* Power Measurement Solutions by . . .

Specializing in turn-key Mission Critical Infrastructure Solutions & Customized Power Distribution Manufacturing

Overview Prepared for:

Schneider Electric PowerLogic™

2009 ION / PowerLogic Users Conference

Presented by Mark Neff, P.Eng.
Engineering Services Manager

* The E.A. Group . . . *overview*

- *Divisions*
  - Contracting & Maintenance Services
  - Manufacturing
  - Engineering Services

- *Strengths*
  - 40 years of Data Centre know-how, resulting in;
    - Common Sense philosophy
    - Un-matched customer service
  - Over 20 Years of installing ION metering
  - Staff factory-trained on ION Enterprise Administrator and Programmer

* Topics

- *What are the needs of Critical Sites?*
  - Reliability
  - Real-Time Monitoring
  - Event Logging
  - Event Disassembly / Sequence of Events

- *How Does ION Satisfy Those Needs?*
  - ION Meters
  - Diverse Connectivity over Modbus
  - Meter Clock Control
  - ION Enterprise Vista Users Interface
  - SQL Server Database for Logging

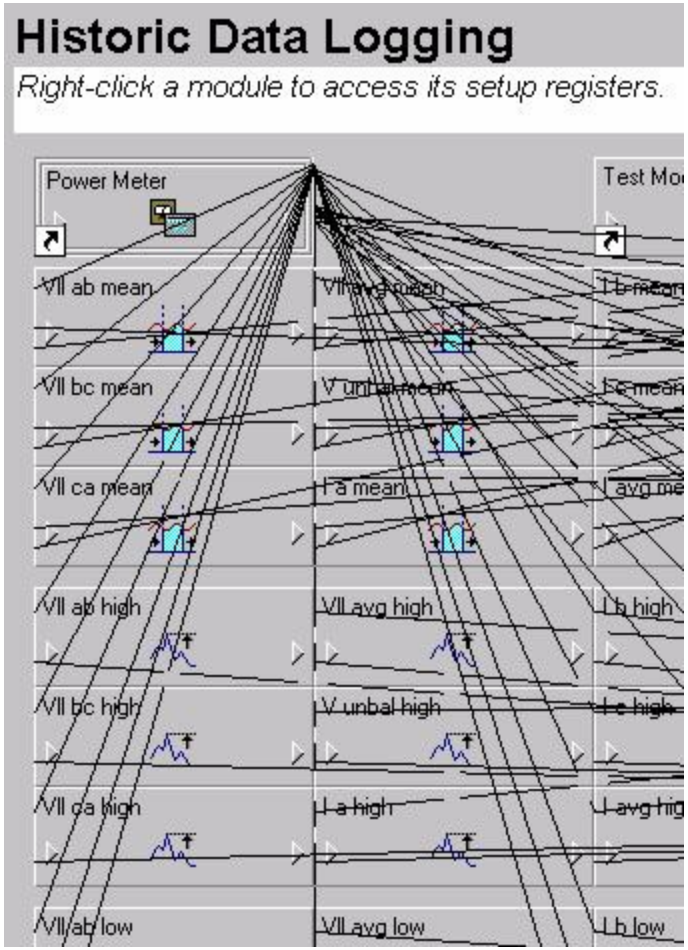
- *Examples from Installed Sites*

* Needs of Critical Sites…

- *In an ideal world, the most reliable components and equipment are selected, they work together seamlessly and provide an identifiable warning of imminent failure*
- *Equipment is fallible, People are fallible and Murphy's Law makes sure that statistics and conditions will conspire to find new ways for things to go wrong*
- *Centralized Real-Time view of the site to identify what's OK, what is approaching a problem and what is in alarm including notification and logging*
- *"What does it mean" when an alarm occurs*
- *Analysis of the alarm and prevention of future alarms*
- *Consideration for the Environment*

* What is ION?

- *Communications Protocol*
  - Proprietary (similarity to Modbus)
- *Method of Programming*
  - Object Oriented
  - Visual Interconnection
  - Can do it through ION Setup, but ION Enterprise Designer is preferred
  - Patented
  - Program is called a 'Framework'
- *ION Meters*
- *ION Enterprise Software*
- *EEM Software (Enterprise Everything Management)*



