SPECIAL REPORT

SAVE ENERGY WITH SMART HOME AUTOMATION

Picking the Best Programmable Thermostats, WIFI Thermostats, Motorized Blinds & More

AUTOMATIC ENERGY SAVINGS

Control of LED lighting, solar power and A/V equipment through a Control4 automation system nets huge energy savings in a Miami home.

IT TAKES A COMMUNITY to raise a house that's so efficient it produces excess power to sell back to the local utility. It requires an environmentally conscious design and construction, plus a bevy of green, eco-friendly products and systems to put a residence on a path toward achieving a Platinum LEED rating. Part of a team of experts that last year completed a $2.2 million residence recognized by the U.S. Green Building Council (USGBC) as the "Greenest Home in America," the custom electronics professionals at MultiMedia Innovations (MMI), Miami, Fla., were able to maximize the 3,200-square-foot home's energy efficiency through the addition of a Control4 automation system.

By collaborating with the Florida Green Home Design Group and its partners SKLARchitecture, Hollywood, Fla., and Arkin Group, Miami Beach, Fla., MMI designed the Control4 system to help the self-sustainable Alton residence achieve the highest-scoring LEED rating in the nation. The system controls all of the home's LED light fixtures, which earned a few LEED points, according to MMI's Edwin Melendez. Also tied to the Control4 processor are Q-Motion motorized window treatments, Jandy

swimming pool system, Control4 distributed audio and video switchers and Eragy energy management system. The latter enables the Control4 system to continually monitor the current energy production of the home's photovoltaic solar panels, as well as the home's overall energy usage. This information can be viewed on both Control4 wireless touchpanels and the screen of an iPad. "Based on the data, which breaks down the energy consumption circuit by circuit, a user can decide where and when to cut back," Melendez explains.

However, because the home is so inherently efficient, rarely does the current owner need to alter his energy use or daily routine. He just lets the photovoltaic solar panels and geothermal heating and cooling system do their jobs and the Control4 system manage the operation. It's a plan that in addition to the Platinum LEED rating enabled the house to achieve a Net Zero rating, which signifies that its systems alone produce enough power to run the house without taking energy from the grid. In fact, the homeowner is able to supply the local utility with the surplus power, resulting in credits on each monthly bill.

Through programming of the Control4 system, the saving energy sacrifices none of the homeowner's comfort, convenience or valuable free time. For example, certain lights turn on and off automatically based on the Control4 system's built-in astronomical timeclock; even when the lights are on, they are never at a full brightness level. This alone is a big energy-saver. The window shades move automatically, too, as part of the homeowner's Morning routine, which helps block out the intense Florida sunlight so that the geothermal cooling system is never overtaxed. As part of his Good Night routine, the owner taps an icon on the screen of his iPad to initiate a command that turns off every light.

The house is so efficient in its use of electrical power, there's plenty left over to share with the home's several substantial entertainment systems, including the Control4 equipment that feeds audio and video to speakers and TVs throughout the property, and a home theater system featuring an Epson video projector, 5.1 surround-sound system and a double-sided, motorized 106-inch VuTec projection screen that when lowered from the ceiling can be viewed from both the living room and the outdoor area. Naturally, viewers outside would see the backside of the image. However, when the owner taps a specially programmed icon on the screen on his iPad, the image flips so that it's perfect for movies alfresco.

All the while, the Control4 system and the rest of the green technologies are working in the background, conserving energy, maximizing efficiency, and making this award-winning home one for the energy-saving record books.

