

EMS (Energy Management System) - PACKAGE



A system which links machines to computer

Upgrading existing one's skills are vital in today's rapidly changing world of networked business. In the field of Energy Management System, vital information many a times lags in the way, it is being communicated. If this exchange of information is done properly, organizations could get an unexpected leverage towards achieving higher goals and better targets. The critical data if analyzed in a process with the means of effective systems like EMS would highlight the setbacks in the presently adopted building control / process control mechanism and prompt the entrepreneurs to channels the resources as well as efforts in a direction, which symbolizes ease of operation, security, accuracy and higher productivity and power savings. One such panacea is Softhard EMS.

With our EMS solution, you can visualize, control, analyze and optimize production data across your operations – resulting in enhanced decision making, faster time to market, improved productivity and reduces cost.



Solution for All Sector & Technologies

- Air-Conditioning
- Chemical & Pharmaceutical industries
- Power Supply & Distribution
- Water & waste water Treatment
- Mechanical & plant Engineering
- Plastic & Rubber industries
- Paper manufacturing & processing, printing industries
- Metal process & steel industries
- Building control technology & Property management

Highlights:

+ Email facility

- Alarm generated & reset
- Shift Report – Customized or department wise
- Data Log Report
- Factory performance, Actual v/s design comparison
- Graph of Factory performance, Actual v/s design comparison

+ SMS facility

- Alarm generated & reset
- Periodic (Settable Time) important monitoring parameter, Actual value send. E.g. KW, Temperature, Current, Voltage etc...

+ Alarm analysis

- History with date / time & cause of trip
- Cause wise sorting
- Machine wise sorting
- Date / Time wise sorting

+ Data analysis

- Data log in tabular format
- History with date / time
- Shift Report
- Periodic (Settable Time) Report facility
- Date / Time wise sorting

+ Factory / Building Performance Evaluation Report

- Production v/s IKW or TR v/s IKW
- Continuously display of actual IKW/Production v/s design IKW/Production
- Continuously display of actual IKW/TR v/s design IKW/TR
- Cumulative display of Total Production v/s KWH or TRH v/s KWH
- Total Production/KWH or TR/KWH actual v/s design
- Gap between design & actual IKW/Production or TR/KWH & its implication in terms of higher power consumption & lower capacity generated
- Possible reasons for lower Production & higher KW or lower TR & higher KW

EMS Features:

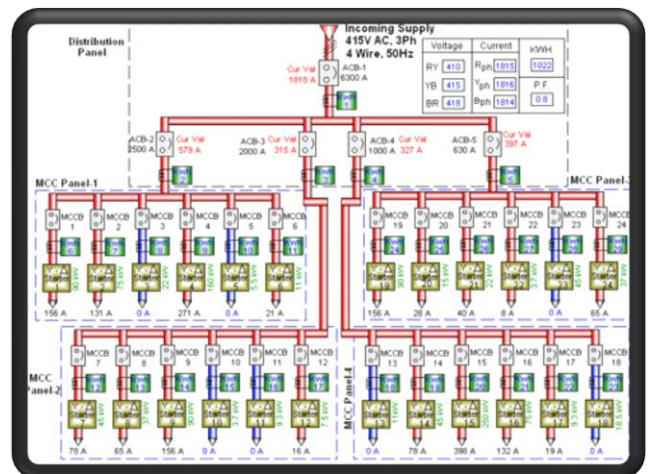
- Monitor and control plant processes, equipments and resources
- Collect and share real-time and historical data with users on all levels of your business
- Respond faster to process conditions and market demands
- Maximize plant effectiveness, increase productivity, reduce cost and waste
- Benefit from a fully secure automation system that delivers 100% data integrity
- Tag Configuration is possible on field.
- Drawing Mimics using various controls is possible on field.

- **Benefits**

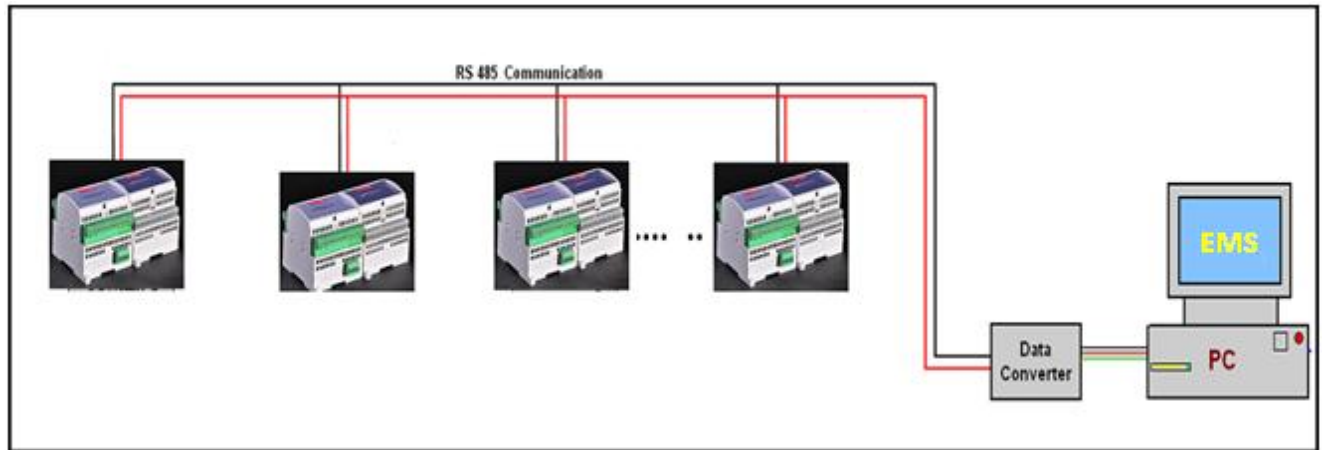
- Develop and deploy powerful automation solutions faster and easier
- Achieve faster time-to-market with new products
- Increase productivity and product quality
- Reduce your system maintenance and expansion costs
- Increase data integrity
- Greater operator accountability
- Higher efficiency

