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# KAIZEN 2.0

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YOUR BUILDINGS WANT TO TALK TO YOU.  
LET THEM.



**COPPERTREE**  
**ANALYTICS**  
Realize building potential

# IF ONLY YOUR WALLS COULD TALK

WITH KAIZEN 2.0, THEY CAN.

The answers you need to better manage your portfolio are already right there in your buildings.

**Here's the problem:** when it comes to decision-making, the masses of raw data generated by your building automation system aren't much help.

**That's where Kaizen 2.0 comes in.**

Kaizen is a powerful analytics engine that translates your building's output data into the **meaningful reports and alerts** your team needs to take action.

With Kaizen 2.0, your building walls — and equipment and systems — *can* continually and automatically talk to you. They can tell you what's working and what's wrong so you can spend less time finding and more time fixing.

And that's the actionable information you need to **improve your building's performance and your bottom line.**

# KAIZEN 2.0 HAS A FEW STORIES TO TELL YOU

In the Japanese theory of continuous improvement, kai means change and zen means good.

We named the brains of the CopperTree software Kaizen because it helps you identify and make the **good changes** your building needs to continuously improve its performance.

## WHAT KAIZEN 2.0 CAN DO FOR YOU

CopperTree's Kaizen 2.0 extracts the data from your Building Automation System (BAS), securely streams it to our Vault cloud servers, and then analyzes it to provide you with a comprehensive picture of your building's energy use and system operations.

### Here's what using Kaizen 2.0 can help you do:

- ✓ Reveal battling systems consuming energy in excess of what's required to maintain your temperature settings.
- ✓ Forecast and monitor energy loads and set up strategies to minimize demand charges.
- ✓ Pull additional business-critical variables into Kaizen for analysis — anything you need to measure or monitor, from weather forecasts to enterprise data, and more.
- ✓ Query large amounts of raw and historical trendlog data — previously a prohibitively time-consuming task.
- ✓ Identify specific equipment and systems that need servicing, repair or replacement.
- ✓ Model the effects and ROI of potential commissionings, renovations, repairs and retrofits.
- ✓ Move away from scheduled, rotational maintenance to predictive maintenance.
- ✓ Get notified immediately when there's a problem and have alerts sent to key team members so they can take action.
- ✓ Set up reports to monitor the performance of your employees and contractors.
- ✓ Verify the depth and integrity of your commissioning and preserve it.



KAIZEN

改  
Kai (Change)  
=  
+  
善  
Zen (Good)

## CHANGE IS GOOD. CONTINUOUS IMPROVEMENT IS BETTER.

**Good changes:** it's what Kaizen 2.0 helps you create in your buildings and your business.

It's also how CopperTree conducts our own business. We're developers and techies on a mission to constantly advance and improve our products so that they're more useful to you.

For example, based on customer feedback and our research into the most-used workflows in Kaizen, we recently released Kaizen 2.0. We made changes designed to make your daily tasks easier, faster and more intuitive. Here are a few of the improvements:

- ✓ Streamlined navigation by creating a left menu so that you can get into your portfolio (clients and buildings) in one click.
- ✓ Gathered all your building insights into one location so you can see issues that need attention in one centralized place.
- ✓ Added new fixed horizontal menu bars and icons so that no matter what screen you're in, you can navigate anywhere you need to go in just one click.
- ✓ Inserted widgets in your main dashboard so you can see, at a glance, trends and critical issues in your building systems.

