

MONNIT[®]
"The leader in low-cost, remote monitoring solutions."



Commercial HVACR Remote Monitoring Solutions

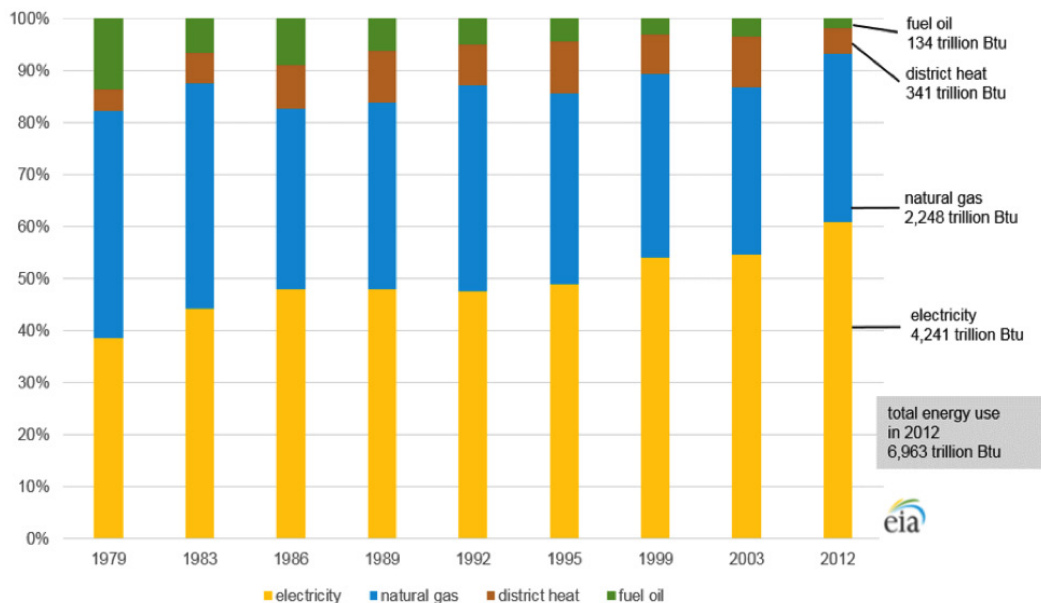
Commercial HVACR Remote Monitoring Solutions

How commercial enterprises can reduce energy consumption, and implement reliable, low-cost HVACR monitoring solutions to achieve smarter, safer, and more efficient operations.

Introduction

Heating, ventilation, air-conditioning and refrigeration (HVACR) systems are used to heat, cool and control moisture levels (humidity can be especially damaging) for homes and businesses. Commercial HVACR for places like hospitals, schools and churches, data centers, pharmacies, hotels, restaurants, office buildings, vacant properties, warehouses full of perishable goods, and rooms or buildings with delicate electronics or telecommunication equipment can be expensive and difficult to track and properly maintain.

Commercially speaking, HVACR accounts for the lion's share of commercial energy consumption, and in a typical scenario, HVACR problems increase costs because they must first be manually discovered and reported before damages can be assessed. Often, both parts and repairs need time to organize and complete. Below is a summary of commercial building energy consumption in 2012 from the U.S. Energy Information Administration website (EIA):



Source: U.S. Energy Information Administration (EIA). 2012 Commercial Buildings Energy Consumption Survey: Energy Usage Summary.

Common HVACR Frustrations

Monnit receives many inquiries from businesses looking for answers to these common HVACR related frustrations.

- Costly system downtime
- Occupant discomfort
- Waste and spoilage
- Damage to sensitive electronics equipment
- Regulatory compliance

Notes on HVACR Regulation

Covering state and federal legislative and regulatory actions relevant to the HVACR industry, *The News*, an online HVACR Directory and Source Guide, listed many U.S. Department of Energy (DOE) revised standards for dozens of residential and commercial HVACR and water-heating products and components, including, but not limited to, commercial rooftop units (RTUs), boilers, water heaters, central air conditioners and heat pumps, furnace fans, electric motors, walk-in coolers and freezers.

