

Energy Management

"TrendPoint One allows us to bill on the basis of actual power use for each customer or sub group. It's a great tool."
– Springnet

Circuit Name	Rated Amps	Average Amps	Actual kWh	Budget kWh	Variance
1: Server Room 1	15	0.0	4.0	NA	NA
3: Server Room 2	20	0.0	4.9	NA	NA
5: Server Room 3	30	0.0	0.0	NA	NA
7: Network Room (7)	50	0.0	4.0	NA	NA
9: Conference Room (7)	30	0.4	717.3	1578.9	861.5
11: Equipment Room	100	0.28	598.5	NA	NA
13: Production A	200	3.65	6691.3	15789.5	9098.2
15: Production B	0	0.44	774.6	2105.2	1330.6
17: HVAC 1	0	0.0	12.9	NA	NA
19: HVAC 2	0	0.58	9.9	NA	NA
21: open1	0	0.0	4.1	NA	NA
Panel Total:			8822.0	19473.8	10651.7
Customer Total:			8822.0	19473.8	10651.7

Bring energy accountability to every department and employee

Energy

Energy Management requires Energy Measurement

Energy is the second-fastest growing line-item of business expenses, second only to health care cost.

- Lighting and comfort cooling costs are decreasing
- PC and server energy use are growing at 15% per year compounded
- Energy cost per kwh is growing at over 5%/year, its fastest rate in over 25 years
- The combination of rising energy use plus rising cost per kWh equates to an explosion in total energy costs

TrendPoint One's energy monitoring features allow you to bring energy use into the standard budget/forecast/variance process. We do this by allowing you to assign each circuit to a user, each user to a department and each department to a site. The result is that each user and department can now see their

own energy consumption and can compare this to their targets. Because data is mapped to each end user, your Enterprise Manager can see exactly who is using energy and how much it is costing.

TrendPoint One Lets you Rein-in Rising Computer Energy Costs

Computer server costs are driving energy use and cost. Over the next 3 years, you are likely to spend as much money to power and cool your computing equipment as you did to purchase these units. TrendPoint One is unique in its ability to give you kilowatt hour data by circuit and data cabinet.

KEY POINTS

- View use and cost by end-user and department
- See the energy effect of server virtualization and balance loads
- Equalize the heat among your cabinets and drive down peak air conditioning costs

Carbon Management

*"TrendPoint's system provides a comprehensive package for energy and carbon monitoring at a very attractive price."
 – Robert Shonewald
 Carillion, PLC*

Circuit Name	Rated Amps	Average Amps	Actual kWh	Budget kWh	Variance	Actual CO2	Budget CO2	Variance
1: Server Room 1	15	0.0	4.0	NA	NA	3.3	NA	NA
3: Server Room 2	20	0.0	4.9	NA	NA	6.6	NA	NA
5: Server Room 3	30	0.0	0.0	NA	NA	0.0	NA	NA
7: Network Room (7)	50	0.0	4.0	NA	NA	5.4	NA	NA
9: Conference Room (7)	30	0.4	717.3	1578.9	861.5	954.0	2100.0	1145.9
11: Equipment Room	100	0.28	598.5	NA	NA	796.0	NA	NA
13: Production A	200	3.65	6691.3	15789.5	9098.2	8899.4	21000.1	12100.7
15: Production B	0	0.44	774.6	2105.2	1330.6	1030.2	2800.0	1769.7
17: HVAC 1	0	0.0	12.9	NA	NA	17.2	NA	NA
19: HVAC 2	0	0.58	9.9	NA	NA	13.2	NA	NA
21: open1	0	0.0	4.1	NA	NA	5.5	NA	NA
Panel Total:			8822.0	19473.8	10651.7	11733.3	25900.2	14166.8
Customer Total:			8822.0	19473.8	10651.7	11733.3	25900.2	14166.8

Manage carbon emissions just as you would any budgeted line item

Carbon

You can Only Manage What You Measure

Carbon Management is front-and-center for governments and businesses. The problem is, few of these organizations have been able to get a handle on their carbon emissions related to energy use. The principal of Management by Information says that you can only manage what you measure so, TrendPoint provides a unique ability to measure and manage carbon emissions by user and group.