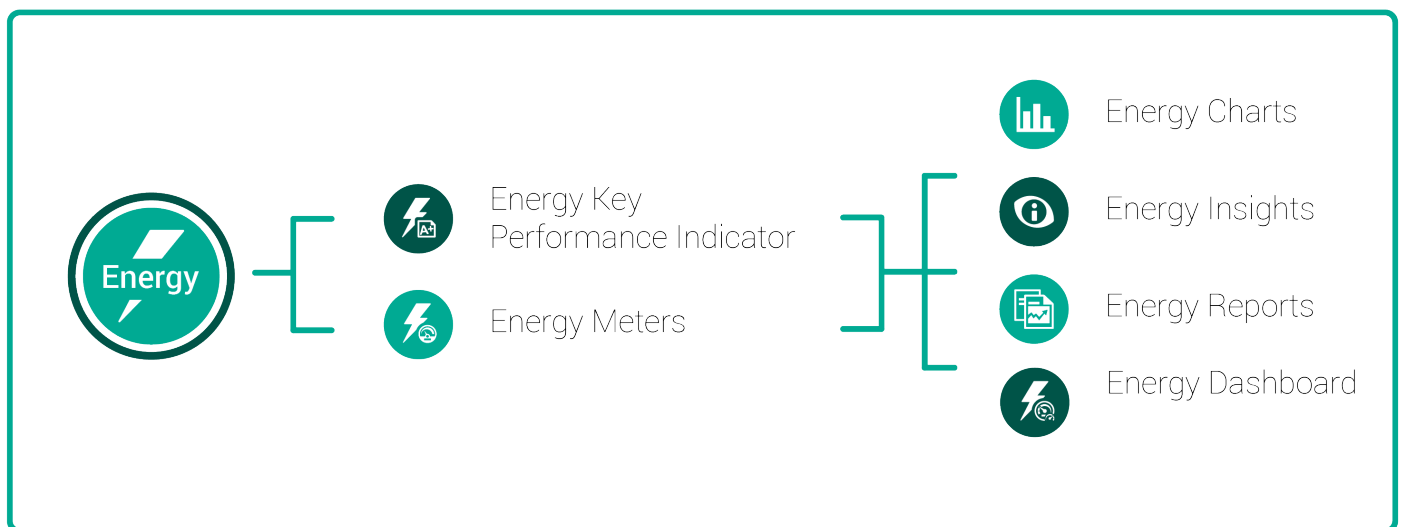
Every advancement in Kaizen 2.0 was designed to make your job easier by reducing the number of steps it takes you to complete your work.

## WE MAKE THE GOOD CHANGES YOU WANT TO SEE IN YOUR WORLD

When you bring Kaizen 2.0 into your buildings and your business, you can be confident you've invested in an evolving technology and a team dedicated to **continually innovating and improving** your analytics solution.

# KAIZEN ENERGY

Kaizen Energy gives you have the tools you need to make the best decisions for increasing your building's energy efficiency.



## Virtual Metering

You can't control what you can't measure...

...but it can be cost-prohibitive to install physical meters on everything you want to track.

Kaizen Energy allows you to create a virtual energy meter on any device within your building for a substantially smaller cost than a physical meter.

Kaizen Energy can even create historical energy data from the existing trendlogs in your BACnet BAS.

**From the central plant to a single VAV, Kaizen Energy gives you the ability to add energy meters to any system, large or small.**

## ENERGY METERS

Advanced meters cover all key traditional utilities such as water, gas and electricity, plus renewables such as solar and wind energy.

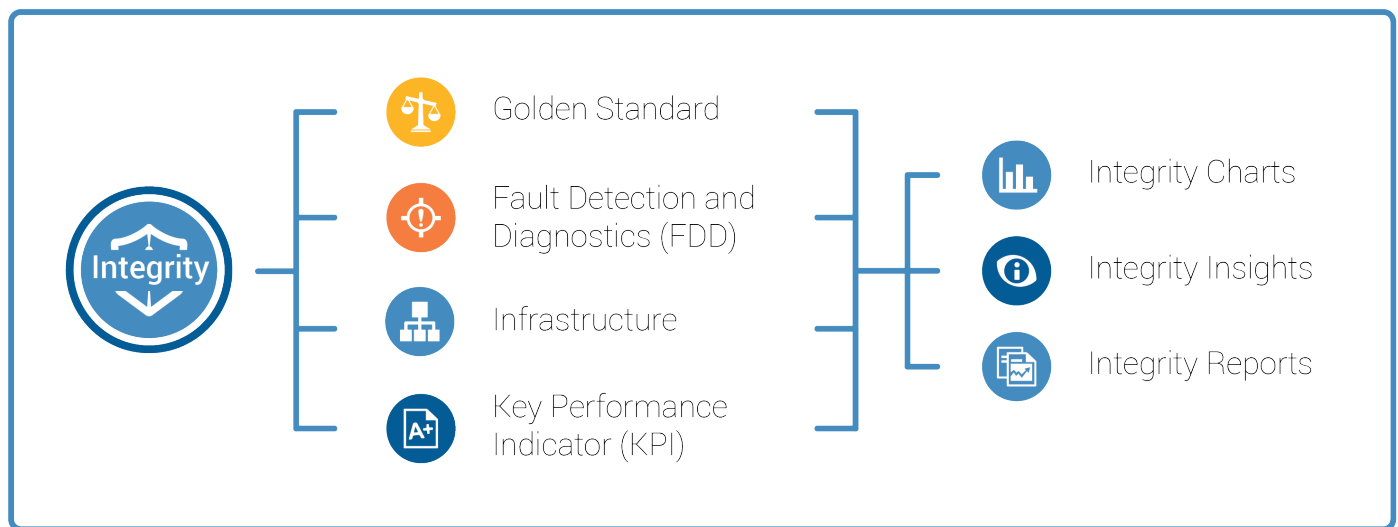
The system also allows full customization of the metering units so you can measure, track and report on any element in your facility. Want weather normalized electrical consumption? kW/ton, kW/widget produced or kW/Student? Kaizen enables you to tailor your metering solution to your specific needs.