CHANGING the Face of THERMOSTATS Forever

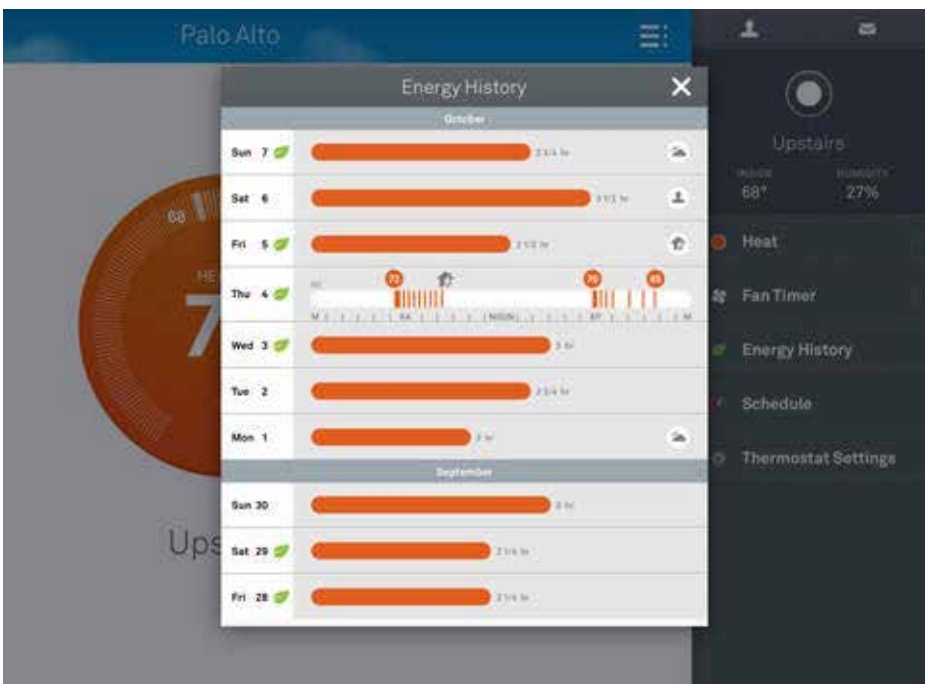
No longer do you have to settle for an unsightly, hard-to-set thermostat; today's models are glamorous and easy to operate.

REMEMBER STRUGGLING to create a day and night schedule for your programmable thermostat to follow. You likely needed to refer to a user's manual … more than a few times and may have even given up after a few unsuccessful attempts. The unfriendliness—not to mention the unattractiveness—was the bane of programmable thermostats everywhere. Consequently, they never functioned as they were intended and homeowners never reaped their energy-saving benefits.

Then came NEST. This one product, acquired by Google, has changed the way people perceive programmable thermostats, turning them into a thing of beauty—something to be admired when attached to the wall and to be appreciated when it came to program it. Programming it is literally a no-brainer. After manually adjusting the settings over the course of about a week, as you would normally do with a regular thermostat (lower at night and when you're away; back to more comfortable temps when everyone is home), NEST learns your heating and cooling routines and creates a schedule automatically. This saves money. It also saves money by responding to activities that happen around the house, a capability leveraged by the Nest Labs Developer Program, where companies can build products to interact with the smart learning thermostat. For example, through a link with the Jawbone UP24 fitness band, Nest can signal the band to wake you up when the temperature adjusts in the morning. Technology integrated into Mercedes-Benz cars can tell Nest when you'll be home and start heating and cooling the house at exactly the right time.

It's a model that's inspiring even veteran manufacturers of thermostats to break the mold, so to speak. Honeywell, for example, recently launched a NEST-like thermostat called Lyric. It's an addition to its established line of Wi-Fi connected thermostats, but with a few unique, energy-saving twists. Instead of auto-creating a schedule based on how you jog its dial (like NEST), it auto-creates based on your location. Through a connection to your smartphone, the Lyric knows when you're home and when you're not (as well as the comings and goings of other smartphone-toting family members) and establishes a heating and cooling schedule around it. You can customize the distance, so there's no chance of it resetting the temperature when you simply run out to grab the mail. The Lyric also takes into account the outdoor temperature, humidity level and other conditions before it adjusts.

And here's the really good news: Both the NEST and the Lyric are designed to be installed by do-it-yourselfers. So if your thermostat could use a serious facelift—and you'd like to save energy to boot—upgrade to one of these uber-smart, super-connected thermostats.



5 EFFORTLESS WAYS TO SAVE ENERGY

An automation system can save the hassle of cutting back on electricity use.

