

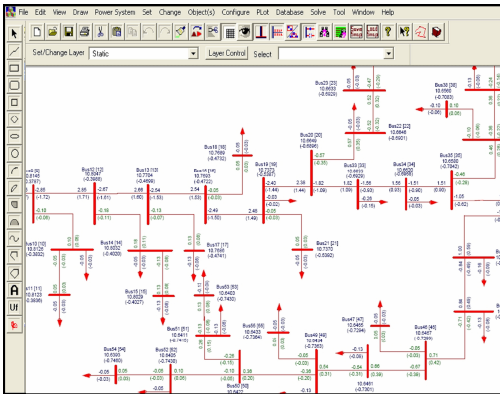
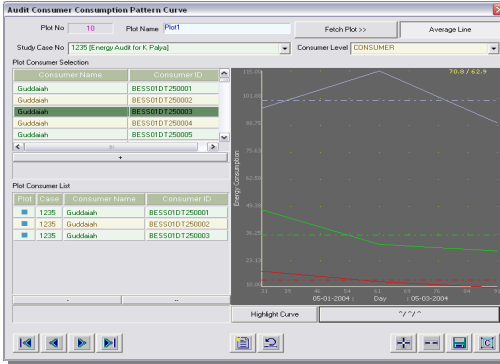
MiPDCAP

MiPower™ Distribution system Analysis & Planning



- Modeling of Distribution Network/Substation
- Energy accounting for the power system network
- Network mapping with consumer indexing for the Power system network with different voltage levels
- DTC wise loss assessment for the distribution network

Consumer ID	Serial No	Meter Const	Make	Model	Type	Max Value
BESS01DT250001	561962	1	REMCO	BLM-1	EMCG	99999
BESS01DT250002	561963	1	ACTARMS	BLM-1	EMHP	99999
BESS01DT250003	561964	1	LandG	BLM-1	EMHP	99999
BESS01DT250004	561965	1	LandG	BLM-1	EMHP	99999
BESS01DT250005	561966	1	LandG	BLM-1	EMHP	99999
BESS01DT250006	561967	1	LandG	BLM-1	EMHP	99999
BESS01DT250007	561968	1	LandG	BLM-1	EMHP	99999
BESS01DT250008	561969	1	LandG	BLM-1	EMHP	99999
BESS01DT250009	561970	1	BHEL	BLM-1	EMCG	99999
BESS01DT250010	561971	1	BHEL	BLM-1	EMCG	99999
BESS01DT250011	561972	1	TTL	BLM-1	EMHP	99999
BESS01DT250012	561973	1	TTL	BLM-1	EMHP	99999
BESS01DT250013	561974	1	LandG	BLM-1	EMHP	99999
BESS01DT250014	561975	1	LandG	BLM-1	EMHP	99999
BESS01DT250015	561976	1	LandG	BLM-1	EMHP	99999
BESS01DT250016	561977	1	LandG	BLM-1	EMHP	99999
BESS01DT250017	561978	1	LandG	BLM-1	EMHP	99999
BESS01DT250018	561979	1	LandG	BLM-1	EMHP	99999
BESS01DT250019	561980	1	LandG	BLM-1	EMHP	99999