Monitoring and Control

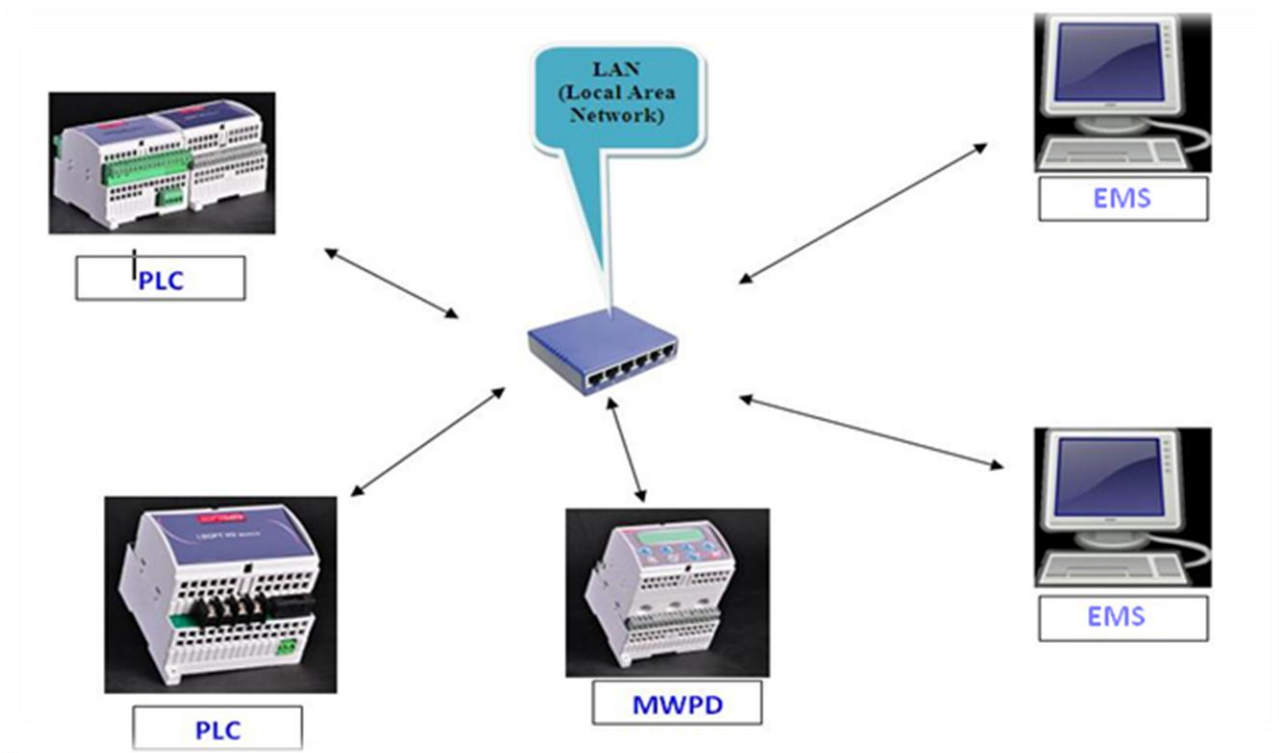
EMS is a robust HMI/EMS solution, providing process visualization, data acquisition and supervisory control of your plant floor operations. EMS gives you the power and security to precisely monitor and control every aspect of your manufacturing process as well as your equipment and resources, resulting in faster response to production issues, less waste, improved quality, faster time-to-market with new products, and increased profitability.

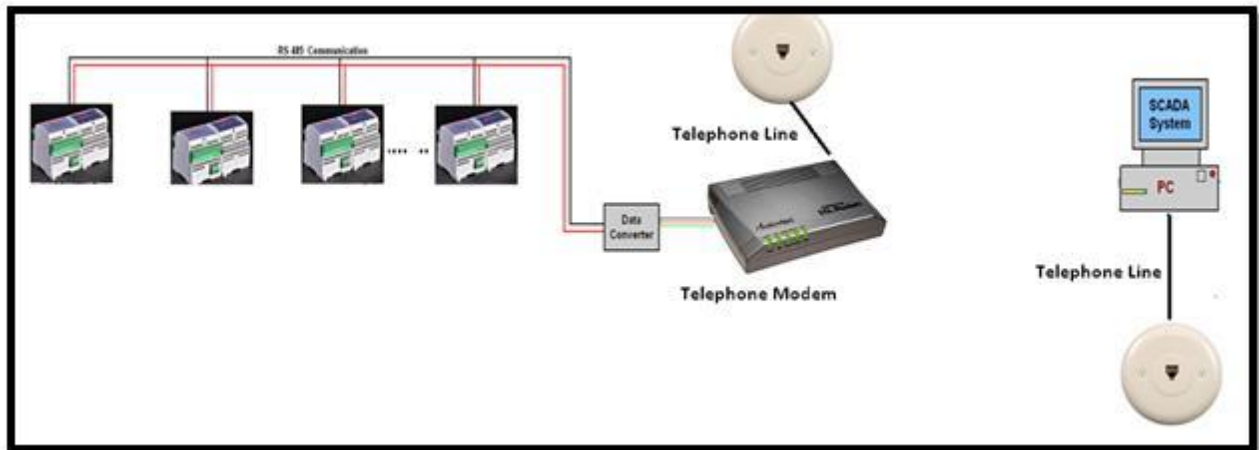


- **EMS Connectivity :**
- RS232---- Local connectivity
- RS 485 ---- Local connectivity (Multiple Devices can be connect)



- Ethernet (Local Area Network) ---- REDUNDANT EMS System
Using Ethernet multiple clients can be connected in EMS system which gives redundancy.