**In 2008, buildings in the United States accounted for 68% of national electricity use.**

# KAIZEN INTEGRITY

Kaizen Integrity continuously analyzes your building systems so you'll know the moment something changes. Make the right decisions quickly by knowing where to look before problems escalate.



## FAULT DETECTION AND DIAGNOSTICS (FDD)

FDD provides a simple way for you to see inside your system using our intuitive user interface. Continuous monitoring of your building's systems is performed based on a library of customizable logic rules. Alerts are sent as needed and to whomever you choose. The Kaizen Insight Log tells staff where they should spend their time, which means less time diagnosing and more time fixing and more issues can be solved with the same resources.



A typical air handling unit accidentally left to run 24hrs/day could cost an additional **\$17,000** per year.



## GOLDEN STANDARD

Kaizen's Golden Standard tool continuously monitors and reports on the state of every point in your BAS.

When changes occur, you'll receive daily, weekly, or monthly reports itemizing the changes and providing you with the ability to reset or promote the changes to your new Golden Standard.

When combined with building recommissioning, Golden Standard provides a simple and effective way to lock in energy conservation measures.

**Kaizen's Golden Standard gives you a simple and effective tool so you know your building is running properly every day.**

# AUTOMATED REPORTING

Kaizen reports are generated by the data collected directly from your building system, ensuring accuracy. Reports can be customized and distributed automatically via email, saving you time and ensuring you never miss a deadline or lack the information you need.

At around 8 hours processing data per report each month, how much time could you save if all your reports were automated?



## HOW YOU WANT IT

Report on anything you measure and trend. If you can see it within the Kaizen system, you can add it to a variety of different graphs and charts. Choose the style that best suits your needs from our report builder templates. Add your company logo and customize your user experience and reporting.

## WHEN YOU WANT IT

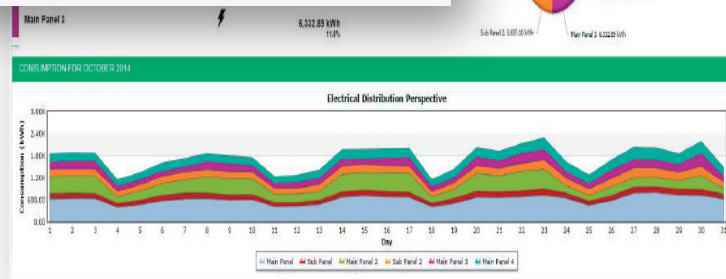
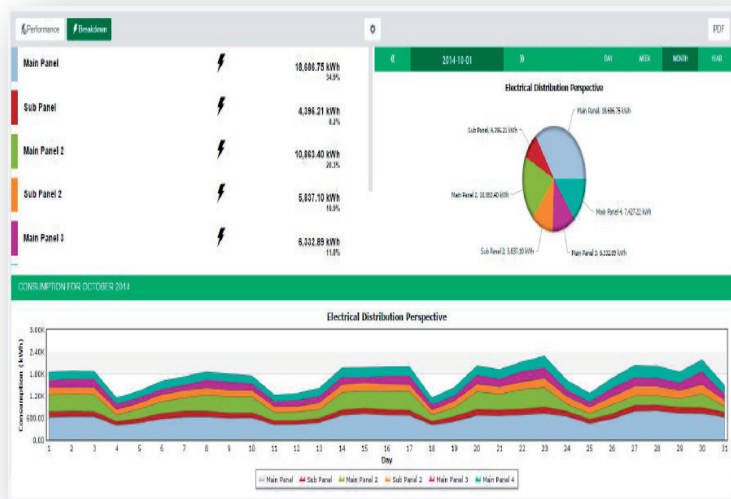
From within Kaizen, reports can be scheduled ahead of time and distributed automatically via email to whomever needs them. You can keep your stakeholders informed like never before. Regardless of what's happening in your hectic day, your reports will always be on time.

