editors' choice

2015 THE HOT 50 PRODUCTS

The 2015 Hot 50 Green Products

Building a green home? You *need* to check out these products!

Plus: An Exclusive Look at Whirlpool's Net-Zero Energy ReNEWW House

Work Horse Standouts

Green Builder editors salute these three built-tough, built-to-last products, which are sure-bet picks for today's durable green homes.

Ventless Clothes Dryer

The 7.3 cu ft. Whirlpool® HybridCare™ Ventless Duet® Dryer with Heat Pump Technology clothes dryer uses technology to repurpose energy created during the drying cycle. Compared to traditional dryers that vent hot, moist air, the HybridCare dryer uses a ventless heat pump that dries and recycles the air inside the home, reducing overall consumption. The unit uses 74 percent less energy with the Eco option. Three modes offer the ability to maximize time, energy or a blend of both. The dryer installs in more places because of the true ventless heat pump technology, making it great for remodels and multifamily applications where venting may be limited. Homeowners will like the low drying temperatures and high air volume, which offers the capacity to use significantly less heat than a vented air dryer, thus helping clothes last longer.

Moisture and Air Barrier Solution

Weatherization is key to preserving the durability of houses. Without it, moisture can seep in, causing mold, rot, and structural failure. Kimberly-Clark BLOCK-IT House Wrap is a cloth-like, non-woven WRB that uses in-house technology to create a breathable barrier. The product features a unique patterned surface that channels any liquid that reaches the side of the home to the ground. The product meets industry standard tests, as reflected in ICC-ES Report #3641, and also passes the optional ASTM E2273 Drainage Test. It is made in the United States and comes with a 10-year warranty.

Energy-Efficient Stretch Tape

ZIP System™ stretch tape easily stretches to fit sills, curves and corners with a single piece without having to piece tape segments together. This avoids seams or joints. Made of a high-performance composite acrylic, the tape conforms to challenging applications and locks out moisture even over mismatched surfaces. ZIP System stretch tape can be pulled up and reapplied for hassle-free installation, providing a tight, energy-efficient seal in no time! Download the first-time user rebate until December 31, 2015 here: www.huberwood.com/zipsystem/literature-rebates/zip-system-rebates

Engineered Sustainability

ReNEWW house project makes significant strides to achieve net-zero status.

IN JULY 2013, Whirlpool Corp. partnered with Purdue University on a new project to change the homebuilding and remodeling industries. The goal: to create more livable spaces while lowering operational costs and environmental impacts.

Called the ReNEWW house—for Retrofitted Net-zero Energy, Water and Waste—the structure will be renovated in three phases with each phase lasting roughly a year. Phase one, a deep-energy retrofit, was completed in the summer of 2014. Phases two and three will focus on water and waste, respectively. During each phase, researchers living in the house will monitor all of the changes made and how they impact the overall sustainability of the home.

The ReNEWW House is a late 1920s vintage bungalow in West Lafayette, Indiana, and features 2,864 square feet of conditioned space, three bedrooms, two baths, and a full basement that houses a laboratory where engineers have installed an instrumentation system that monitors key data throughout the house and will aid in the development of next-generation, high-efficiency appliances.

On Sept. 12, 2014, the house was officially opened as a "living lab," where up to three graduate students participating in the WERLD program (Whirlpool Engineering Rotational Leadership Development) will live. The students along with Purdue researchers will monitor more than 70 data points inside and outside to evaluate the home's performance.

"Originally, we partnered with Whirlpool to establish a graduate co-op program where four engineering students would split their time between six-month rotations at Whirlpool and two semesters at Purdue," said Eckhard Groll, the Reilly Professor of Mechanical Engineering and Director of the Office of Professional Practice at Purdue University. "This was the foundation for the ReNEWW House as it provided a living dynamic in which to get real world data."

The ReNEWW House is a late 1920s vintage bungalow in West Lafayette, Indiana, and features 2,864 square feet of conditioned space, three bedrooms, two baths, and a full basement that houses a laboratory where engineers have installed an instrumentation system that monitors key data throughout the house and will aid in the development of next-generation, high-efficiency appliances.