Bring Carbon into your Budget Process

By allowing each TrendPoint One user to equate their kilowatt hour to carbon ratio and then allowing each user to see their energy use and carbon emissions, TrendPoint solves the information gap. Imagine setting carbon budgets by enterprise, department and users. You can simply manage carbon emissions the same way that you do with other line items. The result is that each user is empowered by having access to real-time emission data which they can compare to their own budgeted allowance.

An Enterprise System for a Global Problem

TrendPoint One has been engineered from the ground-up as an Enterprise-Grade System. The system can handle thousands of circuits at each location and thus, thousands of users simultaneously.

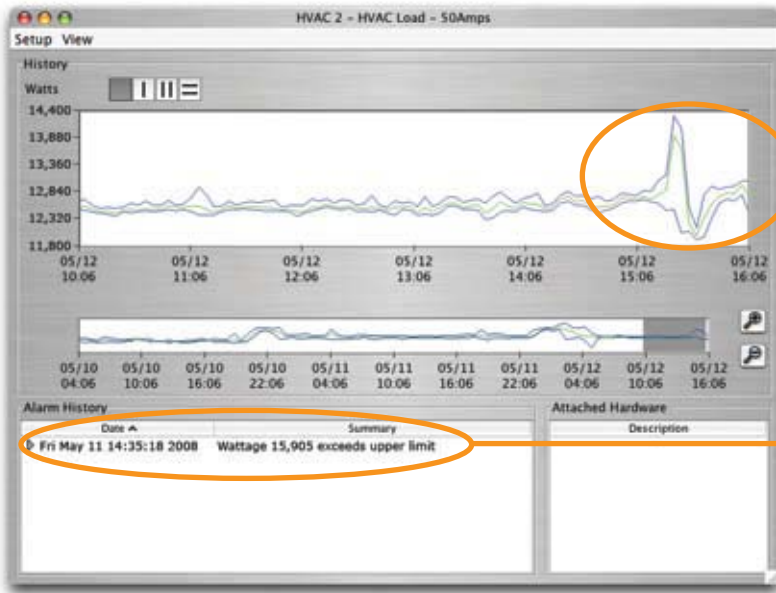
TrendPoint gives each user the same level of security they would have when purchasing items online via credit card. Each user's data stays under their control at all times. The combination of the highly modular and accurate EnerSure units with the TrendPoint One global management system provides a solution to managing carbon emissions for any sized organization worldwide.

KEY POINTS

- Create and allocate carbon budgets throughout the Enterprise
- Allow users and departments to visualize their carbon impact
- Empower every employee to control their carbon footprint

Cooling Management

"With simple cabinet balancing and matching cooling to heat loads, we have saved over GBP130,000 in less than one year"
- EDS - Newcastle, UK



Match CRAC cooling to cabinet heat loads and save energy

Alarms notify you when energy use exceeds target

Cooling

Cooling energy and cost can be larger than your IT energy load

Statistics show that most data centers use more energy for cooling than for IT loads. While cooling represents the largest energy variable in data centers, few actually monitor CRAC and chiller energy usage. TrendPoint's EnerSure is the perfect tool for CRAC and chiller energy monitoring and, coupled with TrendPoint One, allows you to monitor and target your cooling needs to actual heat loads.

Don't Overcool; Use Targeted Cooling and Save Energy

Overcooling is one of the biggest sources of data center inefficiency. TrendPoint's unique heat management tool is the only one that allows you to see actual wattage by cabinet. Our cooling tool then allows you to match cabinet heat with your actual CRAC kW/BTU's. Our patented targeting solution is proven to save substantial amounts of energy and money.