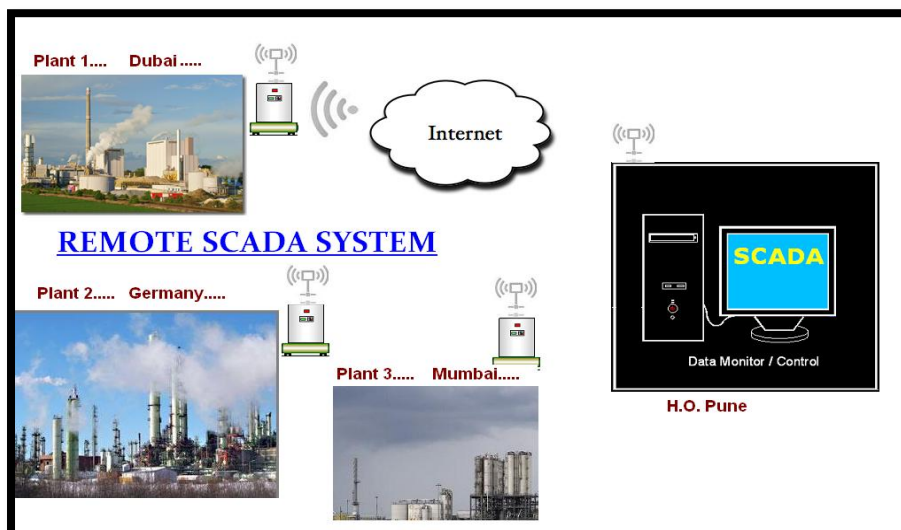
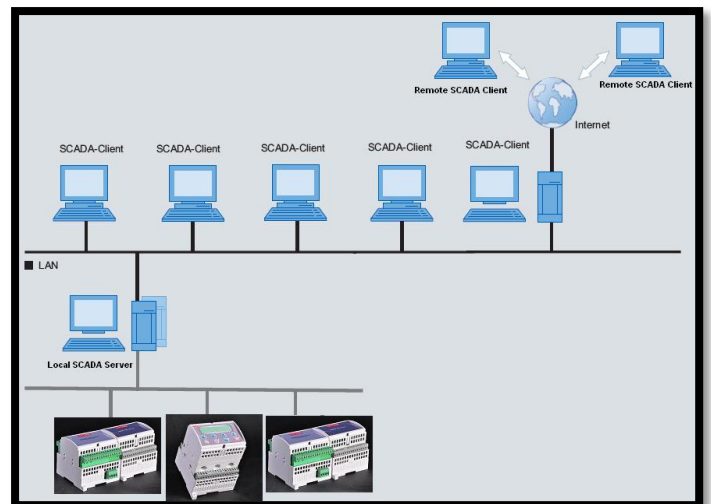




- Telephone Modem ---- Remote Access EMS System
- GSM---- Remote Access through GPRS - (Mobile SIM)

- **Internet ----- Remote Access REDUNDANT EMS System**

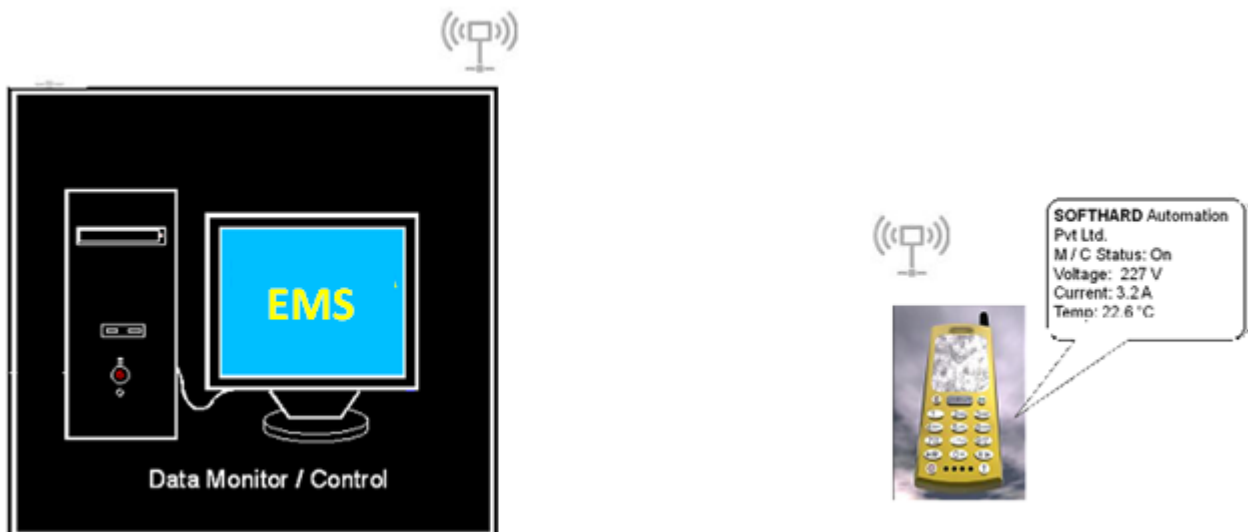
- Multiple Server and/or Clients can be connected with EMS system.
- Reduced overheads for administration & maintenance.
- Centralized rights Management
- Highly redundant solutions



Plant Monitoring on Mobile through SMS : Instant Data Access

Plant manager can be monitor the Machine status (healthy / trip status as well as plant readings) on Mobile through SMS using EMS SMS facility.

SMS are received on regular interval, on tripping etc. Instant data access on Mobile for a defined group of people.