## 100% ACCURATE

Kaizen reports are generated within the same software package that continuously monitors and analyzes your building. Our Acquire, Analyze and Advise system means there's no need to integrate with other reporting packages; which can sometimes result in data errors.

# ENERGY VIEWS

Energy Dashboards from Kaizen put you in control. See the information you need to make the best decisions. React to changes quickly and forecast future trends by being able to visualize past energy data clearly.



## GET THE COMPLETE PICTURE

CopperTree comes complete with a robust analytic library that can begin to process your data immediately. While a one size fits all approach is widely used in other energy packages, CopperTree understands that your needs are unique and you need an easily customized solution. Through the graphical logic builder interface, you can customize Kaizen's analytics to fit the parameters *you* need without requiring complicated programming or specialized software skills.



Pinpointing energy over-usage by VAVs saved a university 15% of their energy costs in the first year.



## DETAIL IS ESSENTIAL

You can drill down to the level of detail you require: from a report on one specific zone or building, to a rolled-up view of a site or collection of monitored buildings.



# LOGIC BUILDER

CopperTree Kaizen gives you maximum flexibility to utilize any number of data inputs from your building and make sense out of them.



## VERSATILE

The same logic built to produce an insight alert can be used to create charts and reports. This flexibility allows you to import a logic template from the community library, modify it to meet your requirements and begin receiving insight alerts, viewing charts and sending out reports. However, the choice is yours. Begin building your own logic rules from scratch if you choose. Alternatively, your CopperTree Partner or CopperTree's Customer Solutions Team can help build rules specific to your needs.



## POWERFUL

From simple unit conversion and data normalization to complex mathematical calculations and data regressions, our Logic Builder is equipped with a variety of logic blocks. There's no need to export data and perform analysis in other programs.

Allow Kaizen to do the heavy lifting so you can spend less time analyzing data and know immediately when problems arise.



There are currently over 200 different logic rules available in the Kaizen community library and more are added every day.



# USER FRIENDLY INTERFACE

The CopperTree Kaizen interface is designed for maximum flexibility so you can choose what you see and who in your organization is allowed to see it. The role configuration feature gives you built-in security to ensure no unauthorized persons gain access.

You can customize your dashboard so that information is displayed as you wish to see it. Using your mobile devices, access the dashboard from wherever you are, making it easy to get information whenever you want it.

Kaizen provides simple setup wizards that walk you through system configuration, making it easy to stay informed and become proactive.



**CHARTS** A chart is simply a graphical representation of data. Charts are used on their own as an aid to troubleshooting, performance monitoring or can be included in reports or dashboards.



**REPORTS** Reports can be viewed within Kaizen or sent to a user or group of users on a periodic (monthly, weekly, etc.) basis. Reports can include charts, KPIs and other data.