WHY RETROFIT, NOT BUILD NEW?

Retrofitted net-zero energy projects are relatively uncommon, said Eric Bowler, senior engineer and ReNEWW House project manager for Whirlpool Corporation. Part of the idea is to demonstrate the feasibility of renovating a 1920s home to meet or exceed new home efficiencies, while maintaining all the charm and character of an older home.

"There are a lot of examples of net-zero energy homes; almost all of them are new builds. In many ways, it's easier to start from scratch," said Bowler. "The fact is, this country's inventory of building stock stands at approximately 130 million units. If we really want to reduce the dependence on foreign energy resources, we need to look at retrofits."

"Working with existing homes allows us to really move the needle on increasing overall energy efficiency in the residential sector," Groll added. "That is what makes the ReNEWW House unique. Furthermore, it is one of only a few opportunities in which University students can live where they are conducting research."

In the United States, there are several academic programs that utilize net-zero energy homes for research purposes, but the biggest difference is, the homes are typically new-builds and vacant, Groll said. Living in the home allows students to realistically replicate the impacts residents have on their homes. In this way, the students become a part of their own research, he said.

The ReNEWW house siding incorporates a polystyrene foam insulation backing that wraps the home's exterior envelope with a continuous blanket of insulation up to 1.25 inches thick, helping to minimize air leakage and break any thermal bridges. The siding is also manufactured with 50 percent recycled materials. Ply Gem Cellular PVC Trim, a low-maintenance alternative to traditional wood trim that is designed to work well with nearly any siding type, is utilized throughout.

PHASE ONE: A DEEP-ENERGY RETROFIT

In addition to Purdue University, Whirlpool teamed with several leading building materials manufacturers to take the 84-year-old home into the future.

Lapolla Industries developed the spray foam system that was used to insulate the home. Its FOAM-LOK spray foam product was applied in the wall stud cavities on the main floor, in the basement and in the attic. Included in the spray foam is Honeywell's new Solstice Liquid Blowing Agent (LBA), an ultra-low global warming potential (GWP) and non-ozone-depleting foam blowing agent. The ReNEWW House application marks the first time Solstice LBA has been used in a residential structure.

Enertech Global provided a GeoComfort Compass Series geothermal system for the ReNEWW House project. Geothermal systems take advantage of a fairly constant underground temperature between 45° and 70° F. A water solution flows through pipes buried in the ground and absorbs heat from the earth in the winter; the heat is transferred to the geothermal system inside the house. Once there, the heat is boosted and applied to the air that is circulated throughout the home, providing warmth when needed. In the summer, the process is reversed. The result is a much more efficient way to regulate the temperature inside a home. For every one unit of energy that is put in, the geothermal system collects three free units from the earth. Simply put, homeowners get four units for the cost of one.

Home appliances make up approximately 17 percent of a home's average energy use, making appliance efficiency a crucial factor in reducing a home's overall energy consumption, Bowler said. For its part, Whirlpool Corporation installed a high-efficiency Whirlpool laundry pair and kitchen suite that contributed to the overall goal of net-zero energy.

Included in the laundry pair is the ventless Whirlpool Duet HybridCare clothes dryer with Hybrid Heat Pump technology. Introduced in 2014, the HybridCare clothes dryer is designed to regenerate energy during the drying cycle to reduce overall energy consumption, while maintaining dryer speed and improving drying performance. Compared with typical dryers that use large amounts of energy by venting hot, moist air, the HybridCare dryer is a ventless heat pump dryer that uses a refrigeration system to dry and recycle the same air. The clothes washer is the Whirlpool Duet Steam Front Load Washer, which has been rated a CEE Tier III, the highest possible efficiency rating available.