GPS Input File: F:\input\testgps1\GPSInputFile.dat

GPS Output File: F:\input\testgps1\GPSOutputFile.out

GUI File Name: F:\input\testgps1\GPSInputFile.gui

Line File Data: F:\input\testgps1\LineData.txt

Load File Data: F:\input\testgps1\LoadData.txt

Reference shift in Kms: X-Shift: 0.10000 Y-Shift: 0.10000

No. Of Poles/km: 1000

Bus symbol reference: Symbol: 1, Font No: 1, Font Ratio: 1

Load Symbol Reference: Load: Object, Line Distance: Meters

MiGui – Network Editor

MiEA – Energy Auditing

MiRA – Reliability Analysis

MiSO – Switching Optimization

MiRG – Report Generation

MiMRI – MRI Data Downloading

Power LFA – 3 Phase Load Flow

MiCAE – Cost Analysis & Estimation

MiASSET – Asset Management

MiPDC – Protective Device Co-Ordination

MiGPS – Geographical Positioning System Interface

MiLR – Load Research

MIPDAP

MiPower™ Distribution system Analysis & Planning



MiRA – Reliability Analysis

Meter Configuration - Configure Meter ID

Number: 2 Name: bescom1 Fetch Company ID List >>

Company Consumer Identifier Format

RIGHT TO LEFT Total Number of Digits: 8

Level	Position	Digits	Ignore
Sub-Division	1	2	<input type="checkbox"/>
Sub-Station	3	2	<input type="checkbox"/>
Feeder	5	2	<input type="checkbox"/>
Category	7	1	<input type="checkbox"/>
Meter	8	1	<input type="checkbox"/>

Polling Schedule

Status	Meter ID	Day Time (Hrs)	Polling Flag	Polling Day
<input checked="" type="checkbox"/>	1233240213 [M1]	1:30	Continuous	0
<input type="checkbox"/>	034343243 [m2]	1:0	Continuous	0
<input type="checkbox"/>	324320342 [M3]	1:0	Continuous	0
<input type="checkbox"/>	0244230234 [M4]	1:0	Continuous	0
<input type="checkbox"/>	324320234 [M5]	1:0	Continuous	0
<input type="checkbox"/>	42343213 [M6]	1:0	Continuous	0
<input type="checkbox"/>	3444431234 [M7]	1:0	Continuous	0
<input type="checkbox"/>	0434431233 [M8]	1:0	Continuous	0
<input type="checkbox"/>	034320213 [M9]	1:0	Continuous	0

Polling Day: 17/10/2008

Tampered Meter Data

Meter Name: m1 RAW DATA VIEW

Manufacturer Name	Date	Time	Meter Configuration	CT Ratio	PT Ratio	CT Tapping	Mode	Unit of
Meter Failure Data								
Failure Type	Date	Time	Total Duration in min	RY Phase Volt at Occurrence	RY Phase Occ			
Y Phase C...	20/11/2007	11:18	10	112.941176				
R Phase C...	20/11/2007	15:59	6	57.647059	-4			
Y Phase C...	20/11/2007	15:59	5	57.647059	-5			
Y Phase C...	20/11/2007	16:4	2	57.647059	-1			
Y Phase C...	20/11/2007	16:17	30	102.952941	-5			
R Phase V...	20/11/2007	16:19	5	58.823529	-5			
Y Phase C...	20/11/2007	16:58	3	108.235294	0			
Y Phase C...	20/11/2007	17:6	3	109.411765	0			
Y Phase C...	20/11/2007	17:12	7	109.411765	0			
Y Phase C...	20/11/2007	17:22	6	0.0	0			
Y Phase C...	20/11/2007	17:38	12	109.411765	0			
Y Phase C...	20/11/2007	17:52	2	109.411765	0			
Y Phase C...	20/11/2007	17:52	2	109.411765	0			
Y Phase C...	20/11/2007	18:0	5	109.411765	0			

Database Text Editor - F:\shwini\loadresearch\ReliabilityIndex\Index\Index_11_08_2008_10_11_31.txt

DATE: 11-Aug-2008 TIME: 10:11:37

Reliability Index Report

CASE No: 13
CASE Name: Case1
Study Date: 11-Aug-2008 Study Time: 10:11:37

Company ID: 1
From Date: 06-Aug-2007
To Date: 06-Aug-2008
From Level: Substation Level

SUB DIVISION LEVEL

Name	Index Type	No of Inter SAIDI	No of Out CAIFI	CAIDI Tmp/Clt-Len
sdi	gtd	8.00000	2.00000	4.00000
sdi	gtd	3.00000	1645.00000	3.00000
sdi Distribution		-	-	-
sdi Distribution		2	2	189.50000
sdi Distribution		2.00000	2.00000	189.50000