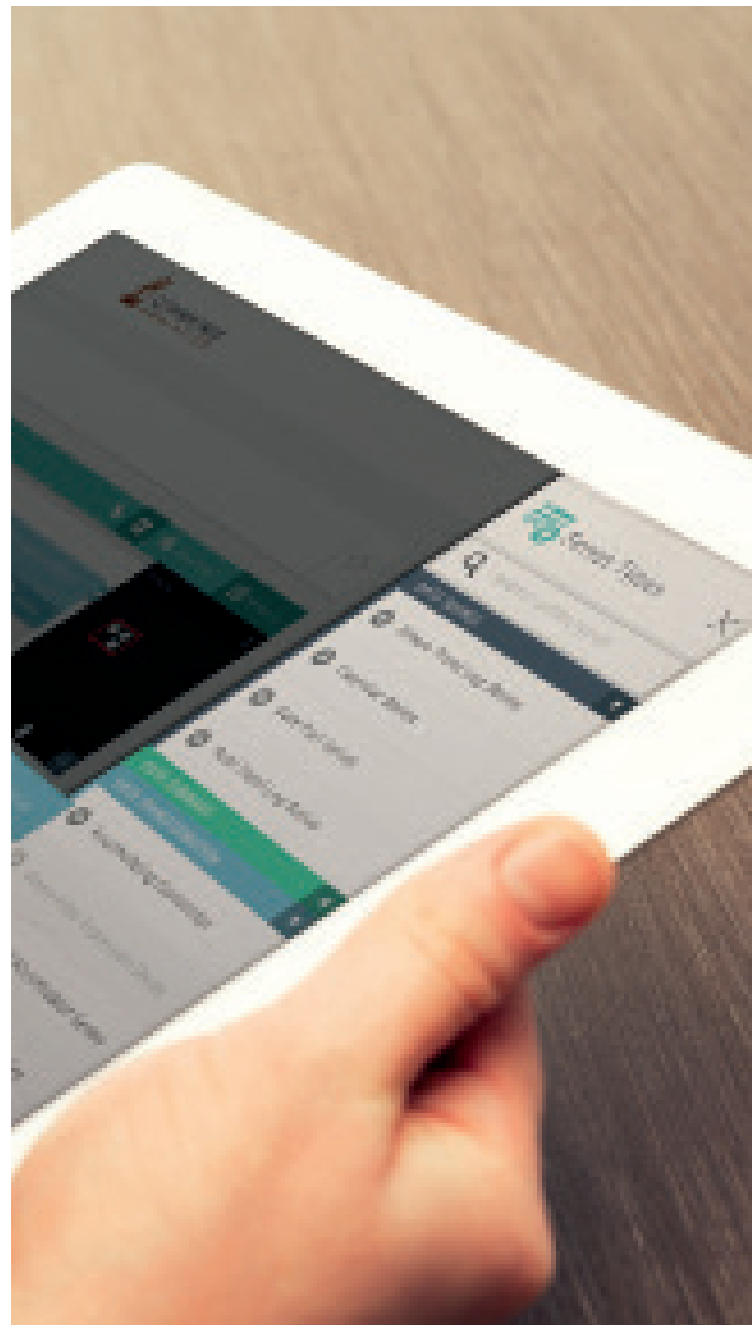


**KPIs** Key Performance Indicator: a data point that can be tracked and reported on, indicating how a particular activity is tracking to expectation. Often set against industry benchmarks. Examples would be overall building energy consumption compared with baseline, or monthly air handling unit performance.



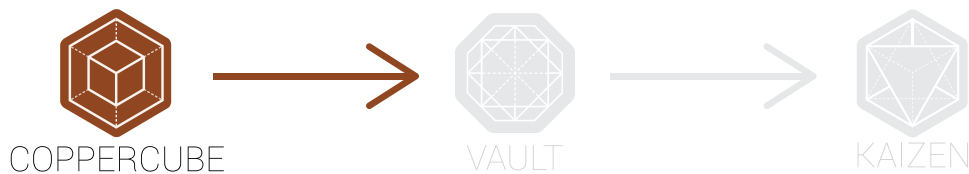
**ALERTS** Alerts are created whenever an insight is generated within the Kaizen system. These alerts can be sent to a user or group of users to advise when a system or metric falls out of standard. It can be sent via email or to smart mobile devices.

All of your data is safely stored in the Kaizen Vault, our secure computing facility, giving you peace of mind knowing your data is secure and backed up regularly. Kaizen Vault can help you meet your emergency preparedness goals.



# COPPERTREE COPPERCUBE

As an integral part of our **Acquire, Analyze, Advise** system, **CopperCube** is the on-site, hardware component of our Kaizen software.



## SEAMLESS TRENDLOG ARCHIVING

This native **BACnet** device searches your BAS network to locate all BACnet trend logs and archives those trends in its internal database, providing redundant and long-term storage of your building's valuable information.

Beyond acting as an on-site trend log archive, the CopperCube provides the gateway to **CopperTree's cloud-based Kaizen** software package. This enterprise level analytic service can provide advanced fault detection, energy analytics and more.

## FLEXIBLE WEB-BASED INTERFACE

Through a built-in web-based user interface, you can confirm operational status and manage your trend log data.

Status logs show clear and concise information about any faults that may have occurred, and can be configured to email maintenance staff to act on those faults.

The CopperCube can be configured to auto-prune each trend log's data to a specific duration, thus eliminating the need to delete data that has outlived its usefulness.

An optional **SQL connector** will route the same trend log data to an external SQL database for use with third party reporting tools, while maintaining the integrity of the original information.