In the kitchen, Whirlpool Corporation installed a Whirlpool 6.7 Total cu. ft. Double Oven Electric Range with Induction Cooktop, the industry's first induction double oven freestanding range; a Whirlpool Gold Series Dishwasher with Sensor Cycle that automatically selects the right wash and dry settings to use just the right amount of time, energy and water for each load; and a Whirlpool 20 cu. ft. Counter Depth French Door Refrigerator with a Temperature-Controlled, Full-Width Pantry and Accu-Chill temperature management system.

The refrigerator utilizes the same ultra-low global warming potential (GWP) and non-ozone-depleting foam blowing agent in the insulation as the house does. Whirlpool Corporation was the first major appliance manufacturer to utilize this foam blowing agent in its refrigerators.

In order for the ReNEWW House to generate its own power, a solar solution was brought into play. SolarZentrum North America (SZNA) contributed the certified Combined Heat and Power (CHP) Solar PV-Therm modules. The CHP solar module will simultaneously provide up to 900 watts of combined electrical and thermal energy. It's also capable of producing up to 30 percent more electricity, and up to four times more total combined energy output, than a conventional solar panel.

The UL-approved residential LED lighting products showcased in the ReNEWW House were designed and produced by ETi Solid State Lighting, a subsidiary of Elec-Tech International Co on behalf of Whirlpool Corporation. Designed to replace incandescent and compact fluorescent (CFL) alternatives, Whirlpool LED lighting uses 80 to 90 percent less electricity than traditional incandescent light bulbs. With a minimum rated life of 22.8 years, Whirlpool LED light bulbs provide soft white light up to 25 times longer than traditional incandescent or halogen bulbs. The Whirlpool LED line also includes LED-integrated light fixtures that will last 20 to 50 years. These recessed light kit fixtures, composed of an LED light bulb, module and integrated trim that fit into existing cans, provide a fast and near-permanent alternative to frequent bulb replacement.

Ply Gem, a manufacturer of exterior building products, supplied the siding, windows, trim and exterior doors for the ReNEWW House. The Ply Gem products incorporated into the home reinvigorate the design and efficiency of the home with updated colors, styles and textures that stay true to the structure's original architectural character.

The windows feature triple-paned, krypton-filled lites with frames and sashes welded together into single, weather-tight units made from recycled materials. The home's custom-built fiberglass doors feature sustainable composite frames and low-maintenance materials that won't dent, warp, rot or crack.

The siding incorporates a polystyrene foam insulation backing that wraps the home's exterior envelope with a continuous blanket of insulation up to 1.25 inches thick, helping to minimize air leakage and break any thermal bridges. The siding is also manufactured with 50 percent recycled materials. Ply Gem Cellular PVC Trim, a low-maintenance alternative to traditional wood trim that is designed to work well with nearly any siding type, is utilized throughout.

PHASE ONE RESULTS

The Home Energy Rating System (HERS) Index is the industry standard by which a home's energy efficiency is measured. To receive a rating, a certified Home Energy Rater assesses the energy efficiency of a home, assigning it a relative performance score. The U.S. Department of Energy has determined that a typical resale home scores 130 on the HERS Index while a standard new home is awarded a rating of 100.

Doctoral student Stephen Caskey uses an infrared camera in research to improve energy efficiency in the structure.

Prior to the start of the project, the ReNEWW House received a 177 HERS rating with an estimated annual energy cost of $3,728. Three months later, with the deep-energy retrofit completed, the house was reevaluated and received a HERS rating of 1. The post-renovation estimated annual energy cost is just $126.

These tremendous strides did not come as a surprise to Eric Bowler, though. "To establish a baseline, we installed numerous thermo couples, relative humidity sensors, water and gas flow meters, and an electricity monitoring system. The data gathered offered us the ability to create and validate a simulation of the home's energy consumption to predict efficiencies based on upgraded materials, appliances and fixtures in isolation or as an integrated system."

Green Goose Homes, a builder in the Lafayette, Indiana, area that focuses on using advanced techniques and products to build resource-efficient homes, served as the ReNEWW House's general contractor, providing jobsite supervision and management.