Reduce temperature variability and increase equipment performance

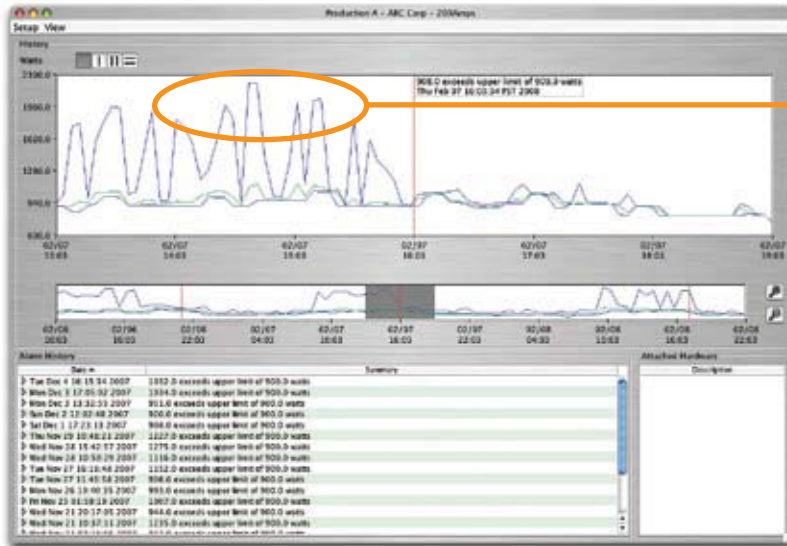
Once you match your cooling to actual heat loads, you not only save energy, you also reduce the variation in cabinet temperature. Large variations in cabinet temperatures have been linked to shorter equipment life and reduced performance. Monitoring and targeting the proper amount of cooling to each cabinet is the key to reducing cabinet temperature variation.

KEY POINTS

- Monitor kW and kWh by individual CRAC and Chiller units
- Target cabinet IT heat load to CRAC cooling and save energy
- Reduce temperature variability in cabinets and increase IT equipment performance

Heat Management

*"A rack of blade servers can produce as much heat as two ovens."
– techworld magazine*



Instantly zoom in on potential trouble. See and create alarm thresholds in a snap!



Heat Management is critical to Managing your Facility

TrendPoint One is the only product on the market that allows you to monitor heat levels in watts. It constantly monitors watts of heat being transported by circuits and maps that heat to the rooms, as well as data cabinets where the wattage is released as heat. Every watt of power used by lighting and equipment at your facility is released as heat and must also be removed by cooling in order to maintain a comfortable environment.

TrendPoint One provides the only proactive view of heat by providing a room-by-room or cabinet-by-cabinet picture of wattage. By seeing actual heat trends, you can quickly highlight problems and focus on their resolution. Instead of adding and moving equipment according to hope and feel, you know exactly where to place equipment.