- **Plant monitoring through e-mail :**

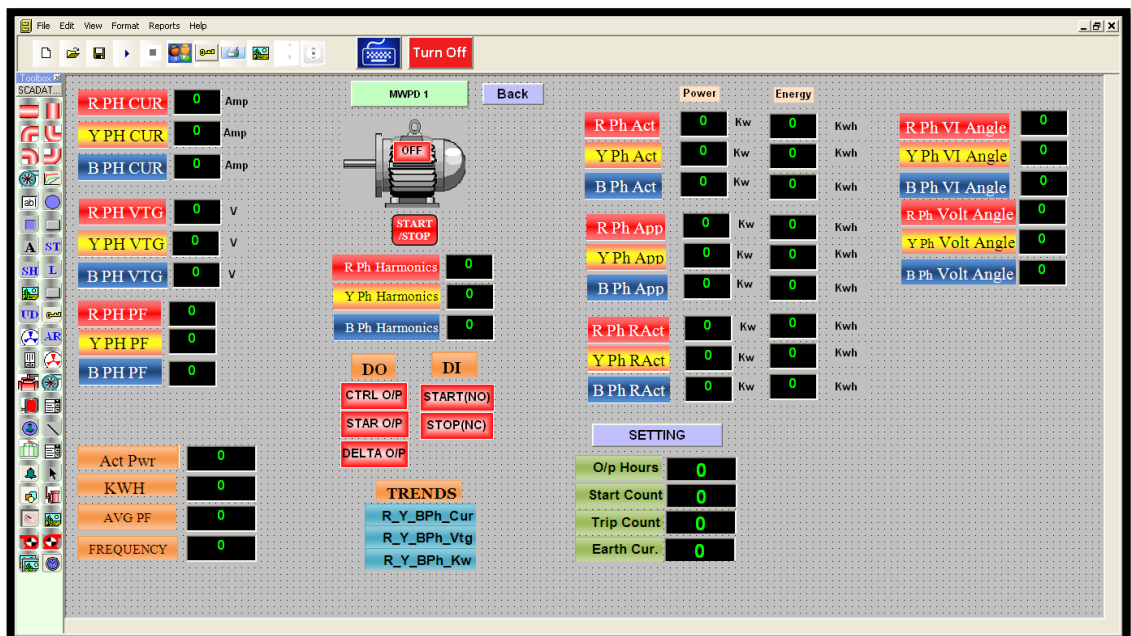
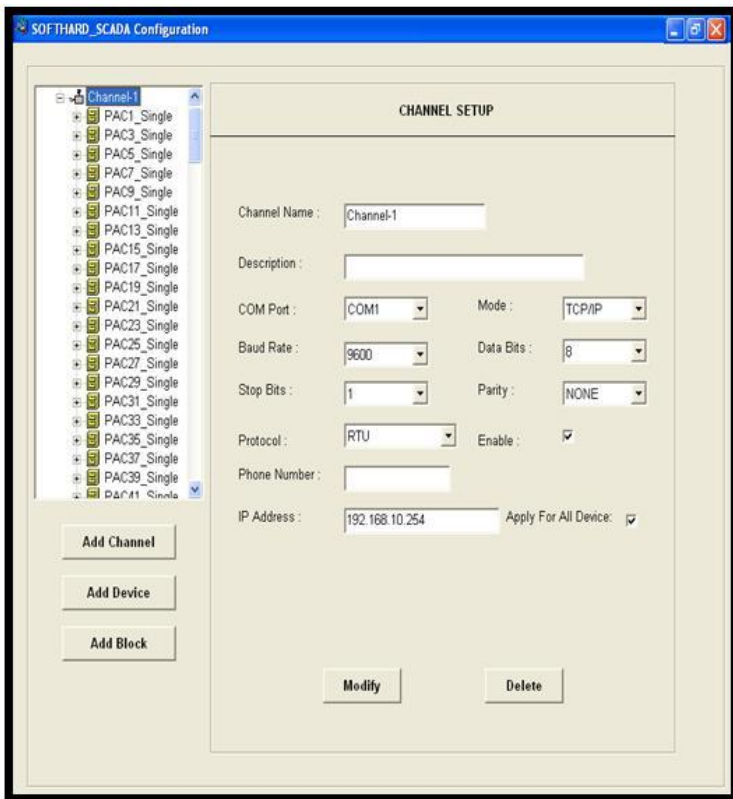
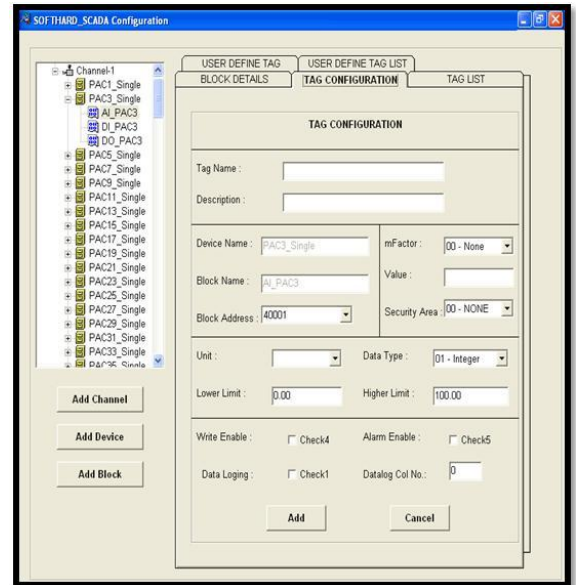
Plant can be monitor, analyze using email facility in EMS. Email is sending on regular interval with attach data log file in MS Excel to group of people. On trip immediately email is send to the concern person & its authority.

Various types recipients are added like To, Cc & Bcc in Email settings.

- **EMS Configuration:**

EMS can be configured easily & efficiently.

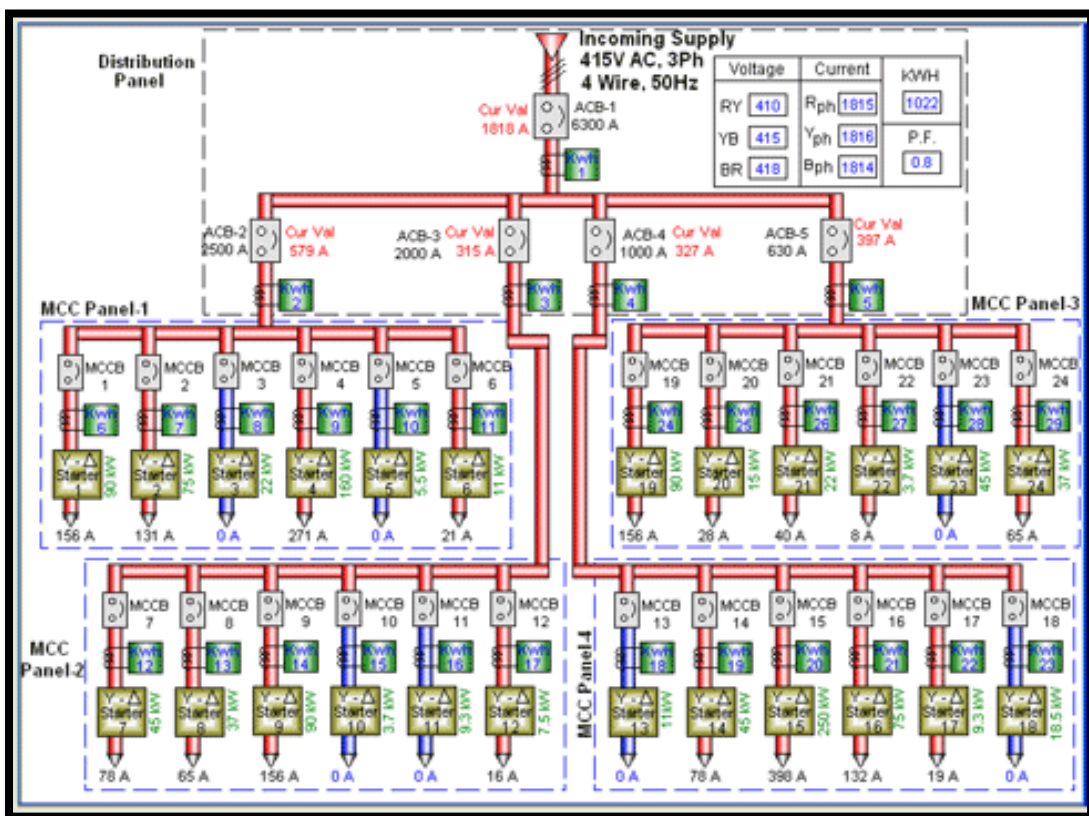
- User-friendly, Object oriented graphics editor
- Compressive libraries
- Efficient Modular system
- Configuration & Design tool available
- Channel, Device & Tag separate module for configuration