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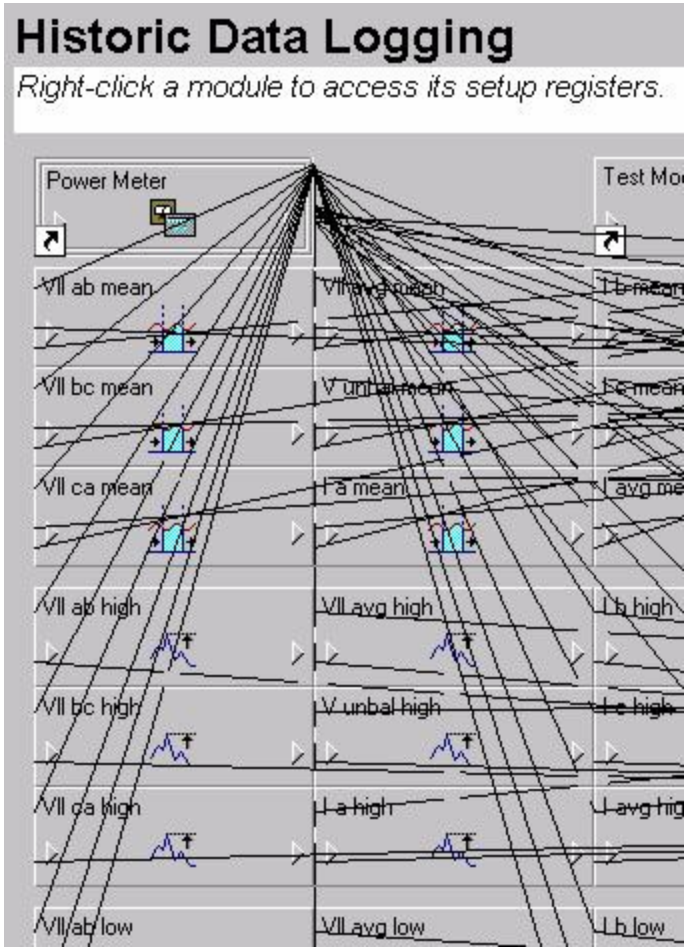
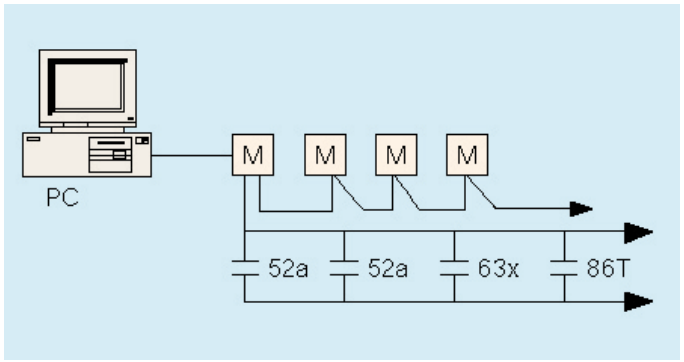
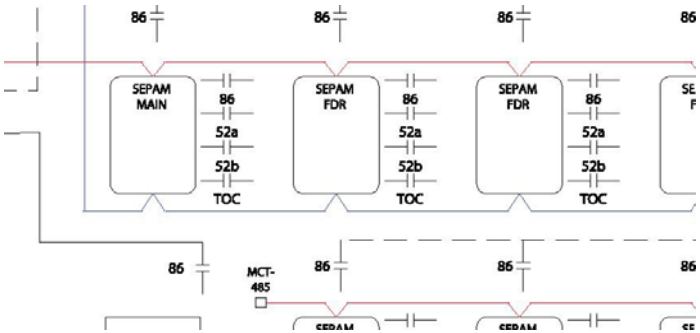
- *EEM Software (Enterprise Energy Management)*



* Meter I/O and Alarm Notification

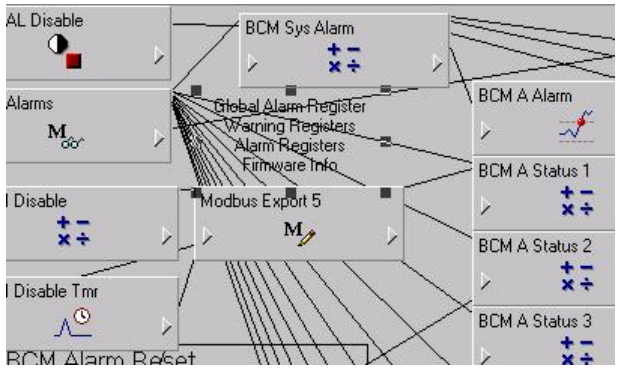
- *I/O Function is Programmable in the Framework*
  - Analog Inputs
  - Analog Outputs
  - Digital Inputs
  - Form C (Relay) Outputs
  - Form A (Transistor) Outputs
- *Digital Inputs can be configured to log an event upon change of state*
- *Analog Inputs can be compared to setpoints and a variety of actions can be taken*
- *Meters can send out notifications on its own – Modem, Modbus, Email, SNMP*
- *Meters are time-coordinated by ION Enterprise*