CONSERVING ENERGY AT HOME shouldn't sacrifice your comfort or make you feel deprived. It shouldn't require a change of routine or lifestyle or create a lot of extra work. With an automation system at the helm of your house, you'll never have to worry about being uncomfortable or inconvenienced, as the system is able to operate the lights, thermostats, and other power-hungry devices with the utmost efficiency. All you do is sit back and watch the system shave money off your monthly utility bill. Here are five ways an automation system can foster energy efficiency:

All Off. No longer will you leave a light on, a curling iron heating up, or the music playing as you leave the house for work, vacation or to run a few errands. An All Off command, which can be issued from a touchpanel, tablet or your smartphone can tell an automation system to sweep through the house to turn off and adjust as needed. The closing of the front door, the arming of a security system or a signal from a motion sensor can also trigger the house-wide All Off edict.

Curtain Call. Sunlight can quickly heat up a room, causing your AC system to go into overdrive. Motorized shades, when automated, can close at certain times of the day or when a sensor notices a heavy amount of sunshine.

Stat Patrol. Thermostats can be finicky pieces of technology. But with an automation system in charge, their built-in schedulers become easier to manipulate. Plus, you'll be able to sync the stats with the operation of other electronic devices; for instance, when the automation system tells the lights to turn off; the stats can set back too.

Spin Cycle. Ceiling fans help circulate warm and cool air, making your heating and cooling system work more efficiently. By automating the fans, they can turn on and off at certain predetermined times of the day.

Knowledge is Power. When you understand where your energy dollar is going, you can make better decisions on how and when you use the electronic systems in your house. With the right technology integrated, a home automation system can provide a real-time report of your household energy use, even breaking it down circuit by circuit if you want.

Motorized shades such as these by Qmotion can help save on home energy costs.

ENERGY MANAGEMENT that Make Sense

Security-style sensors can help your house run more efficiently, while protecting it.

WHEN MOST PEOPLE hear the word, sensor, it's a security-type emergency that comes to mind. A sensor detects motion in the backyard and it sets off a siren; a sensor notices that there's water in the basement and it alerts you with a phone call. While these will always be core applications of a sensor, when programmed appropriately by a custom electronics (CE) professional, they can also help curb use of electricity. Here's how:

1. When a motion sensor detects that someone has left a room, it can tell the light to turn off. Some companies offer light switches with sensors built in, making the installation easily handled by a do-it-yourselfer. These types of sensors are particularly useful for spaces like closets, powder rooms and basements where lights are often left on accidentally. Bathroom exhaust fans can function in this same manner.

2. Although it can be more difficult to set up, motion sensors can also tell thermostats to adjust according to occupancy within a room. This type of application works best in homes with multiple zones of heating and cooling. So, for instance, a zone that includes lesser used rooms can stay at a lower, energy-saving temperature while rooms where people tend to hang out can remain comfortable.

3. A daylight (also called a photocell) sensor tell lights when to turn on and off, as well, but based on the presence of natural sunlight. In other words, when there's enough available sunlight, the light fixtures within a predefined space stay off; when additional light is needed, they turn on.

4. While turning off every light at bedtime is a surefire way to save energy, having some soft lighting available for midnight trips to the bathroom and kitchen are helpful. Strategically positioned motion sensors can trigger a pathway of lights to your destination. They can be set up to turn off automatically after a certain amount of time has lapsed.

5. Weather sensors can be used as a gauge for irrigation systems. For example, if sensors notice that enough rain has fallen, or even if the weather report predicts rain, they can trigger a temporary override of a lawn irrigation system.

6. Outdoor temperature sensors, when interfaced with a home's heating and cooling system and/or motrorized window shades instruct thermostats and window shades to adjust according to the outdoor weather conditions. This can help curb heating and cooling costs.