- **Plant Viewer :**

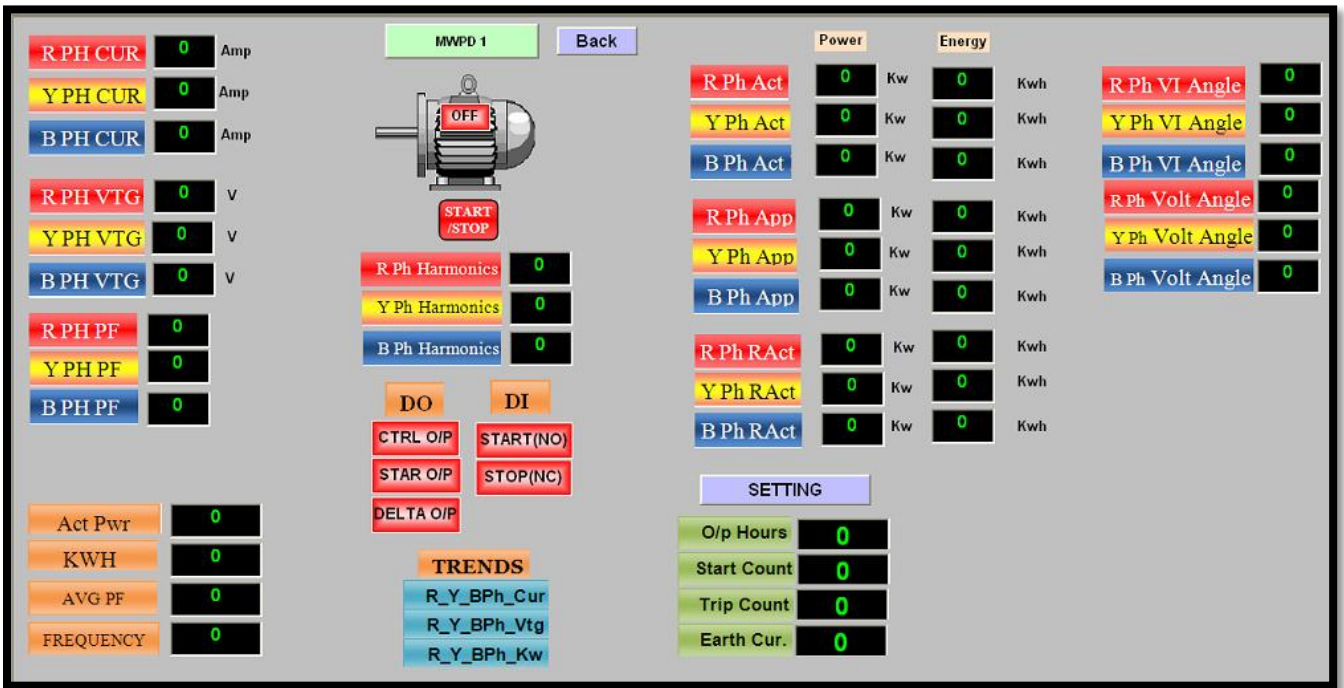
Live mimic of full working plant. Clear Over View Of Distribution

- Easily Trace / Monitoring of Feeders
- Network Control & Distribution Management
- Event & Crisis Notifying
- Control Loads to Maintain Stability & Reduce Shutdown
- Monitors- Sub-Stations, Mains, Feeders, Loads, Equipments, Systems, Generators.....



- Dynamic Process Mimic
- Indicate running status of motor
- Indicate Current per phase
- Indicate Voltage per phase
- Indicate KW, KWH
- Indicate POWER FACTOR
- Indicate Frequency and Harmonics
- Indicate VI Angle and Voltage Angel

- Indicate status On / Off



- **Settings of Various Parameters:**

Value of various parameters of Machine can be View and Changed through the Setting Facility available in EMS. These parameters are configured in EMS with respective details.

Only authorized user can change the settings of the parameter. Different types for security level are maintained for different types of parameters.

UNIT	MV PANEL					INDEX PAGE	
	INCOMER	CP6	CP7	CP8	CP9	SMSB	DB-MV
Set O/I Cur.	0	0	0	0	0	0	0
Set Underload	0	0	0	0	0	0	0
Set Earth	0	0	0	0	0	0	0
O/I Curve	5 Sec.	2 Sec.	5 Sec.	5 Sec.	5 Sec.	5 Sec.	5 Sec.
Spp Time	0	0	0	0	0	0	0
UI Time	0	0	0	0	0	0	0
Scroll Time	0	0	0	0	0	0	0
Phase Rev	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Auto Reset	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Lock Rotor	0	0	0	0	0	0	0
Definite Time	0	0	0	0	0	0	0
Star-Delta	0	0	0	0	0	0	0
Set Undervolt	0	0	0	0	0	0	0
Set Overvolt	0	0	0	0	0	0	0
Op. Mode	Digital I/P	Digital I/P	Digital I/P	Digital I/P	Digital I/P	Digital I/P	Digital I/P
Art Timer	0	0	0	0	0	0	0