SUB STATION LEVEL

Name	Index Type	No of Inter SAIDI	No of Out CAIFI	CAIDI Tmp/Clt-Len
substation	gtd	8.00000	2.00000	4.00000
s2	gtd	3.00000	1645.00000	3.00000
substation Distribution		-	-	-
s2 Distribution		2	2	189.50000
s2 Distribution		2.00000	2.00000	189.50000

FEEDER LEVEL

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

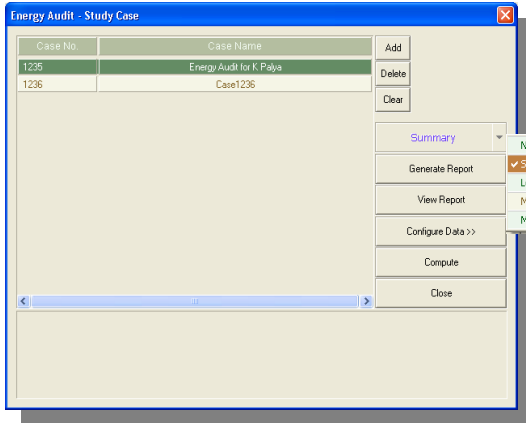
Index calculations for subdivision, substation, feeder, and meter contains the failure type, Date and time of failure occurrence, duration of failure, RY voltage, BY voltage, RY Current and BY Current

MiPDAP

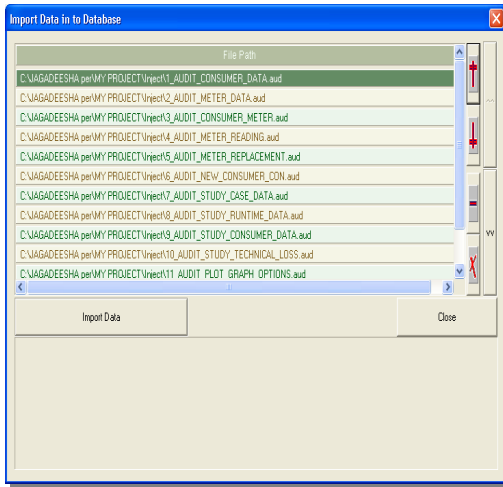
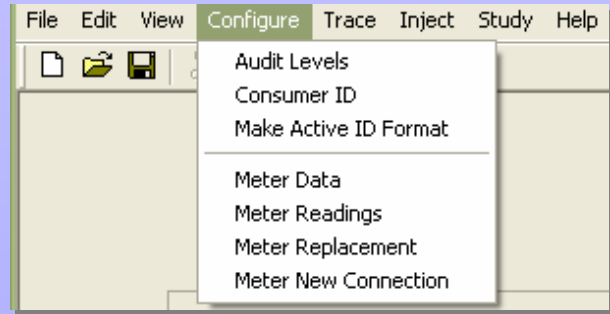
MiPower™ Distribution system Analysis & Planning



MiEA – Energy Auditing



Audit levels - DTC's, feeder, consumer, etc.