Temperature, light, motion and weather sensors can be used to automatically adjust your heating or AC system

7 SURPRISING ENERGY SAVERS

1. Cooling AC Use

The Monolyth is a web-enabled device for existing window and wall AC units. When paired with a smartphone, the Monolyth permits remote tweaks to the settings of the AC. The product communicates with your AC unit via an infrared sensor; no wiring or complicated installation is required. Once it's been synched with the AC and your home's Wi-Fi network, the Monolyth can learn both your schedule and your temperature preferences, and set the AC accordingly. Of course, you can always override these automated alterations via the Monolyth app on your smartphone. Other features include motion detection and push notification of alerts, tips and reminders. It is expected to be available sometime early next year at a MSRP of $159.

2. Automated Vent

The Z-Vent from EcoNet controls can be controlled remotely from a smartphone app to open or close based on your heating and cooling needs. You can shut the vents in rooms that aren't being used so that all air flows to the rooms that are occupied. Installation involves removing your existing vents and replacing them each with a Z-Vent ($100 each). Not only can you wirelessly control the vents, you can also set them to automatically open or close on a schedule. Configured with Z-Wave occupancy sensors, and the vents can open and close when people walk into and out of a room.

3. Solar Window Shades

Deciding to power a home with solar is a huge financial commitment. Somfy Systems offers a smaller, less intrusive way to give solar a try with its WireFree Solar Pack kit. Compatible with Somfy's line of WireFree motorized roller shades, the $200 kit includes a solar photovoltaic panel. This panel converts energy from the sun into electrical power which is passed to a special rechargeable battery that powers the roller shade. This helps the battery last longer and, of course, promotes and greener, environmentally friendly lifestyle. It's also a good solution for hard-to-reach rollers, such as second story windows where battery replacement can be challenging.

4. Pretty and Practical LED Bulbs

For the mere fact that it's an LED blub the Hue from Philips consumes less energy than a traditional incandescent bulb. The fact that its intensity level can be altered adds to its efficiency, as does the ability to schedule it via an app to turn on and off and preset times. Add all this to the Hue's ($200 for a starter kit) color changing capabilities and you've got a gift that anyone will appreciate pulling from their stocking this year. Using the app a user can create a variety of lighting effects—for parties, romantic dinners, bedtime—any occasion at all.

5. Nest-Friendly Washer and Dryer

The Works with Nest washer and dryer from Whirlpool takes its cues from the widely popular Nest thermostat. For example, when the Nest thermostat is in Away mode, the dryer can switch automatically to a longer, more energy-efficient cycle. And, if you're a participant of Nest's Rush Hour Rewards program, you can use Nest to delay the start of the washer and dryer during high-demand energy periods. The washer and dryer are available for $1,599 each.

6. Curbing the A/V Appetite

You know all of those awesome A/V components stacked up in your friend's home theater? Maybe you even own a drool-worthy system yourself. Those A/V racks are certainly slick and may be the envy of the neighborhood, but the fact is, they're monsters when it comes to eating energy. A device, like Axess Elite power management unit SurgeX can help curb their voracious appetites for electricity. IP-enabled, it facilitates two-way communication between the components and the professionals who installed the home theater equipment. The home theater pro is then able to reboot locked up equipment and monitor and manage how much power each piece is consuming. Even without the two-way communication, the Axess Elite power management system protects sensitive A/V gear from damaging surges. Both 15- and 20-amp versions are available for $1,829

7. Sensible Irrigation

Most lawn irrigation systems are fairly dumb. They don't take into account the weather conditions and sprinkle the lawn even when it's raining. The Solar Sync sensor from Hunter Industries measures sunlight and the temperature, and calculates evapotranspiration to adjust Hunter irrigation controllers accordingly. For example, the watering cycle might be shortened one day then back to its original setting the next. The Solar Sync is can work in combination with Hunter's other sensors, the Rain-Clik and the Freeze-Clik, which shuts down the irrigation system temporarily during rain and/or freezing conditions. In the end, you save water, power, and money.

If you're interested in learning more about home energy management, smart thermostats and how automation can help you save on heating and air-conditioning bills check out these useful resources

Find an Installer: Locate a professional in your area who can set you up with your dream system.

EH Daily: Helpful articles on a variety of home tech topics.

EH Library: The most complete resource for smart home technology research.