Every home Green Goose Homes completes is built using advanced techniques and products to ensure the home is energy efficient, conserves water and properly utilizes resources.

"Any qualified remodeler, builder or architect can easily implement these changes," said Grant Giese, founder and president of Green Goose Homes. "Using the best insulation, adding a geo-thermal unit or upgrading to the most efficient windows can be done with any traditional home with minimal changes."

But, he cautions, "Most wouldn't endeavor to take on all of these renovations at once as we did with the ReNEWW House. Logistical coordination and pre-construction planning were critical components that led to our success."

Giese said he learned several things after completion of phase one of the project, including the importance of appliances to the overall impact of creating a more resource-efficient home.

"Outside of the usual envelope improvements, we had considered appliances as almost a commodity item," he said. "But, after seeing first-hand the amount of research that went into their design and performance, it is something that we, as a company, are going to look at much more closely to improve the overall efficiency and flexibility of the homes we build."

PURDUE UNIVERSITY PHOTO/MARK SIMONS

Purdue doctoral student Stephen Caskey (at left) works with professor Eckhard Groll to convert a home near campus to the most efficient domicile possible - a "net-zero" structure. Purdue is working with Whirlpool Corp. on the three-year project.

At the opening of the ReNEWW house, a Whirlpool representative Laura Petee-Chriscinske explains the features of the Whirlpool Duet HybridCare clothes dryer with Hybrid Heat Pump technology.

NEXT STEPS

As Whirlpool Corporation and Purdue University work together toward phases two and three of the ReNEWW House project, researchers will meanwhile utilize the home to continue monitoring, at a very detailed level, temperature, relative humidity and energy consumption, Bowler said.

"Discerning homebuyers are paying more attention to their homes' performance and operational costs over time," Bowler said. "This data will enable manufacturing partners to work closely with the building industry on creating more resource-efficient homes."

Eckhard Groll wants to take it one step further: "One thing we want to create is a tool box for homeowners to look at all components of the home and identify the savings over time. The goal is to bring the level of sophistication of the automobile to the home. In a car, sensors closely monitor road conditions and make adjustments, air pressure for the individual tires is displayed and engine diagnostics are performed to alert drivers when repairs may be needed. In the home, most people only know if the air conditioner or furnace is running or not. Temperature is registered, but we don't know if the filter needs to be cleaned or if the level of refrigerant needs to be tweaked."

In the next two phases researchers will focus on the net-zero water and zero-waste-to-landfill aspects of the house. Discussions with leading manufacturers, consultants and professionals in the industry are underway to address water renovations to update the pipes, fixtures and fittings and incorporate rainwater and gray water solutions to ensure the highest level of success. ■

Westech *TruGrain* Decking

Made from rice husks, salt and mineral oil, *TruGrain* decking is a sustainable hybrid material that looks and feels like wood. Weather resistant against sun, rain, snow and salt water, the product won't crack or splinter. *TruGrain* decking is suitable for floors, decks, house façades and wellness and wet areas, requires minimal care and cannot be harmed by insects or fungi.

ROOFING, SIDING AND DECKING
editors' choice THE HOT 50 PRODUCTS 2015

Sto Corp *StoGuard* Transition Membrane

Sto Corp's *StoGuard* transition membrane provides a flexible air barrier for use on walls, concrete and masonry. Serving as a secondary weather seal at joints during construction, this fluid-applied membrane does not require the use of primers or mastics for full adhesion. Asphalt emulsion-free, the product is both EPA and SCAQMD compliant.

Boral *TruExterior Craftsman Collection* Siding and Trim

Made from recycled polymers and highly refined recovered coal combustion products, Boral *TruExterior Craftsman Collection* siding and trim recreates the look and feel of traditional wood siding. The products are endorsed by the U.S. Green Building Council (USGBC) and are made of a minimum 70 percent recycled content. *TruExterior* siding and trim is produced in a LEED Silver-certified commercial facility in the USA. A low-maintenance alternative, it resists rot, pests and moisture, eliminating cracking and splitting.