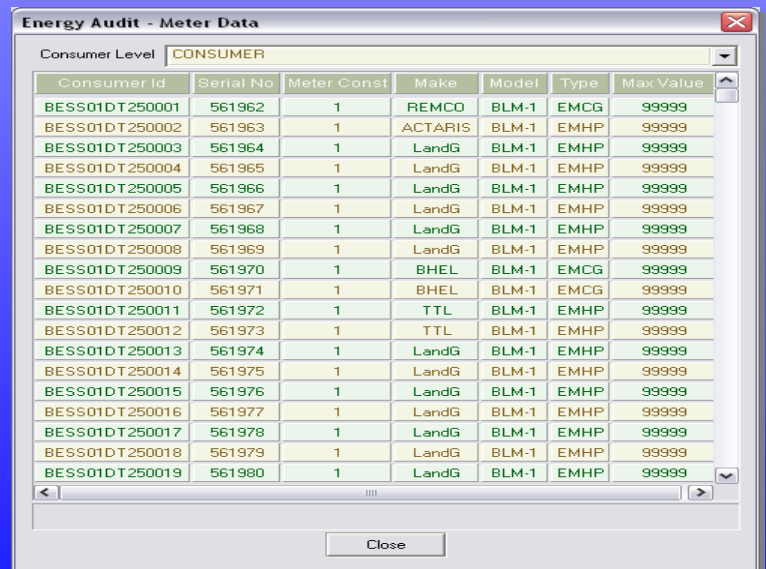
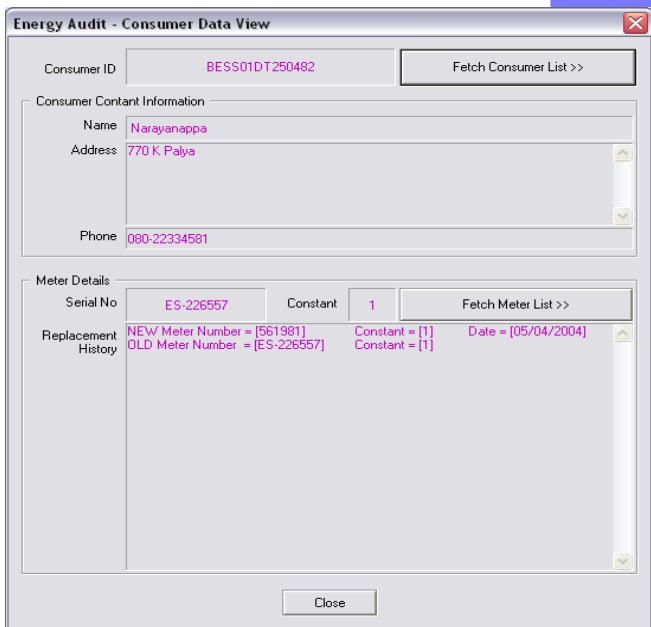
Consumer ID <<====>>. Audit level digits.
 Active ID format: To make particular company active.
 Meter data
 Meter Readings
 Meter Replacement history
 Meter New Connection

Consumer Identification Format Configuration Consumer Data View

Creating consumer data view dialog
 Popping of data from database if exists based upon meter id or consumer id.
 Data will be displayed either meter id or consumer id.

Consumer Technical Loss

Energy Audit Study Execution and Report Generation



MiPDAP

MiPower™ Distribution system Analysis & Planning

MiGPS – Geographical Positioning System Interface



GPS Interface

GPS Input File: F:\migu\testgps1\GPSInputFile.dat [Browse] [Edit/View]

GPS Output File: F:\migu\testgps1\GPSInputFile.out [Save As]

GUI File Name: F:\migu\testgps1\GPSInputFile.gui [Save As] [View Network]

Line File Data: F:\migu\testgps1\LineDetails.txt [Browse] [Edit/View]

Load File Data: F:\migu\testgps1\LoadDetails.txt [Browse] [Edit/View]

Reference shift in Kms: X-Shift: 0.10000 Y-Shift: 0.10000 [Load] [Line Distance: Object Meters]

No. Of Pixels/km: 1000

Bus Symbol reference: Symbol: 1 [Select] [Preview] [Load Symbol Reference] [Create Network Diagram]

Font No: 1 [Color] [Preview] [Font Ratio: 1] [Color] [Close]

Interface for GPS: Recording positions of the Distribution Network elements

Automatic generation of the distribution network

Update GPS Batch Data

Network Name: GPSInputFile.but [Browse]

