

# Last Word



## IoT Revolution: Disrupting, Modernizing HVAC

MATTHEW SALLEE

It will probably come as no surprise that the Internet of Things (IoT) revolution is enveloping much of the traditional technology industry. IoT is empowering service providers to do better than simply rely on a client to reactively report a problem with heating.

It follows that IoT has begun to have a major impact in the realm of HVAC systems.

The traditional model of thermostats controlling HVAC units has been an overall simple and effective solution for easy resident and property management of these HVAC systems. But, what if this process could be even more streamlined and the management and maintenance of these systems on a small and large scale made even simpler?

That's exactly what some manufacturers are attempting to address by moving the thermostat inside the HVAC systems themselves. Why not just stick with the thermostat on the wall model? There is one very clear advantage of combining the thermostat and HVAC systems unit—simple bi-directional communication between two traditionally separate devices.

Aside from the energy efficiency benefits of using smart devices to manage temperature and home comfort, integrating a thermostat directly into an HVAC system connected to a WiFi network, provides the ability for accurate data collection and distribution. A manufacturer or third party can then use this data to optimize existing units and improve future ones.

An additional benefit of integrated IoT HVAC systems is the ability for residents and property managers alike to manage HVAC systems via mobile and/or desktop applications without having to physically be near a thermostat. Using connectivity and data accessed from a connected device, these new IoT-infused HVAC systems are now able to monitor their own performance,

while optimizing operations to create energy savings and improved comfort. These systems go a step further and can also compare per-unit performance data against a database of other units around the country or world.

A major advantage of such a system is its ability to detect anomalies within the operational data variables that can ultimately signal a rapidly approaching system failure. The system identifies the change and notifies the manufacturer and/or a resident or property manager to dispatch a technician to fix the potential problem, and in the process, heading off a system shut down.

Taking it one step further, large property management companies, which manage a portfolio of properties across the country, now have access to two new valuable resources. The first resource enables a clear view all of their HVAC systems in one place. This allows companies to see operational efficiencies at a unit, property or portfolio level in real time.

The second resource is technology that provides the ability to automatically dispatch techs to address a problem without manual intervention by a property manager. Property managers can now have a fully hands-off approach to HVAC systems maintenance, giving them back time to focus on other important issues.

The promise that IoT holds means a great increase in customer satisfaction. For example, when the weather is hot or extremely cold, an HVAC emergency service call needs to be addressed in a short window of time. And when hot weather strikes, often many systems will go down simultaneously. It is a challenge to repair all those requests while maintaining a high service level.

With IoT, service providers are able to do better than rely on the client to reactively report a problem. An apartment complex might be getting a com-

plaint from a resident some hours after a problem actually starts, and by the time they receive a service request, several hours more.

The ability to accurately detect problems before they arise is a huge win for both property managers and contractors. For property managers with tenant-occupied properties, less downtime from HVAC systems failure means more happy residents and less scrambling to find contractors at the last minute or dealing with customer complaints.

For contractors, this system provides a steady, ongoing flow of work projects. That means less selling and more doing what HVAC contractors do best—repair and replace HVAC systems. ☺

*Matthew Sallee is vice president sales and business development at Motili, a division of Daikin, which has created a technology platform that allows property managers, owners, and investors to easily manage their repair and replacement jobs. Sallee may be reached at [matthew.sallee@motili.com](mailto:matthew.sallee@motili.com).*

### ▶ TROUBLESHOOTING ANSWER

Measuring 24V between 8 and 6 is a sure sign that one of the safety switches are open in the safety loop. Because switches are "power passing" components, not loads, there should be almost zero voltage drop across them. Measuring 24V means that at least one of them is open.

The next step is to "walk" through the circuit using the voltmeter until you find the open safety switch and then diagnose the cause. Be very careful when resetting a safety on a furnace. Something caused the fault, so make sure to check the burners, venting, combustion air and inlet gas pressure before allowing it to light.

Manifold gas pressure, combustion, ambient CO, draft and air temperature rise should all be carefully checked once the furnace has started to run.