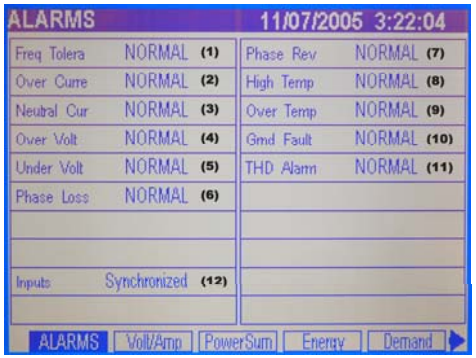




* Meter-Connected Devices

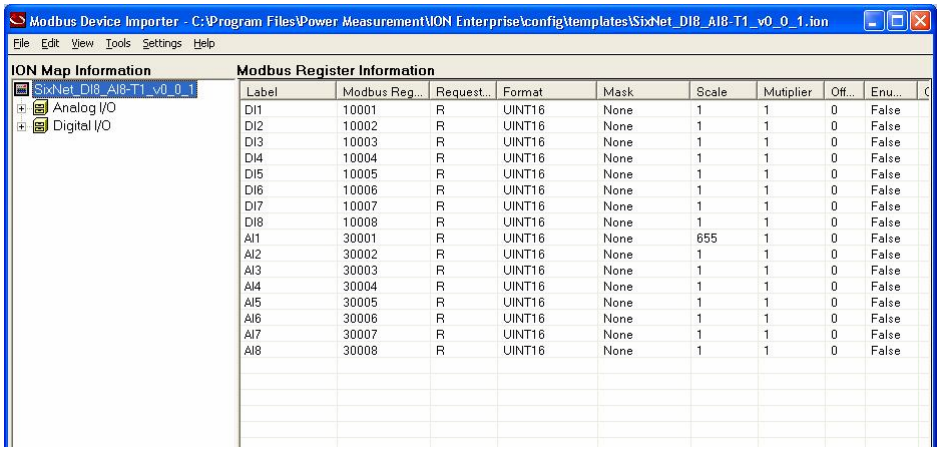
- *Serial Port*
  - RS-232 (EIA-232)
  - RS-485 (EIA-485)
- *Accessed Directly By Meter*
  - Meter acting as Master
    - Modbus Master Options Module
    - Modbus Master Map
    - Modbus Import
  - Meter acting as Slave
- *Accessed by ION Enterprise VIP using Ethergate*
  - VIP acting as Master
- *Meter Display Annunciation*





* Server-Connected Devices

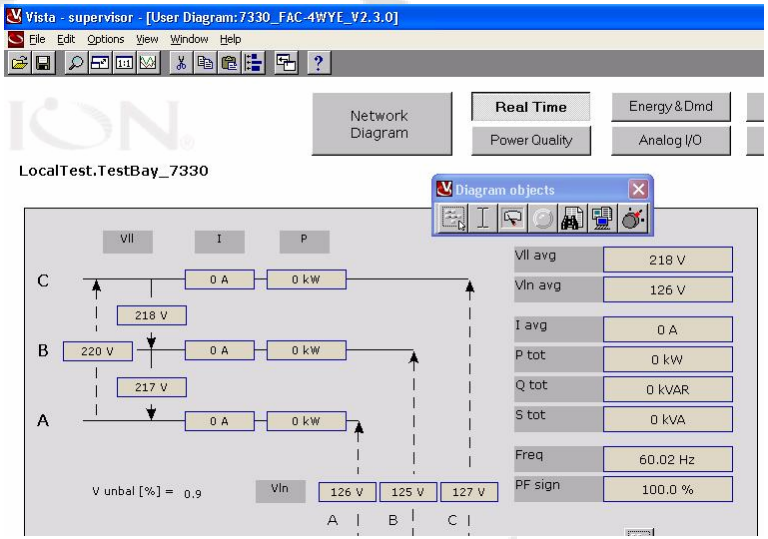
- *VIP – Virtual Processor*
- *Modbus*
  - Serial Port
  - Ethernet Gateway Device
  - Modbus/TCP (Ethernet)
- *Modbus Device Importer*
  - IONize your device
- *XML*