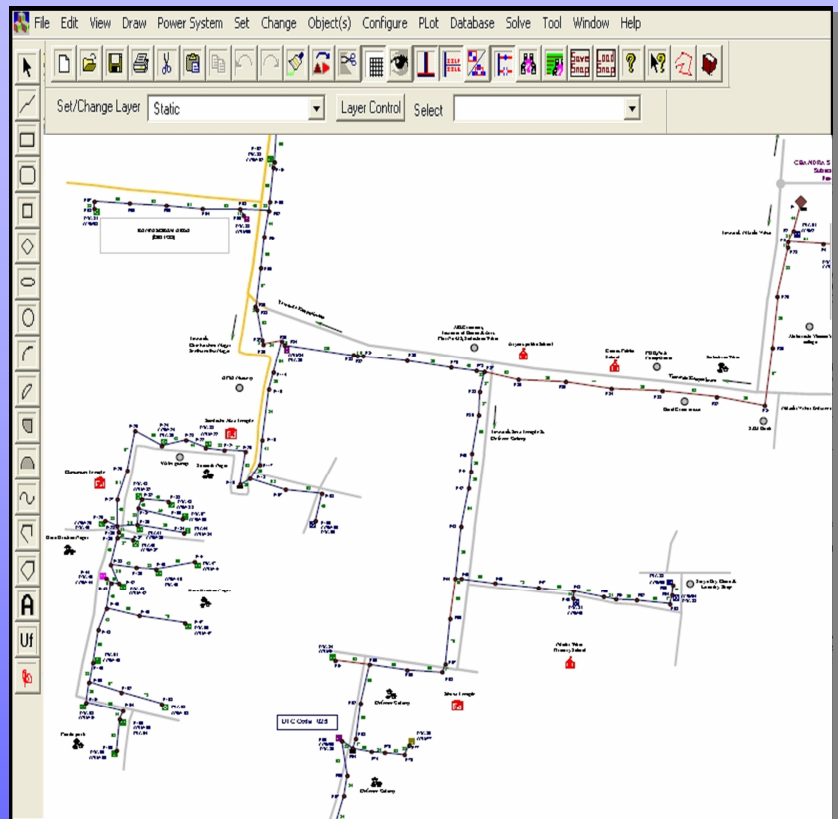
Network Path: F:\migu\testgps1 [p.u.]

Network Files:

- Network Generated Files
- GPSInputFile.but [View]
- GPSInputFile.txt [User Config]
- GPSInputFile.lit [Config Elements Records]

[Update To Oracle DB]

[Ok] [Cancel]



Direct record of GPS points
Way Point record
Geographically
Easy creation of the database
Easy creation of Distribution Network Diagram

GPS To Text Files

Input file from GPS: F:\migu\testgps1\GPSInputFile.txt [Browse]

Connection Data: F:\migu\testgps1\LineDetails.txt [Browse] [View/Edit]

Load Data: F:\migu\testgps1\LoadDetails.txt [Browse] [View/Edit]

Voltage: 11.00000 kV Pixels/km: 1000

[>> Convert To Text File >>] [Cancel]

MiPDAP



MiPower™ Distribution system Analysis & Planning

MiASSET – Asset Management

Fetch Details Tool Window

126 -> 0

Enable Sort Double Click To Edit

Case Sensitive Match Whole Word

Mark Text

Bus No	Bus Name	Bus Voltage
6032	DTLT6032	0.415
6033	DTLT6033	0.415
6034	DTLT6034	0.415
6035	DTLT6035	0.415
6036	DTLT6036	0.415

MiASSET - To view and updated all electrical device (assets) data of distribution network.