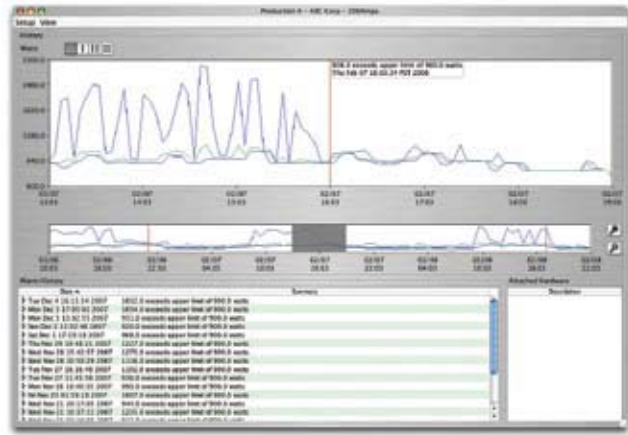
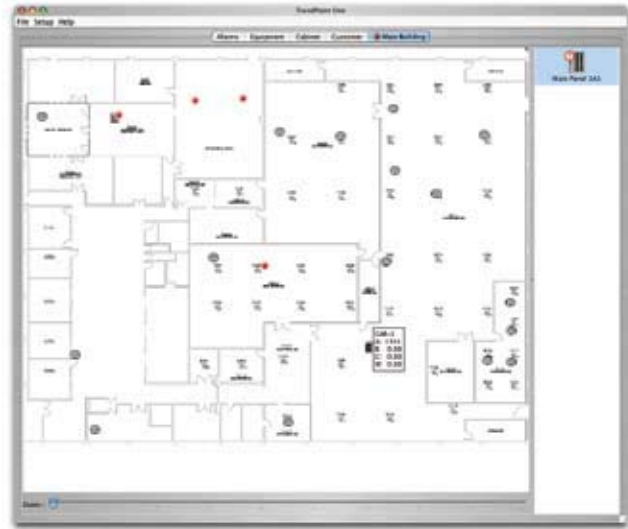
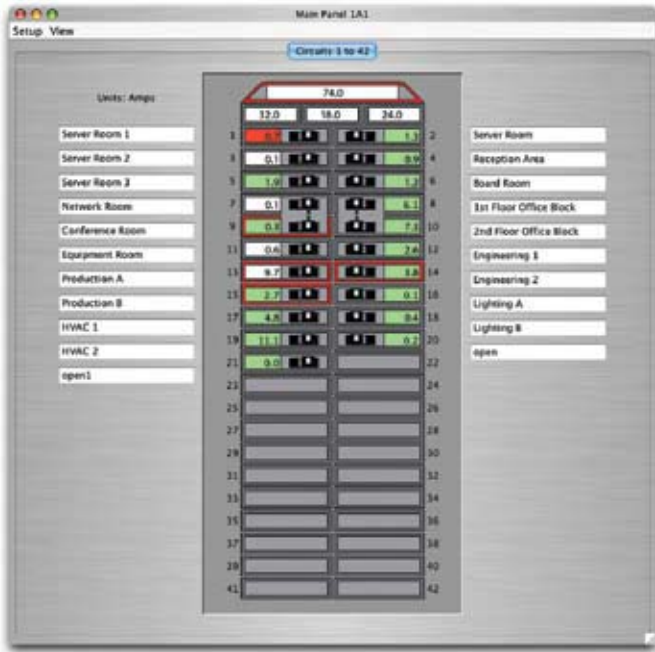
Temperature Measurement is Not Enough

For years, data center managers have had to rely on fixed temperature sensors to manage heat levels in their data cabinets and racks. The problem is, temperature is merely a lagging indicator of the actual heat balance in your cabinets. If you want to minimize heat overloads and downtime, you must get a grasp on the actual wattage loads in your cabinets. TrendPoint One is the first and only product on the market that allows you to see graphically the exact wattage of heat being released in each cabinet. TrendPoint One then lets you manage your cabinets by allowing you to see the effect of equipment changes in real-time.

KEY POINTS

- See actual heat levels in watts by cabinet and rack
- Zoom-in on problems before trouble occurs
- Add, move and change equipment on the basis of actual heat levels

Product Summary



TrendPoint One provides a quantum leap in data center management. This unique system allows you to easily manage your heat, power, energy and carbon as a unified web-based application.

Planning

TrendPoint One provides you with live and historical trends for power, heat, energy and carbon. You can view these trends by user, department, and even by individual data cabinets. Only TrendPoint One provides the following:

- Power trends and forecasts per cabinet and circuit
- Heat trends in Watts by cabinet including what-if scenarios
- Heat balancing in each cabinet for maximum cooling efficiency
- Heat removed and energy consumed by each CRAC unit
- Total Carbon Emissions by cabinet, user, department and site

Commissioning

Data centers are dynamic with constant adds, moves and changes. By monitoring true amperage, voltage, wattage and kWh energy at each circuit, you can plan and see the effect of each change you make including:

- The effect on peak circuit amperage for each change
- View the added or removed heat from each cabinet change
- See the effects of CRAC changes instantly and via trending