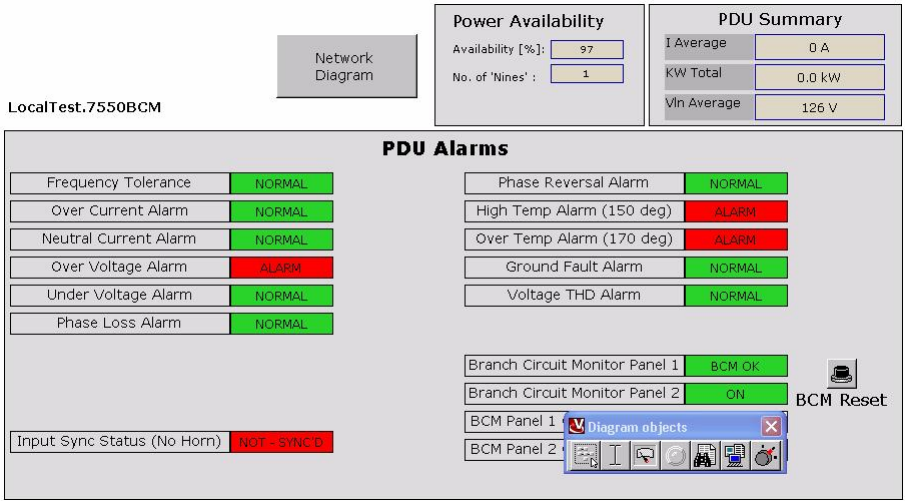


Label	Modbus Reg...	Request...	Format	Mask	Scale	Mutiplier	Off...	Enu...
DI1	10001	R	UINT16	None	1	1	0	False
DI2	10002	R	UINT16	None	1	1	0	False
DI3	10003	R	UINT16	None	1	1	0	False
DI4	10004	R	UINT16	None	1	1	0	False
DI5	10005	R	UINT16	None	1	1	0	False
DI6	10006	R	UINT16	None	1	1	0	False
DI7	10007	R	UINT16	None	1	1	0	False
DI8	10008	R	UINT16	None	1	1	0	False
AI1	30001	R	UINT16	None	655	1	0	False
AI2	30002	R	UINT16	None	1	1	0	False
AI3	30003	R	UINT16	None	1	1	0	False
AI4	30004	R	UINT16	None	1	1	0	False
AI5	30005	R	UINT16	None	1	1	0	False
AI6	30006	R	UINT16	None	1	1	0	False
AI7	30007	R	UINT16	None	1	1	0	False
AI8	30008	R	UINT16	None	1	1	0	False

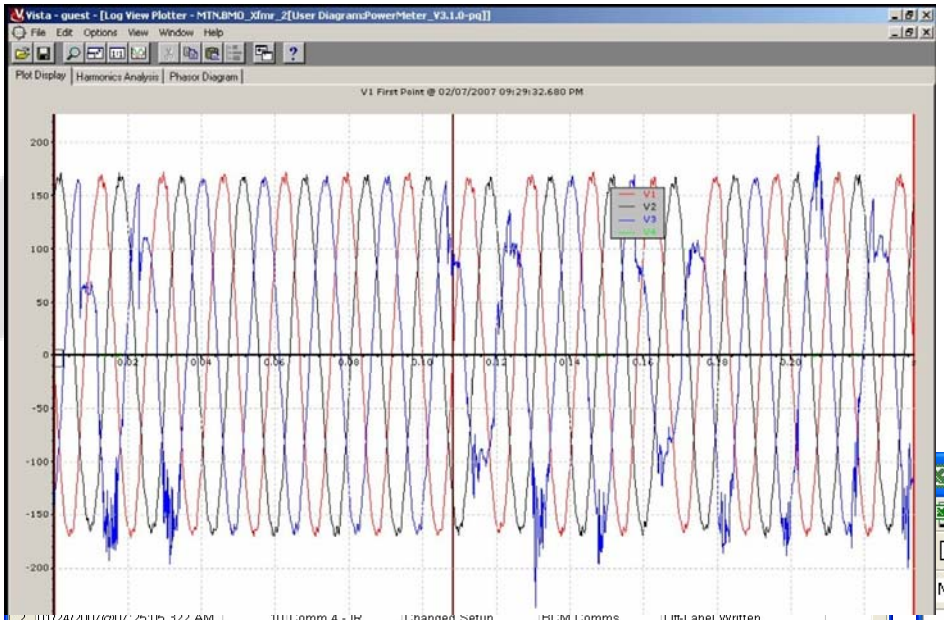
* Vista Diagrams

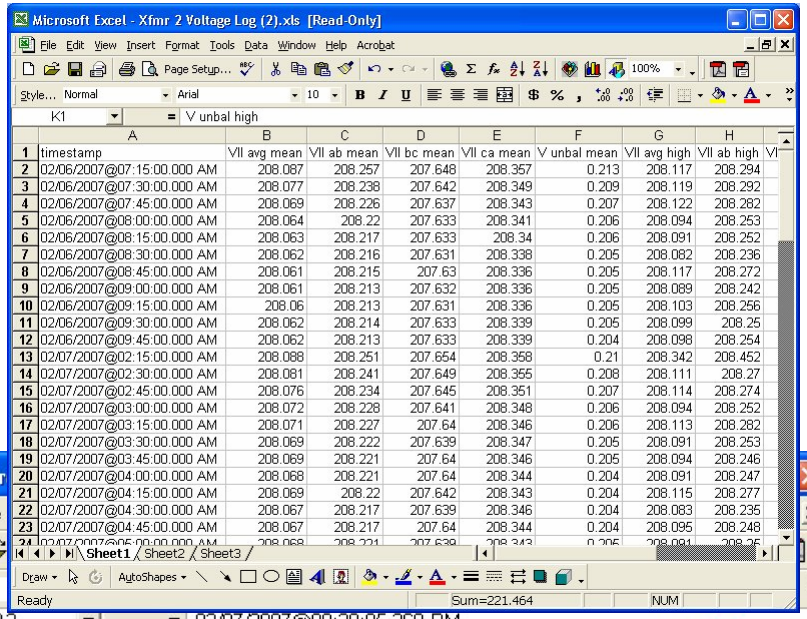
- *Meter Diagrams*
  - Standard
  - Customizations