Internet of Things for HVACR

What is the Internet of Things (IoT), and what does it mean for commercial HVACR systems? The IoT represents an ever-growing network of physical objects (“things”) embedded with sensors capable of network connectivity, which enables them to collect and exchange critical operational data from any HVACR system. What we know as the IoT has actually been around for years, and its wide applications are rapidly becoming a necessary business technology.

A collaborative article from The Wharton School and NTT DATA, *Leveraging the Internet of Things for Competitive Advantage*, experts explored why companies can’t afford to do without IoT as a competitive advantage.

Alay Jasti, an IoT Practice Leader at NTT DATA, a global IT services and solutions provider advised, “In one IoT pilot, making HVAC systems more efficient could save a hotel around \$60,000 a year in one location alone.”

Their insights advocated “a solid IoT plan that allows real time trouble-shooting and diagnosis of HVACR issues,” which in turn provide cost-effective remedies, and ability to maintain uptime critical to satisfying customers and preserving a positive brand reputation.

Similarly, an Emerson *State of HVAC Climate Technologies* video showed, on average, commercial buildings waste 30 percent of the energy it consumes; nearly 50 percent of cooling-conditioned commercial floor space in the U.S. features rooftop units, and 68 percent of contractors use smart phones as part of their workday.



Using Monnit Remote Monitoring Solutions, companies can remotely monitor and manage temperature and environment from anywhere, anytime, using an IoT HVACR system. This also means you can securely record and exchange data, and receive immediate alerts about issues before they become costly, time-consuming problems.

“Service can be implemented remotely to fix issues and help retailers sustain energy savings in the long-term while ensuring operational issues are actually fixed rather than masked,” said Paul Hepperela, Director of New Solutions Development for Food service and Produce Management at Emerson Climate Technologies in a September 2016 *HVACR Business* article, *Use Facility Data to Provide Value to Customers*.

In Wharton’s article, Senior Vice President and global head of NTT DATA’s digital business services unit, Raman Sapra suggested, “This [IoT] in turn will result in operational excellence, new revenue models, enhanced employee engagement and a superior customer experience.”

And, Wharton professor of operations, information and decisions, Kartik Hosanagar described IoT’s power to raise system efficiency and value, “IoT is mainly about two things – using sensors to collect extra information and then channeling that to guide better decisions and actions.”

Energy Consumption

Rising energy costs are causing property managers to consider smart technology as an energy conservation strategy. But power consumption also needs to be reduced *without* compromising proper humidity, carbon dioxide, or temperature levels. Monnit Remote Monitoring Solutions for HVACR provide real-time data that helps reduce energy consumption and cost.

Carrier reported studies conducted by the U.S. Department of Energy say predictive maintenance can reduce maintenance costs by up to 30%, and eliminate breakdowns by as much as 75%. In the language of IoT, this type of seamless integration is known as Predictive Maintenance (PdM).

Monnit AC Current Meters allow you to monitor and optimize energy consumption for HVACR systems, and many other energy-consuming devices.

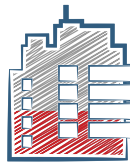
COMMERCIAL HVAC ENERGY WASTE

According to the United States Department of Energy, buildings account for 40 percent of U.S. energy use, and waste 30 percent of the energy they consume, representing over \$100 billion in operation costs per year.



40%

Of U.S. energy use is from buildings.



30%

Of building energy is wasted.



\$100B

Dollars worth of energy is wasted every year.

Source: United States Department of Energy

HVACR IoT Benefits Can't Be Ignored

Speaking past the IoT buzz, NTT DATA global Director of Cloud Application Services, Chethan Gorur said, "The implementation of IoT is growing exponentially as a result of several simultaneous new developments: leaps in innovation around computing, storage and analytics; falling technology costs; and a sharp jump in mobile device use."

By 2020, there should be 28 billion connected units globally and the market for IoT solutions would top \$7.1 trillion, according to International Data Corporation (IDC), a global provider of market intelligence, advisory services and events, "Propelling the growth is enterprise IoT, rather than consumer IoT such as digital clothing, smart watches and other wearables."

Out with Clipboards, in with Monnit Solutions

The "old-school" days of limited productivity and singular focus on HVACR when technicians arrived on scene armed with clipboards are almost gone. Smart IoT HVACR systems that can preemptively address inconvenient emergencies, and improve workforce efficiency and productivity are rapidly becoming the norm.