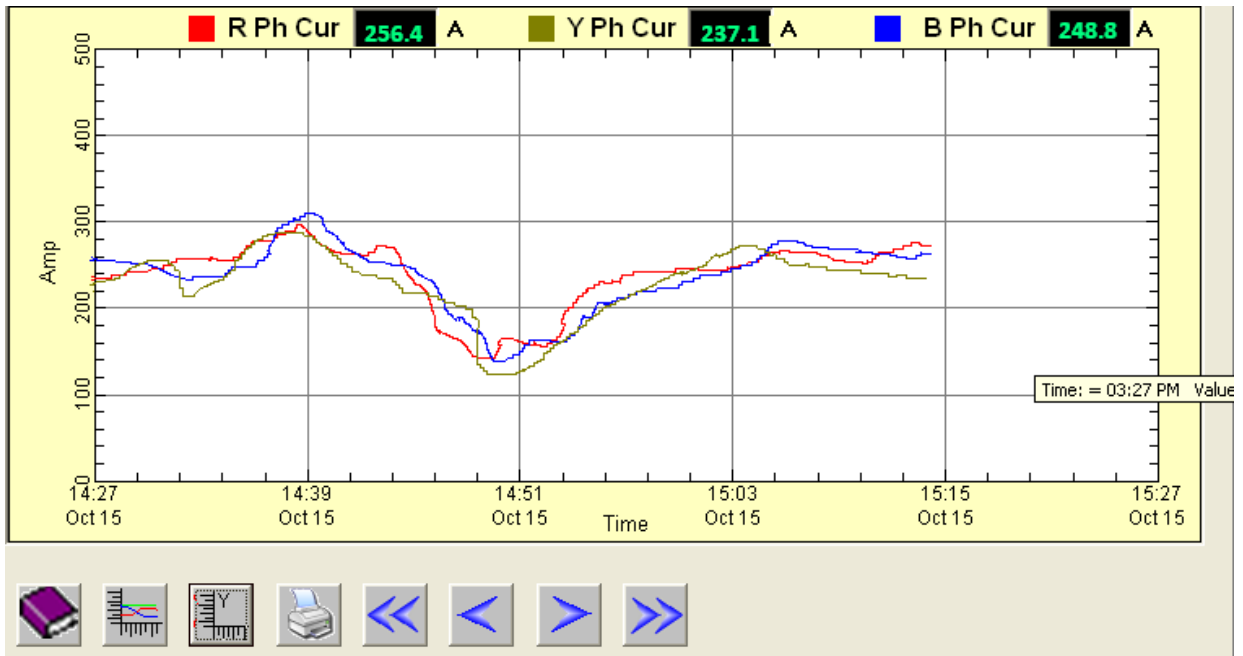
- **Trend Viewer (Machine Log history upto Machine Life) :**

Real time trends can be view for various Analog Inputs and can be used to compare it with set value. Historical Trend can display for parameters by giving the From and To date and time.

Historical & Real time processing of data for convenient analysis using time based selection. This identifies discrepancies, energy consumption and load pattern on motor current.

Following figure shows the trend for analog input with its current value.

- Dynamic Graphical Trend
- Graphical History Trend
- Hourly, Daily Weekly, Monthly Graph trend
- Guides the loading patterns
- Guides Power factor correction
- Facility To print Graphs (optional)



- **Authentication :**

Three level Password protection for unauthorized or unwanted access i.e. Process Level, Engineering Level and Management Level.

• **EMS Report for Management with Email Facility:**

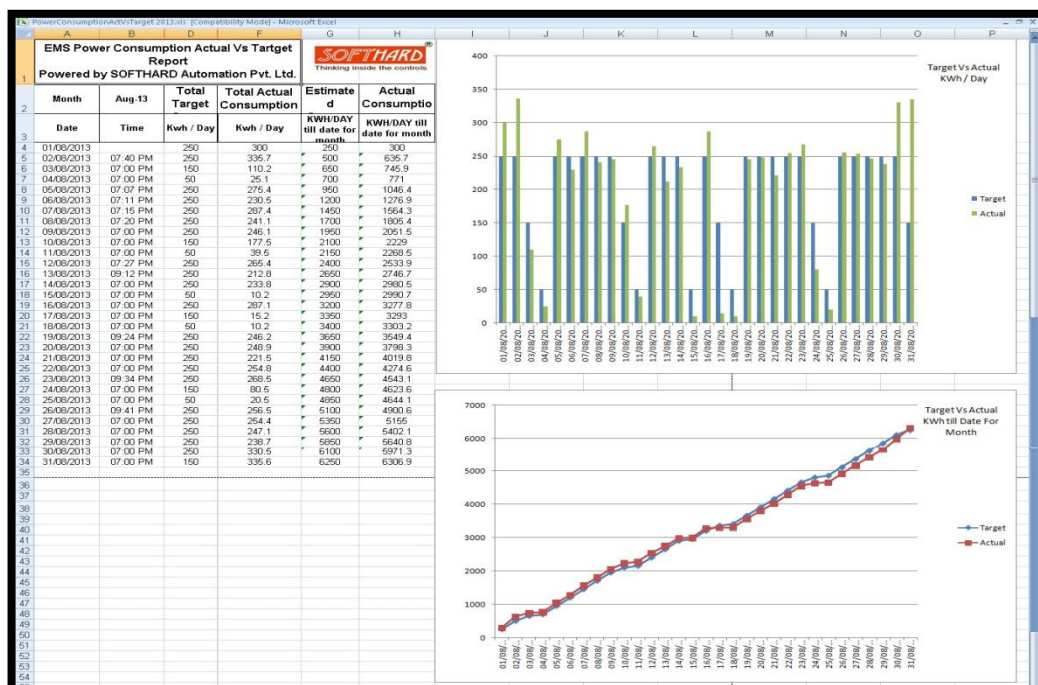
○ **Power Consumption Report:**

Power consumption of each energy meter shift wise, daily generated in Microsoft Excel Sheet format. Reports generated in daily, monthly and yearly format.

Power Consumption report										
Powered by SOFTHARD Automation Pvt. Ltd.										
Month	Aug 13	5th Floor AHU			Condensor Pump			5th Floor Lighting Load		KWH/DAY
Date	Time	Kwh Cumulative	KWH/DAY for Shift	Total KWH/DAY	Kwh Cumulative	KWH/DAY for Shift	Total KWH/DAY	Kwh Cumulative	KWH/DAY for Shift	Total KWH/DAY
02/08/2013	09:25 AM	87.24			9064.11			7618.77		
02/08/2013	08:32 PM	87.41	0.17		9081.86	17.75		7636.42	17.65	
03/08/2013	09:41 AM	87.63	0.22	0.39	9104.43	22.57	40.32	7659.85	22.43	40.08
03/08/2013	06:58 PM	88.02	0.39		9145.62	41.09		7699.66	40.81	
05/08/2013	09:00 AM	88.08		0.45	9151.02		46.59	7705.18		46.33
05/08/2013	06:04 PM	88.16	0.07	0.18	9158.88	7.86	19.17	7712.85	7.67	19.08
06/08/2013	09:08 AM	88.26	0.11		9170.19	11.31		7724.26	11.41	
06/08/2013	07:11 PM	88.34	0.08		9178.14	7.95		7732.12	7.86	
07/08/2013	09:14 AM	88.39	0.05	0.13	9183.58	5.44	13.39	7737.37	5.25	13.11
07/08/2013	07:16 PM	88.46	0.07		9191.4	7.82		7745.26	7.89	
08/08/2013	09:18 AM	88.53	0.07	0.14	9199.39	7.99	15.81	7753.16	7.89	15.78
08/08/2013	07:20 PM	88.58	0.05		9204.69	5.3		7758.35	5.2	
26/08/2013	09:35 AM	91.7		0.08	9532.32		8.77	8083.55		8.6
26/08/2013	09:41 PM	91.82	0.12		9545.96	13.64		8097.1	13.55	
27/08/2013	09:42 AM	91.85	0.03	0.15	9548.95	2.99	16.63	8100.04	2.94	16.49
27/08/2013	09:43 PM	91.88	0.03		9551.95	3		8103.01	2.97	
28/08/2013	09:44 AM	91.91	0.03	0.06	9556.2	3.25	6.25	8106.28	3.27	6.24
28/08/2013	09:46 PM	91.95	0.04		9558.1	2.9		8109.2	2.92	
29/08/2013	09:49 AM	92.03	0.08	0.12	9566.82	8.82	11.72	8119.05	8.85	11.77
29/08/2013	09:50 PM	92.06	0.03		9570.01	3.09		8121.08	3.03	
30/08/2013	09:51 AM	92.08	0.02	0.05	9573.02	3.01	6.1	8124.03	2.95	5.98
30/08/2013	09:08 PM	92.51	0.43		9616.04	43.02		8166.63	42.6	
Total Kwh / Month		5.27			551.93			547.86		1019.01
Total Kwh / Yearly		5.27			551.93			547.86		