Navigation of Records

Traversing Records

Graphical User Interface for Record Operations

Viewing Records

Adding/Deleting Records

Record Operations in Database

Record Fetch

SORTING

Network Tracing & editing

User Manager responsibilities:

Grouping Permissions

Creating/Managing roles

Creating/Managing user account

Assigning/Reassign roles

File Edit View Distribution System Assets Help

- Basic Power Station
- Switch Gear
- Power Transformer
- HT Feeder ▶ 33 KV
- HT Pole ▶ 11 KV

Distribution System Assets Modes Reports Help

- Basic Power Station
- Switch Gear
- Power Transformer
- HT Feeder ▶
- HT Pole ▶
- HT Junction Pole ▶
- Distribution Transformer
- LT Feeder
- LT Pole
- LT Junction Pole
- Metering Point ▶
 - PXer(Secondary)
 - PXer(Primary)
 - HT Feeder
 - DXer
 - Street Light
- Consumer

Basic Power Station

Consumer Id	00200000000	Fetch Details >>
Administrative Id	1111010001	Config ConsumerID >>
Circle Code	1	Config AdministrativeID >>
Division Code	1	Switch Gear >>
Sub Division Code	1	Power Transformer >>
Section Code	1	InComing Feeder >>
Sub Station Code	2	
Circle Name	CircleName_1	
Division Name	DivName_1	
Sub Division Name	SubDivName_1	
Section Name	SectionName_1	
Sub Station Name	StName_2	

No. of Switch Gear: 2 No. of Incoming Feeders: 1

No. of Outgoing Feeders: 1 No. of Power Transformer: 3

Date of Commission: 23/12/2008

Verified Configure Modification Details

MiPDAP

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MiLR – Load Research

LR-Configure User Group

Meter Unit Code	Meter Category
4252019	COMMERCIAL
6486639	DOMESTIC
6607306	COMMERCIAL
6607314	DOMESTIC
1956562	INDUSTRIAL
2993815	
2993839	
2994175	
2994218	
900279	

Config Load Category Class

Class Name	Class Range From	Class Range To
Load Class1	1	500
Load Class2	300	700

Ok Cancel

MiPLOAD RESEARCH

Load Characteristics

Load Categories

Load Category Classes

User Groups - Configure predominant consumer type associated with different meters (all meters identified separately by meter unit code). Different types of consumers are recognized as configured

Metered Customers - Configure data for non-metered customers

Meter Data - Load Meter Data contained in the formatted excel files.

- Edit
- View
- Delete

Group Meter Load Research:

Study Case Screen provides option to create and configure case studies, execute the configured case studies, generate reports and view graph.

Group Study: Configure cases for different types of studies such as Single Day Analysis, Multiple Days Analysis and Typical Weekday Analysis