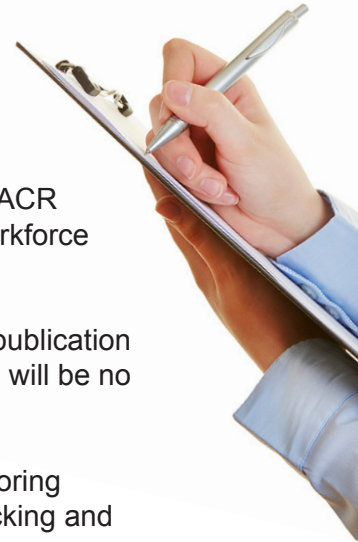
A futurist picture of the HVACR industry from Contracting Business.com, an online publication that has helped HVACR managers run better businesses since 1944, predicts there will be no such thing as HVAC contractors in 2030, only energy-service contractors.

Monnit HVAC Remote Monitoring Solutions can detect compressor issues by monitoring power draw, consumption and vibration. Monnit's systems monitor efficiency by tracking and comparing system output temperatures to ambient area temperatures or cooled zones.

Monnit helps improve processes that have traditionally been manual. This is important since manual processes increase the possibility for errors and are difficult to track. However, for the first time HVACR can be monitored and controlled by non-specialized personnel or facility managers via smartphone or tablet.

With a Monnit HVACR Remote Monitoring Solution, errors can be discovered quickly to minimize system down time, prevent costly damages, increase system and process efficiencies, and reduce oversights.

- Cost-effective, high-ROI energy management.
- Solves interoperability problems to normalize data.
- Delivers data accurately and securely to cloud-based services, so you can use it to improve operational efficiency for your HVACR system.



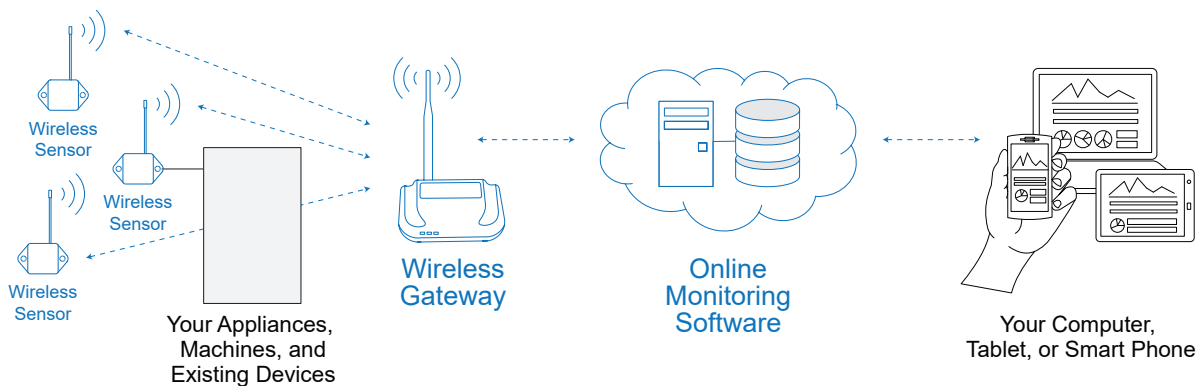
Monnit HVACR Remote Monitoring is an All-In-One Solution

Monnit Wireless Sensors are making a big impact with many commercial property owners across the globe. Monnit systems can help you and your staff monitor various aspects of your business environment with multiple sensors in a single view.

- Save time and resources
- Protect your investments
- Enhance safety
- Maintain regulatory compliance
- Strengthen your workforce
- Protect your Reputation
- Extend the lifetime of your HVACR system
- Monitor from anywhere, 24/7

How the Monnit Solution Works

Monnit HVAC Remote Monitoring Solutions keep track of everything from anywhere in the world, while securely logging data and immediate alerts whenever conditions exceed predefined thresholds. Today, the importance of convenience, flexibility, a cloud-base, and mobile access to system data cannot be overemphasized.



The Monnit solution consists of wireless sensors, gateways and monitoring software, to offer a complete remote monitoring solution. Wireless sensors can be used to monitor various environmental aspects of your business as well as integrate with your existing equipment (such as coolers and appliances) to give you real-time data.

