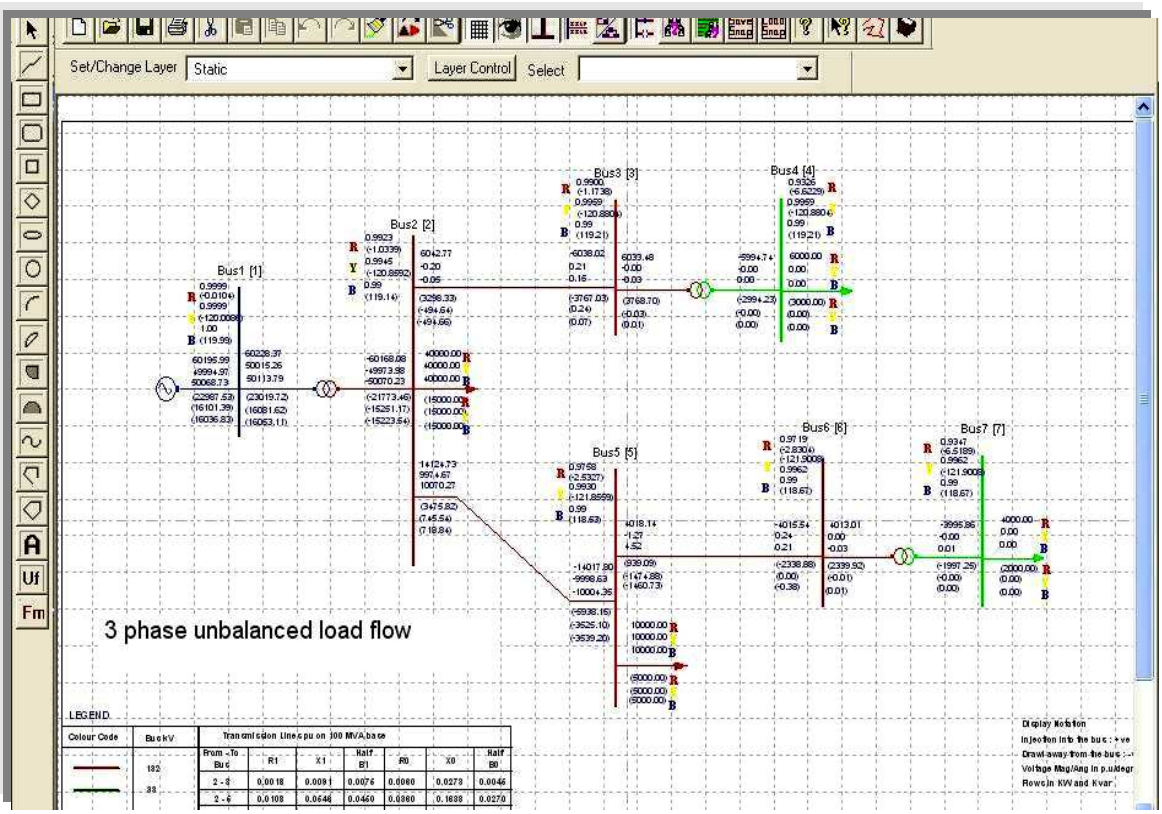
3-Phase Load Flow

Feature Highlights

- ☑ Newton Raphson Algorithm
- ☑ Provision for both balanced and unbalanced power flow.
- ☑ Provision for modeling single, double and quad circuits
- ☑ Computation of positive, negative and zero sequence voltages as well as currents and also degree of unbalance in the system
- ☑ Plotting of 3 phase load flow results on GUI.







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