○ **Power Consumption Target Vs Actual Report:**

Power consumption Target Vs Actual of each energy meter daily generated in Microsoft Excel Sheet format. Data is available in tabular format as well as in graphical format. Reports generated in daily, monthly and yearly format.



○ **Power Quality Report:**

Power quality report determines the fitness of electrical power for customers. This report logs the data instances whenever the power quality is abnormal. It considers various parameters like Current quality, Voltage limit, PF quality, Harmonics, Frequency etc.

EMS Power Quality Report Powered by SOFTHARD Automation Pvt. Ltd.																	 Thinking inside the controls	
Month	Aug-13	Device Name	R Current	Y Current	B Current	R Voltage	Y Voltage	B Voltage	R PF	Y PF	B PF	Avg PF	R KW	Y KW	B KW	Total KW	Remark	Status
06/08/2013	10:42:55 AM	Chiller Pump	100	201	213	376.8	429.1	408.3	1	0.95	0.96	0.966667	21.9	47.6	48.7	117.8	Voltage Out of Band	Low
06/08/2013	10:42:56 AM	5th Flr Lighting Panel	100	200	213	374.5	424.7	404.1	1	0.94	0.96	0.96	21.8	46.8	48.4	117	PF Out of Band	Low
06/08/2013	10:42:57 AM	Chiller Pump	100	200	212	377.6	428	407.8	1	0.95	0.96	0.97	22	47.4	48.4	118.2	Voltage Out of Band	Low
06/08/2013	10:42:58 AM	5th Flr Lighting Panel	100	200	214	374.4	424.4	405.4	1	0.94	0.96	0.96	21.8	46.7	48.6	116.8	PF Out of Band	Low
06/08/2013	10:42:58 AM	5th Flr AHU	3	6.1	4.3	362.4	416.2	398.4	1	0.94	0.96	0.966667	0.64	1.39	0.96	2.99	PF Out of Band	Low
06/08/2013	10:42:59 AM	Chiller Pump	100	201	213	374	428.9	409.8	1	0.94	0.96	0.97	21.7	47.4	48.8	117.9	PF Out of Band	Low
06/08/2013	10:43:01 AM	Chiller Pump	98	197	209	367	422.9	404.5	0.99	0.95	0.96	0.966667	20.9	46.5	47.3	117.9	Voltage Out of Band	Low
06/08/2013	10:43:01 AM	5th Flr Lighting Panel	99	199	212	367.8	421.4	402.4	1	0.94	0.96	0.96	20.8	45.6	47.4	113.5	PF Out of Band	Low
06/08/2013	10:43:06 AM	5th Flr AHU	3	6.1	4.3	361	417.1	397.4	1	0.95	0.96	0.966667	0.63	1.4	0.96	2.97	Voltage Out of Band	Low
06/08/2013	10:43:13 AM	5th Flr Lighting Panel	100	200	214	371.7	424.3	405.4	0.99	0.94	0.96	0.96	21.5	46.6	48.6	116.8	PF Out of Band	Low
06/08/2013	10:43:14 AM	Chiller Pump	95	191	202	358.4	409.5	392.6	0.99	0.95	0.96	0.963333	20.9	44.2	44.5	117.5	Voltage Out of Band	Low
06/08/2013	10:43:15 AM	5th Flr Lighting Panel	95	190	202	354.7	406.7	389.8	0.99	0.94	0.96	0.96	19.6	42.4	44.1	106	PF Out of Band	Low
06/08/2013	10:43:18 AM	Chiller Pump	96	190	200	360.9	408.3	392.8	0.99	0.95	0.96	0.966667	20	42.8	44.1	106.9	Voltage Out of Band	Low
06/08/2013	10:43:18 AM	5th Flr Lighting Panel	96	189	201	358	405	389.6	1	0.94	0.96	0.96	19.9	42.2	44	106.1	PF Out of Band	Low
06/08/2013	10:43:19 AM	5th Flr AHU	2.9	5.8	4	350.2	396.4	381.8	1	0.94	0.96	0.966667	0.59	1.26	0.87	2.72	PF Out of Band	Low
06/08/2013	10:43:20 AM	Chiller Pump	136	195	212	361	408.2	393.7	0.99	0.97	0.98	0.966667	28.3	44.9	47.8	106.9	Voltage Out of Band	Low
06/08/2013	10:43:21 AM	5th Flr Lighting Panel	136	194	213	358	404.5	389.7	1	0.96	0.98	0.98	28.3	44.2	47.7	120.2	Voltage Out of Band	Low
06/08/2013	10:44:21 AM	Chiller Pump	148	216	238	386.9	441.3	421	0.99	0.97	0.98	0.983333	33.1	53.6	57.2	143.5	Voltage Out of Band	High
06/08/2013	10:44:36 AM	Chiller Pump	148	215	237	385.8	440.8	420.5	0.99	0.96	0.98	0.983333	33	53.3	57.1	143.7	Voltage Out of Band	High
06/08/2013	10:44:40 AM	Chiller Pump	148	214	236	385.7	441.5	418.8	0.99	0.97	0.98	0.976667	33	53.3	56.8	143.4	Voltage Out of Band	High
06/08/2013	10:44:41 AM	5th Flr Lighting Panel	148	213	237	362.3	437.9	414.6	0.99	0.96	0.98	0.97	32.7	52.5	56.2	141.4	Current Out of Band	Low
06/08/2013	10:44:45 AM	Chiller Pump	148	214	236	386	440.1	420.2	0.99	0.97	0.98	0.98	33	53	56.8	142.4	Voltage Out of Band	High
06/08/2013	10:44:46 AM	5th Flr Lighting Panel	148	213	237	362.9	436.6	415.5	0.99	0.96	0.98	0.97	32.8	52.2	56.6	141.7	Current Out of Band	Low

- **Data Log Viewer (Machine Log history up to Machine Life) :**

Data logging for various analog inputs based on date and time can be store in Microsoft Excel Sheet format. Data log interval is settable and can be changed as per need.