Monnit wireless gateways act as a communication bridge between wireless sensors and the iMonnit Online Monitoring Software which allows you to view sensor information from anywhere, anytime through a computer, tablet or smart-phone. iMonnit software can also provide immediate alerts via email or text message; it can also call your phone when predefined conditions you've set are met or exceeded.

Monnit's Wireless Sensor Network (WSN) can expand from a single local area to a multi-site network with sensors anywhere in the world, as long as the sensors are connected to a Monnit gateway. Monnit gateways then transmit data to Monnit's cloud-based software giving you the freedom to configure, monitor, and manage all of your locations from one network.

Monnit has over 50 different wireless sensors types, and all of them have unique characteristics whose application will provide the solution you need. Monnit also delivers a variety of gateway communication options, such as Cellular, Ethernet, USB and serial MODBUS to connect your devices with Monnit's cloud software.

Cellular, Ethernet and USB gateways from Monnit can connect with up to 100 wireless sensors per gateway and serial MODBUS gateways can connect with up to 50 wireless sensors. Sensor networks can be extended by simply adding additional gateways to support more sensors.

Features and Benefits that Can't Be Ignored

- Easy set-up and use
- Reliable, proven technology
- Low-cost
- Low power/long life
- Exceptional wireless range
- 50+ sensor types
- Scalable / Expandable (100 sensors per gateway)
- Global RF frequencies
- Cloud-based monitoring software
- Text message, email, or phone call alerts
- 24/7 access from anywhere
- Custom sensors available upon request

Monnit IoT Remote Monitoring Solutions provide visibility, and more importantly, controllability for HVACR challenges. Monnit's HVACR Remote Monitoring System is the most intuitive, reliable, and cost-effective solution on the market.

As government HVACR regulations tighten and competition grows, commercial property HVACR system management and energy consumption issues offer opportunity to gain peace of mind using our remote wireless monitoring solutions. Monnit sensors can monitor and record important operational HVACR data in the software system 24/7, and it can be accessed from anywhere through Monnit's Online Dashboard and mobile apps via secure login.

If HVACR systems perform outside specified parameters, Monnit alerts can be sent to multiple contacts via text message, email, phone call or even to a local warning system, to notify nearby employees. This eliminates potential for human error, and saves time and money while giving you the control to ensure customers, property, and inventory are safe.



Key Takeaways

- Government regulation of the HVACR industry is becoming increasingly stringent.
- Proper manual processes and documentation are time-consuming, resource intensive and prone to human error.
- Monnit's HVACR Remote Monitoring Solutions can properly monitor and track critical systems performance data.
- Energy-use savings and greater operational efficiency can be realized by monitoring HVACR power usage and performance data.
- Monnit's Remote Monitoring Solutions offer peace of mind through 24/7 access to your business from anywhere, and immediate notifications as issues arise.
- Implementing the Internet of Things and Monnit HVACR Remote Monitoring Solutions in your business is affordable and easy.



“They say you never know when disaster will strike. Well now we do! Monnit’s remote monitoring system is such a valuable tool when it comes to protecting our buildings and everything in them. The installation was quick and easy. Everyone that uses it loves it! You really can’t beat the value of this system!”

– Leroy R., Property Management

About Monnit

Monnit bridges the gap between industry and technology through the Internet of Things, empowering businesses with easy-to-use, low-cost remote monitoring solutions. Monnit solutions can be used to remotely monitor a variety of “Things” (i.e. temperature, motion, moisture and humidity, energy use, etc.), alerting you by text, email, and/or phone call when user-defined conditions are met. Our goal is to save you as much time, money, and stress as possible, by preventing issues with inventory, infrastructure, and more.

As a Global Top 50 innovation leader in The Internet of Things (IoT), Monnit’s technology has significantly expanded the frontier of both what and how “things” can be connected, monitored and controlled. It is almost impossible to identify an asset, process or solution, from SMB to Enterprise, indoors or outside, commercial to industrial, that cannot be uplifted by one of Monnit’s 50+ reliable, affordable, tiny, powerful, wireless monitoring solutions.



For more information about our products or to place an order, please contact our sales department at 801-561-5555.

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