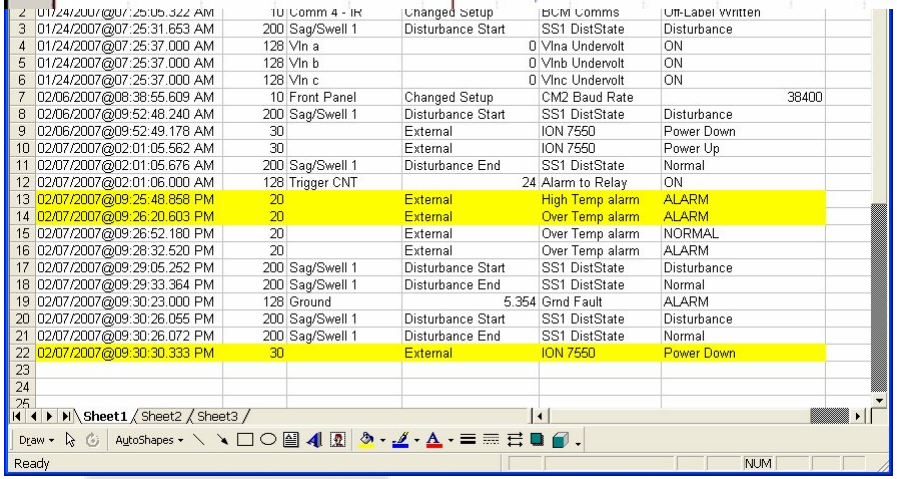


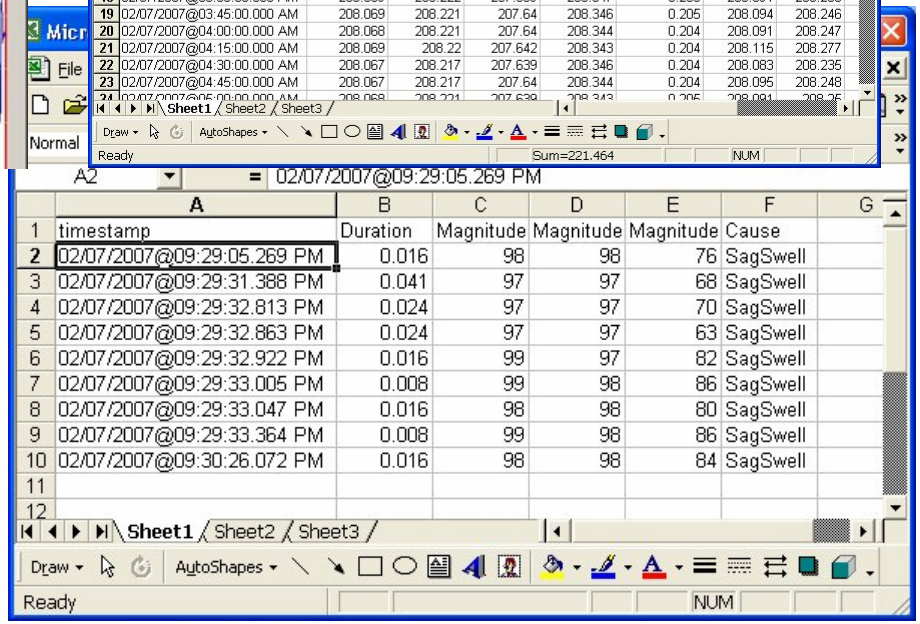


* Event and Data Logs

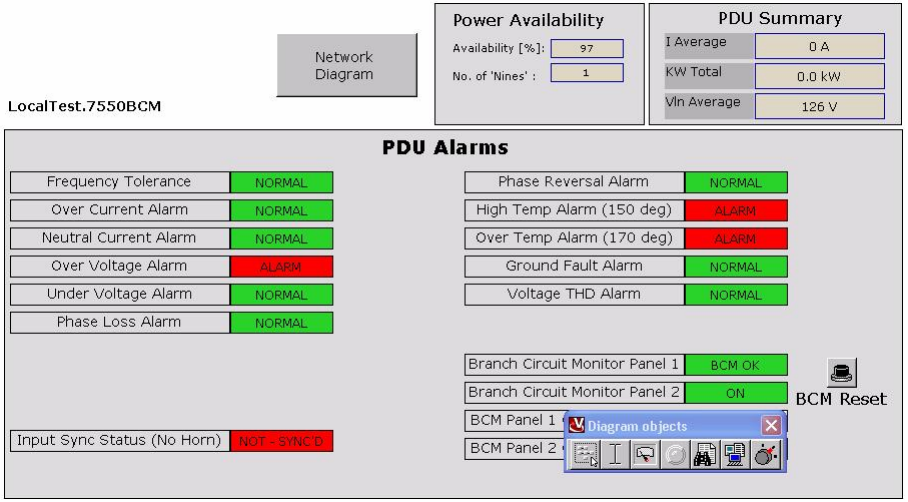


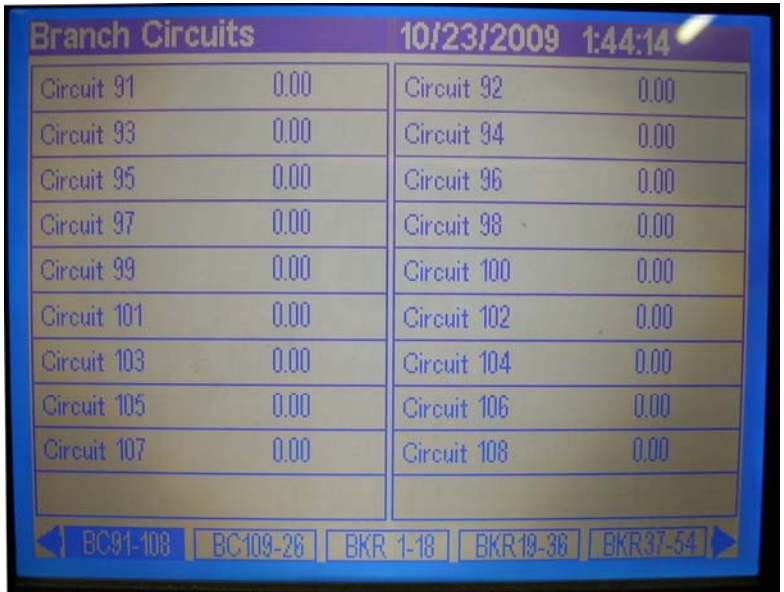




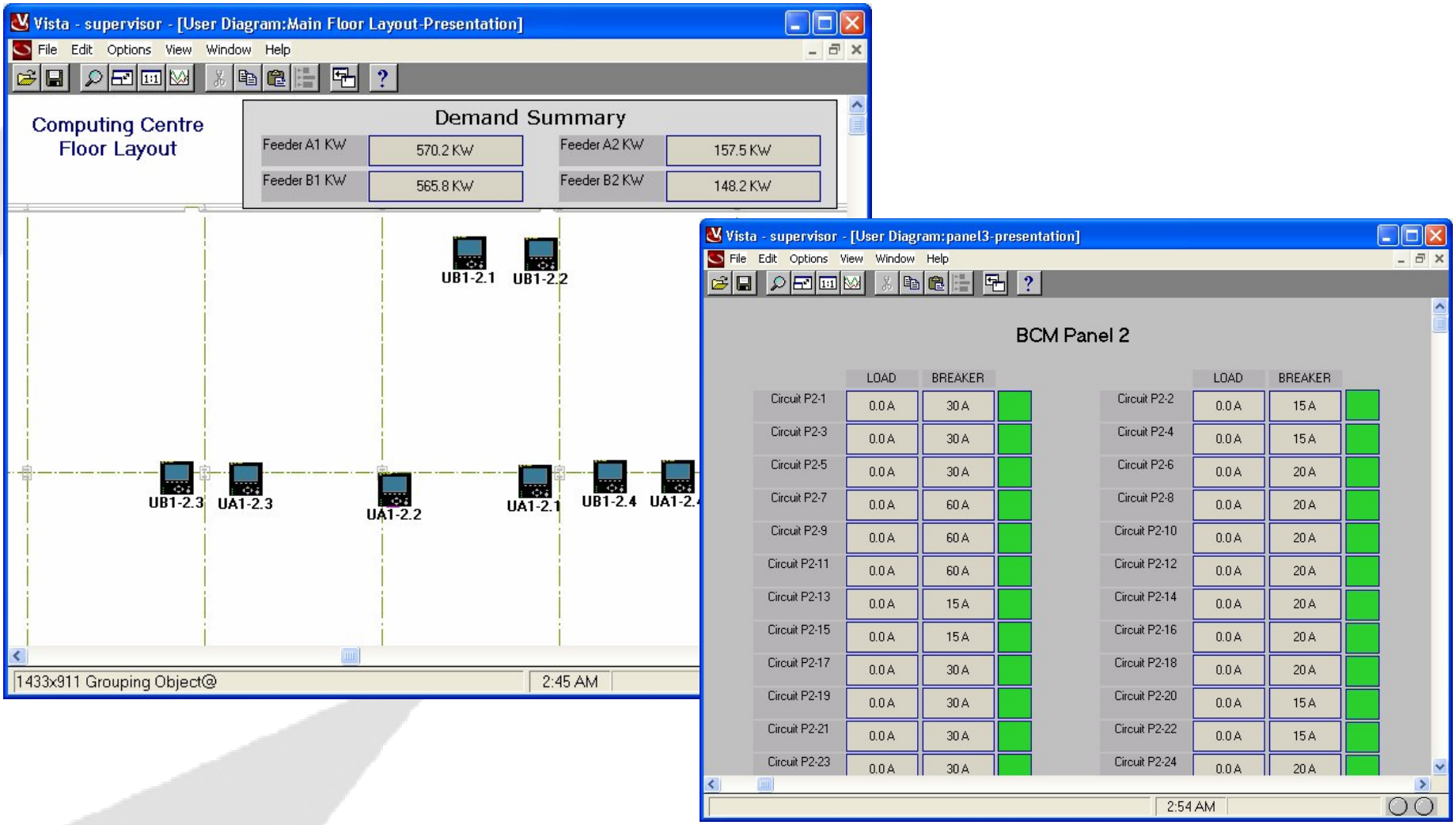


* Meter Screens

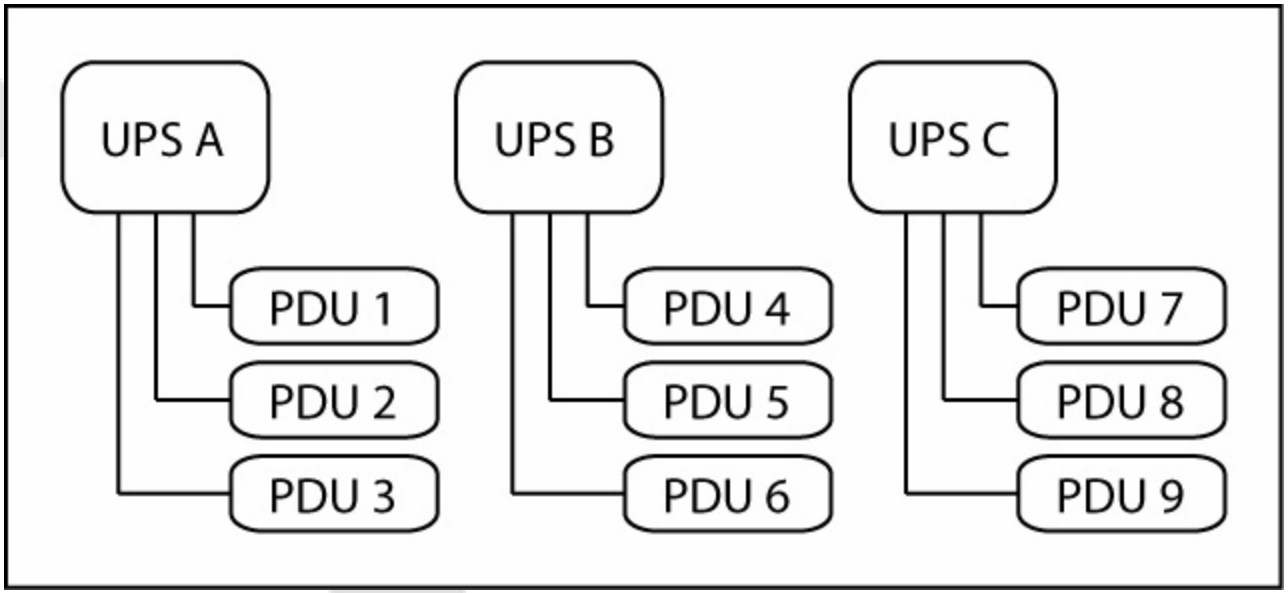




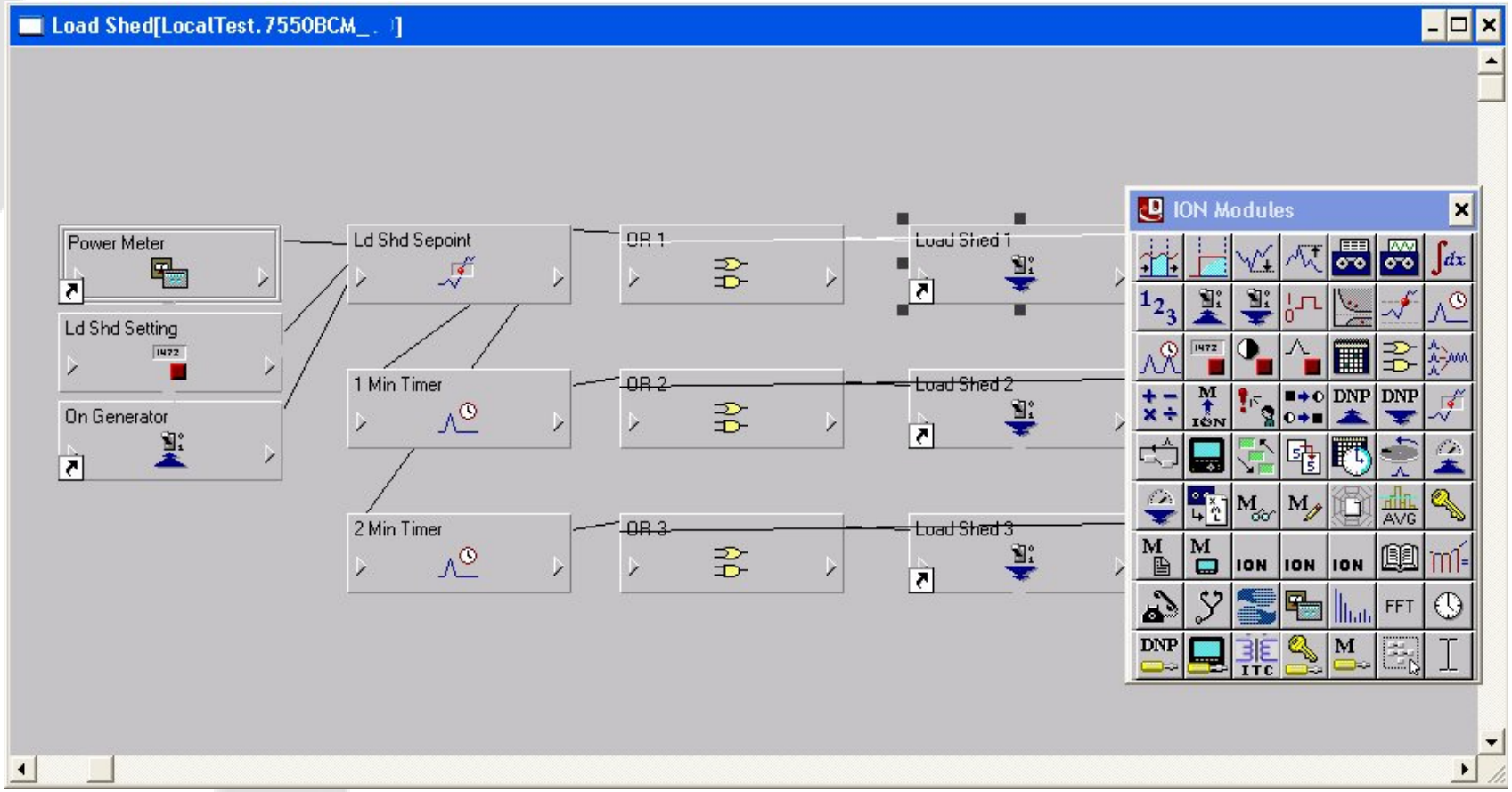
* Custom ION Vista Displays



* Calculations & Analysis



* Automated Control



* Automated Reports

Aggregate Energy & Demand

From: April 1, 2009 00:00:00
To: May 1, 2009 00:00:00

ENERGY

Tariff	Total kWh	Cost/kWh ($)	Cost for Tariff ($)
Tariff 1	209917.88	0.00	0.00
Total Cost			0.00