LR - Group Study Options

Case No: 8 Name: CASE8

Study Options

Study Date: 10/06/2007

Study Date To: 10/12/2008

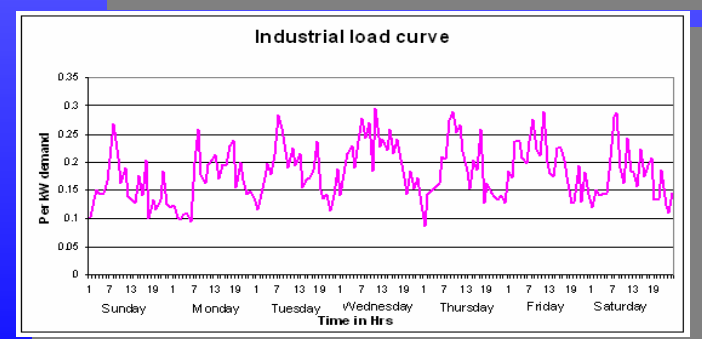
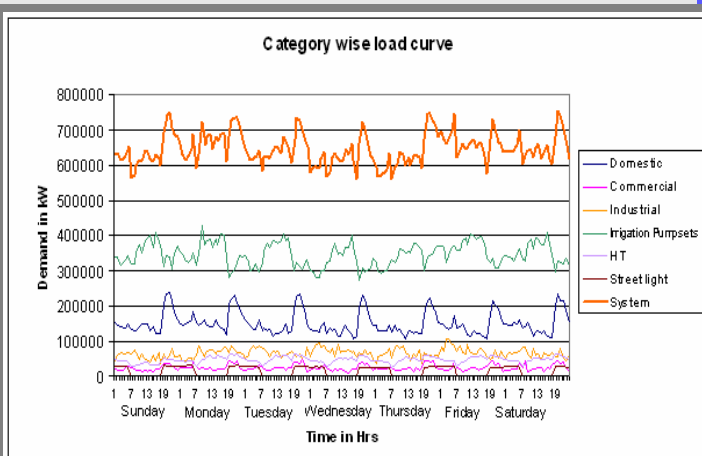
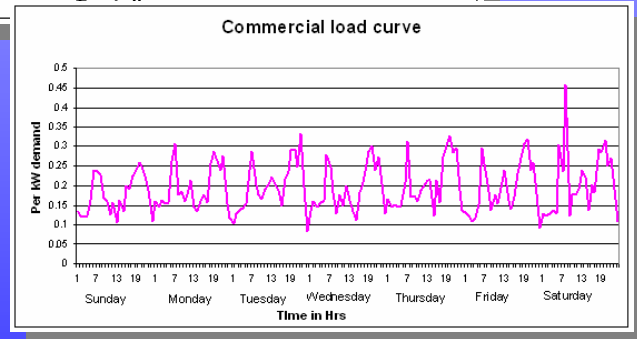
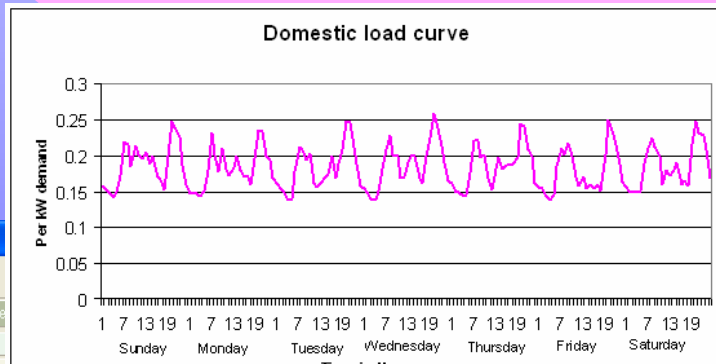
Select Week Day: Single Day

Select Group Name: T[COMMERCIAL]