## FEATURES



Native BACnet communications



Built-in web UI for feedback, operational status and configuration



Internal storage of trend log data



Configurable auto back-up to external storage device supports manual update at any time



Optional SQL connection

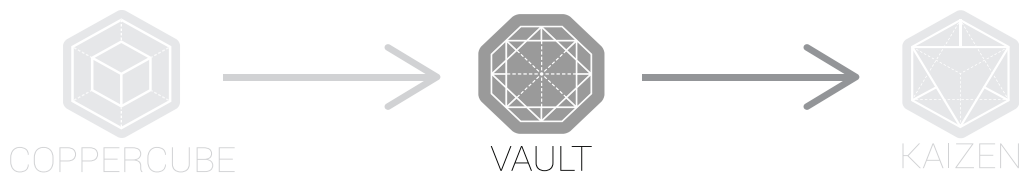


Firmware auto-update capability



# COPPERTREE VAULT

CopperTree Vault provides fast and secure data storage in the cloud and sends your data through to the Kaizen Analytics Engine.



## YOUR DATA, SAFE IN THE CLOUD

CopperTree Vault continually collects and securely stores live building data fed from the CopperCube installed in your building. This data is then passed on to the Kaizen Analytics Engine.

**Data can be stored from trendlogs, controller databases or both; and is available on a continuous basis.**

Vault also carries out some categorization of information, speeding up the analytics process.

## SECURITY

Vault's remote storage ensures a higher level of security than an on-site system, giving you peace of mind in a disaster recovery situation. CopperTree protects your building data by storing it in multiple server sites so you can be confident your data is securely backed up. For further security, data transmission is encrypted.

## CONTINUITY

There is no limit to the amount of data you can store on Vault, allowing you to access live and historical figures to prepare a year-to-year comparison. Even more powerful is the ability for you to view long term trends and progress in energy use efficiency.

## FUTURE PROOF

Since live data is fed continuously, you can get a snapshot of your building's performance from past or present. This information can be presented on your dashboard or in multiple different reports.

It is difficult to know whether reports will be useful in the future as your reporting needs may change. As the Vault stores historical data, this data is always available, so it can be retrieved and used accordingly.



Walnut Research Facility  
 Thursday, May 15, 2014

Device Backup Report  
 Monthly  
 May 04, 2014 to May 15, 2014

**Actions:**  
 4 BACnet devices have no backups. Confirm that devices still exist.  
 8 BACnet devices require a more recent backup.

**Device Backup Statistics:**  
 12 BACnet devices for this location (Total)  
 0 BACnet devices have been backed up during this reporting period.  
 12 BACnet devices have not been backed up during this reporting period

**Top 10 Device Backup Exceptions:**

Priority	Device ID	Device Name	Filename	Last Backup Date	Age
85	CTL2131		None	None	
102	DCW_Pulse		None	None	
105	Reception		None	None	
1000	Device Object		None	None	
106	Library		PerkinsAndWill.DEV106.2013.9.15.zip	Sunday, September 15, 2013	242
100	Perkins & Will - SEF, DHW		PerkinsAndWill.DEV100.2013.12.8.zip	Sunday, December 08, 2013	158
101	Perkins & Will - HRV2		PerkinsAndWill.DEV101.2014.2.19.zip	Wednesday, February 19, 2014	85
107	Perkins & Will - Windows, SEF		PerkinsAndWill.DEV107.2014.2.19.zip	Wednesday, February 19, 2014	85
104	Perkins & Will - HRV1		PerkinsAndWill.DEV104.2014.2.19.zip	Wednesday, February 19, 2014	85
103	Perkins & Will - Atrium		PerkinsAndWill.DEV103.2014.2.19.zip	Wednesday, February 19, 2014	85




At CopperTree, we have 30 years of practical energy and building management expertise behind us, allowing us to bring you a Software as a Service (SaaS) solution to help you start saving energy now. Our passion is to empower you to take charge by giving you the right tools to optimize building performance.

With CopperTree, you get more than just data. Our system takes real time data and transforms this information into insight unique to your building. This means you take back control of managing your resources — people, time and money — and gain the clarity you need to schedule the important and deal with the urgent in the most efficient manner.

We understand that energy and building management presents a challenging and dynamic problem. With CopperTree, you get all the information and insight you need in one single platform so you can proactively manage and improve your building.

To find out what CopperTree can do for your building, visit our website at [www.coppertreeanalytics.com](http://www.coppertreeanalytics.com).



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+1.855.575.5943