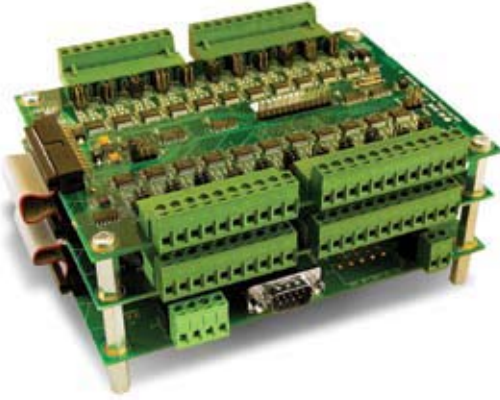
Managing

TrendPoint's patented budget/forecast/variance process for energy and carbon give you all the following:

- User ability to see their personal carbon impact
- IT management tools to control energy and carbon
- Increased system uptime and throughput

EnerSure®

Affordably Monitor
Energy Use by Circuit



You Can Only Manage What You Measure

Data center managers understand the effect of rising energy use. It means ever increasing operating costs and all the problems of hot spots and power density. The principal of Management By Information states that: "You can only manage what you measure." Energy is no different. The problem is that monitoring energy by circuit has been prohibitively expensive. That is, until now.

See and Manage Energy Consumption by Circuit

EnerSure is the centerpiece for your organization's energy management plan. EnerSure works simply and attaches to each of your facilities circuits with NO downtime. The unit gathers utility data and provides output directly to our TrendPoint One server via Ethernet, eliminating distance restrictions.

Modular Architecture to Monitor up to 88 Circuits per Unit

EnerSure's modular architecture consists of a Processor Module and from 1-4 Data Gathering Modules (DGMs). Each DGM has inputs for 22 circuits. Up to 4 DGMs can be mounted on the Processor Board giving you up to 88 circuits with a single complete unit. The Processor Module collects data from the DGMs and makes it available via Ethernet directly to our TrendPoint One server.

Precision Data, Not Estimated

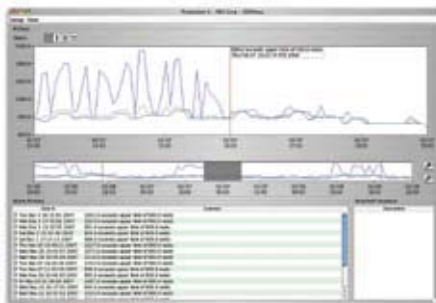
Metered power strips often use estimated data, resulting in errors of up to 20% or more from actual RMS values. EnerSure provides true RMS data with greater than 1.5% accuracy on all the following points for each circuit:

- Current (see actual and peak current for all circuits in your racks)
- Voltage (see peaks and spikes and take early action to avoid trouble)
- Power Factor (the Hidden Cost of Energy)
- Wattage (the amount of heat released from each circuit in your rack)
- Energy (see energy for your all your IT and Cooling loads)

Affordability and Ease-of-Use Make it the Right Choice

EnerSure's modular architecture and plug-and-play installation make it the right choice for almost any size facility. It installs easily with NO downtime so its the perfect choice for retrofit or new installation. So called "metered power strips" cost 2 to 3 times as much as EnerSure yet, deliver lower quality data. Because EnerSure continuously samples data with high-grade accuracy, you can use it to manage all the following problem issues:

- High, low and mean amperage, voltage and wattage for each circuit
- Data trending for the last minute, hour, day, month and year for each circuit
- 2 and 3 phase circuits are handled easily and with no additional hardware



▲ EnerSure data as seen through TrendPoint One



111 Deerwood, Suite 200, San Ramon, CA 94583
925-855-0600 888-ENERSURE
www.trendpoint.com info@trendpoint.com

EnerSure and TrendPoint One are covered under United States Patents 6,622,097, 7,039,532 and 7,263,450. Additional U.S. and foreign patents pending.