Meters Selected for Study

Sl.No	MeterName
1	6486639
2	6607306
3	6607314

Ok Cancel

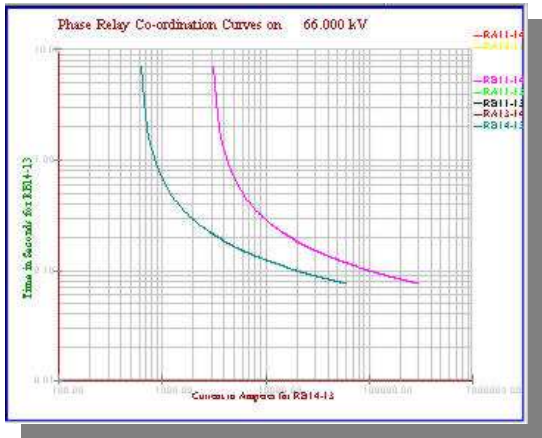


MiPDAP

MiPower™ Distribution system Analysis & Planning



MiPDC – Protective Device Co-Ordination



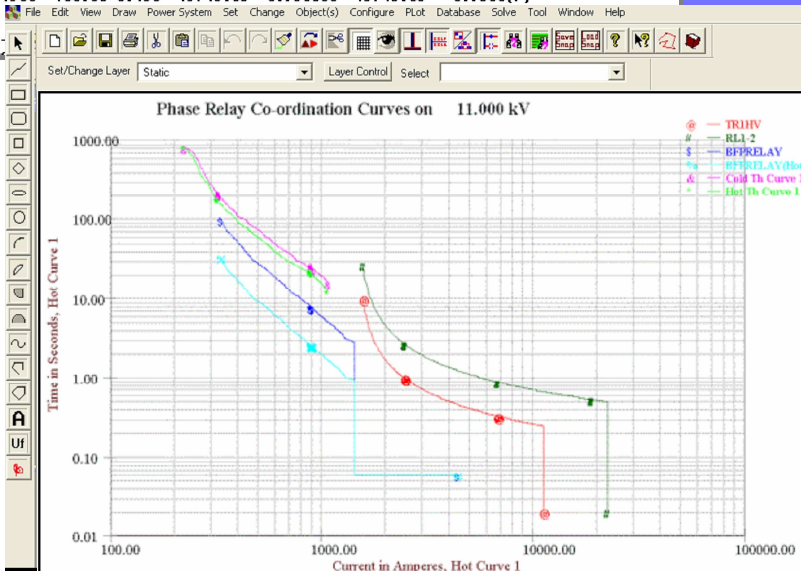
- Inbuilt discrimination time calculator
- Optional inclusion of motor contribution during fault simulation
- Zone 1, zone 2 and zone 3 setting for distance relays
- Hot and cold curves considered
- Phase and Earth relay co-ordination
- Automatic / Interactive / Manual Primary-back-up relay pairs generation

RELAY SETTINGS FOR PHASE FAULTS

RELAY NAME	CLOSE IN FAULT CURRENT (Amps)	PLUG SETTING (Amps)	RATIO	REMARKS
TR1HU	14623.2793	1500.0000	9.749	100.00 Within Limit
TR1LU	12217.6045	2500.0000	4.887	100.00 Within Limit
TR2HU	16686.2207	50.0000	333.724	100.00 Exceeds Limit
TR2LU	10585.0.0700	1500.0000	7.0567	100.00 Within Limit
RL1-2	15798.9023	1500.0000	10.533	100.00 Within Limit
BFPRELAY	13909.2266	396.0002	35.124	100.00 Within Limit
SCMRELAY	107272.7422	232.5001	461.388	100.00 Exceeds Limit
GENRELAY	15746.0762	1500.0000	10.497	100.00 Within Limit
LOADRL	13909.2266	640.0005	21.733	100.00 Within Limit

RELAY NAME	CT CHOSEN (Amps)	PLUG SETTING (%)	T.D.S	CLOSE IN FAULT CURRENT (Amps)	OP. TIME IN FAULT (Secs)	REMOTE BUS FAULT CURRENT (Amps)	OP. TIME REMOTE BUS FAULT (Secs)	INSTANT SETTING (%)	REMARKS
TR1HU	1500	100.00	0.070	14623.28	0.020000	7330.56	0.3048	750.00	CDG-21
TR1LU	2500	100.00	0.050	12217.60	0.217692	12217.60	0.2177	750.00	CDG-21
TR2HU	50	100.00	0.310	16686.22	0.368552	3993.43	0.4889	*****	CDG-21
TR2LU	1500	100.00	0.050	105850.07	0.081142	105850.07	0.0811	*****	CDG-21
RL1-2	1500	100.00	0.190	15798.90	0.557438	14623.27	0.5764	1500.00	CDG-21
BFPRELAY	400	99.00	4.000	13909.23	0.060000	DOES NOT BACK-UP	600.00	CTHM-501	
SCMRELAY	250	93.00	4.000	107272.74	0.060000	DOES NOT BACK-UP	600.00	CTHM-501	
GENRELAY	1500	100.00	0.480	15746.08	0.960000	15746.08	0.9600(F)		

- ✓ 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



- ✓ Extensive fuse data
- ✓ Easy adding of new relay to library
- ✓ Graphical co-ordination
Pick, drag and drop relay curves