Tariff	Total kVARh	Cost/kVARh ($)	Cost for Tariff ($)
Tariff 1	0.00	0.00	0.00
Total Cost			0.00

DEMAND

Tariff	Time	Max kW	Cost/kW ($)	Cost for Tariff ($)
Tariff 1	17-Apr-09 2:15:00 AM	295.76	0.00	
Total Cost				

Tariff	Time	Max kVAR	Cost/kVAR ($)	Cost for T
Tariff 1	Not Available	0.00	0.00	
Total Cost				

Aggregate Energy & Demand / Unit7 / Unit8 / Unit9 / Unit10 / Unit11 / Unit12 / Unit13 / Unit14 /

Load Tracking Data

Area 1	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09
1	29	29	29	29	29	29	29	29	22	24	24	25
2	27	27	27	27	27	27	27	27	27	29	29	29
3	28	28	28	28	28	28	28	29	29	30	30	31
4	36	35	35	35	35	27	27	27	27	29	29	29
5	52	52	52	51	50	50	50	50	49	49	48	47
6	54	54	54	54	53	53	52	52	52	51	51	51
9	43	43	42	42	42	42	41	41	41	41	40	41
10	40	40	40	40	40	40	39	39	39	39	38	38
11	10	9	9	9	9	9	9	9	9	10	9	11
12	9	8	8	8	8	8	8	8	8	9	9	10
13	16	15	15	15	15	15	15	15	15	16	15	16
14	25	24	24	24	24	24	24	24	17	18	17	18
Sub Total (kW)	369	364	363	362	360	352	349	349	335	345	339	345
Area 2												
19	27	27	27	27	27	27	27	27	29	29	29	29
20	29	29	28	29	29	29	28	28	30	30	30	30
21	34	34	34	34	34	34	33	33	33	33	33	33
22	16	16	16	16	16	16	16	16	16	16	16	16
23	25	26	26	26	26	26	24	24	26	26	26	26
24	23	23	23	23	23	23	22	23	24	24	24	24
25	22	22	22	22	22	23	22	22	23	22	23	22
26	23	23	23	23	23	23	23	23	24	23	24	24
27	19	18	18	19	20	20	20	20	20	20	21	20
28	12	12	12	13	14	14	14	14	15	14	15	14
Sub Totals (kW)	231	231	230	232	235	236	229	231	240	238	241	239
Totals (kW)	600	595	593	594	595	587	579	580	574	583	580	584
Area 1	97	96	96	95	95	93	92	92	88	91	89	91
Area 2	77	77	77	77	78	79	76	77	80	79	80	80

Site / Status / Instructions /

* Result . . .

- Critical systems fully monitored
- Real Time Data and Historical Data available when you need it
- Automation
- Reports

* Thank You

- Contact us for systems designed and engineered to meet your requirements with unmatched support by The E.A. Group.

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