- Data presentation in Tabular format
- Event recording with Date & Time
- Hourly, Daily Weekly, Monthly data display
- Facility To print Graphs (optional)
- Data Logging with time interval

Device Name:		Data Log Report for KWH-1										
Date	Time	KWH-1										
		R Ph Cur	Y Ph Cur	B Ph Cur	R Ph Vtg	Y Ph Vtg	B Ph Vtg	R Ph Pf	Y Ph Pf	B Ph Pf	R Ph Kw	Y Ph Kw
		29.8	31.2	30.6	237.7	243.4	243.1	0.83	0.81	0.81	5.96	6.23
16/08/2012	1:45 PM	27.6	31.6	30.1	238.3	243.4	243.5	0.83	0.83	0.81	5.58	6.43
16/08/2012	1:50 PM	28.3	28.5	26.7	233.6	239.2	238.9	0.86	0.82	0.8	5.76	5.69
16/08/2012	1:55 PM	27.5	29.5	27.4	233.7	238.8	238.8	0.83	0.82	0.8	5.51	5.86
16/08/2012	2:00 PM	26	29.5	28.8	238.9	244	243.8	0.79	0.78	0.77	4.93	5.7
16/08/2012	2:05 PM	33.6	33.1	29.5	230.8	236.6	236.2	0.89	0.85	0.8	6.98	6.79
16/08/2012	2:10 PM	29.8	31.2	30.6	237.7	243.4	243.1	0.83	0.81	0.81	5.96	6.23
16/08/2012	2:15 PM	27.6	31.6	30.1	238.3	243.4	243.5	0.83	0.83	0.81	5.58	6.43
16/08/2012	2:20 PM	26.8	29.6	26.8	230	235.6	235.5	0.85	0.85	0.81	5.32	6
16/08/2012	2:25 PM	33.1	32.2	30.2	232.5	238.5	238.1	0.88	0.85	0.82	6.95	6.66
16/08/2012	2:30 PM	26.9	30.5	28.7	232.5	237.6	237.8	0.82	0.81	0.79	5.33	5.96
16/08/2012	2:35 PM	31.9	34.4	31.2	231.1	236.5	236.4	0.86	0.86	0.83	6.43	7.04
16/08/2012	2:40 PM	29.1	29.4	26.6	231.2	236.7	236.9	0.86	0.83	0.79	5.85	5.86
16/08/2012	2:45 PM	26.2	27.4	26.2	237.3	242.4	242.5	0.81	0.8	0.78	5.09	5.36
16/08/2012	2:50 PM	29.2	26.7	26.4	237.3	243.4	243.1	0.87	0.81	0.79	6.08	5.3
16/08/2012	2:55 PM	26.7	28.7	27.1	238.7	243.8	243.6	0.85	0.83	0.81	5.49	5.92
16/08/2012	3:00 PM	26.9	28.6	28.4	239.2	244.4	244.3	0.83	0.82	0.81	5.41	5.79
16/08/2012	3:05 PM	29.8	31.2	30.6	237.7	243.4	243.1	0.83	0.81	0.81	5.96	6.23
16/08/2012	3:10 PM	27.6	31.6	30.1	238.3	243.4	243.5	0.83	0.83	0.81	5.58	6.43
16/08/2012	3:15 PM	26	29.5	28.8	238.9	244	243.8	0.79	0.78	0.77	4.93	5.7
16/08/2012	3:20 PM	28.6	31.5	29.5	238.6	243.6	243.8	0.82	0.81	0.81	5.65	6.26
16/08/2012	3:25 PM	30.2	31.7	29.6	238.1	243.4	243.4	0.86	0.83	0.81	6.23	6.55
16/08/2012	3:30 PM	32.3	31.5	28.2	238.4	243.8	243.9	0.83	0.81	0.77	5.98	6.33
16/08/2012	3:35 PM	29.6	31.2	30.1	237.6	243.1	243.2	0.84	0.81	0.8	5.45	7.1

Data log file for data log is generated for each machine per month automatically. These file are password protected. Can be email to a group of people.

- Month wise Data Log file for individual Machine
- Shift wise Data log report (optional)
- Periodic Data log Report
- Data log interval is settable

- **Alarm Viewer (Machine Log history up to Machine Life) :**

Alarm logging for Machine based on date and time can be store in Microsoft Excel Sheet format. The Trip state of alarm and Reset state of alarm can be logged in excel file with date and time. At the same time this can be mailed to group of people

Alarm Popup facility is given in EMS. Whichever screen is open as machine trip automatic popup comes indicating the machine trip with all details. We can give a beep sound for same.

- Provides ALARM History
 - Monitoring Alarms with tabular format
 - Indicates Cause of Trip
 - Provides each alarm with Date and Time
 - Event recording
- Individual Alarm history files are created Yearly
 - Email generation on Machine trip (optional)
 - SMS generation on Machine trip (optional)

MWRPD Machine Alarm Report				
Alarm	Active On		Normal On	
	Date	Time	Date	Time
Voltage SPP	30/04/2012	12:04:17 PM	30/04/2012	12:14:07 PM
CURRENT O/L	30/04/2012	1:20:12 PM	30/04/2012	2:04:17 PM
CURRENT O/L	30/04/2012	2:54:37 PM	30/04/2012	3:08:18 PM
UNDER LOAD	2/5/2012	10:04:17 AM	2/5/2012	10:24:17 AM
CURRENT SPP	2/5/2012	12:04:17 PM	2/5/2012	3:04:17 PM
PHASE REVERSE	2/5/2012	8:04:17 AM	2/5/2012	10:24:17 AM
OVER VOLTAGE	2/5/2012	8:04:17 AM	2/5/2012	10:24:17 AM
OVER VOLTAGE	2/5/2012	2:04:17 PM	2/5/2012	2:24:17 PM