Whirlpool *HybridCare* Dryer

The Whirlpool *HybridCare* clothes dryer uses technology to repurpose energy created during the drying cycle. Compared to traditional dryers that vent hot, moist air, the *HybridCare* dryer uses a ventless heat pump that dries and recycles the air inside the home, reducing overall consumption. Three modes offer the ability to maximize time, energy or a blend of both.

LG Mega-Capacity *Door-in-Door* Refrigerator

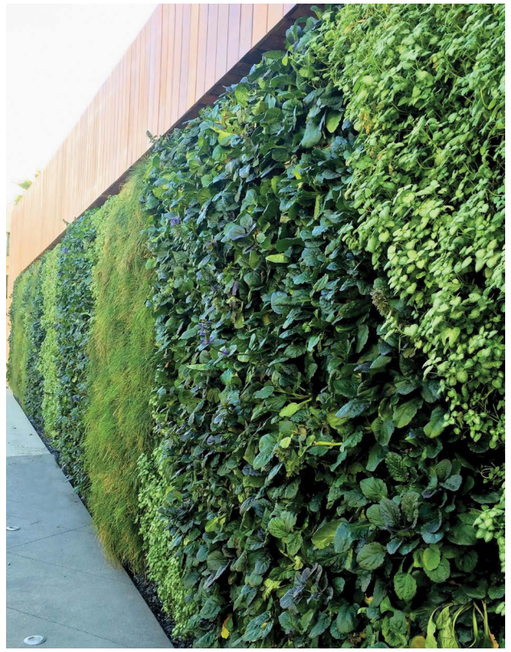
Just released, LG's latest French-door refrigerator features 34 cubic feet of storage and the company's unique door-in-door compartments. The double-door compartments can be accessed from both outside and inside, so often-used items can be reached without opening the entire refrigerator. This convenient feature reduces cold air loss by nearly 50 percent. LG's mega-capacity *Door-in-Door* refrigerator is expected to qualify for 2014 Energy Star certification and comes with Smart Diagnosis, which allows call center representatives to quickly diagnose problems over the phone.

tekR *Structural Thermal Envelope System* with BASF Technology

Composed of a 20-gauge galvanized steel core molded into expanded polystyrene, the tekR *Structural Thermal Envelope System* provides a more efficient barrier against air, moisture, noise and energy loss than conventional CMU, tilt or stud walls. tekR has partnered with BASF to enhance its product with BASF's *Neopor* rigid thermal insulation, made from graphite polystyrene. The graphite particles both reflect and absorb radiant heat, enabling whole-wall R-values ranging between R-28.3 to R-56.7.

Z Living Systems Living Walls

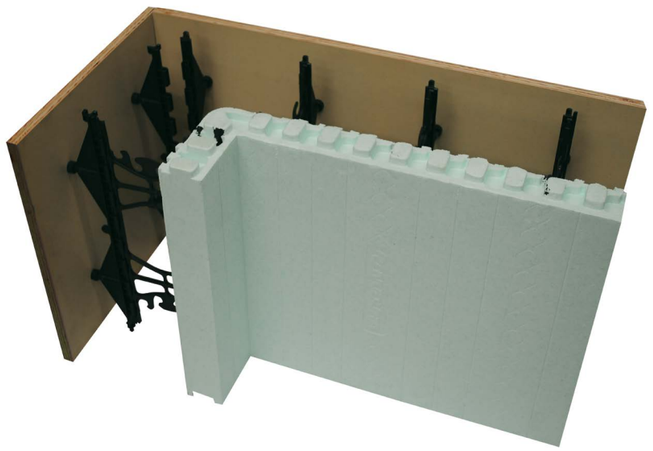
Designed by horticultural, architectural, and construction professionals, Z Living Systems living walls re-incorporate nature into cities through unique vertical gardens. Installation of a living wall qualifies a building for LEED certification credits from USGBC, contributing to the Water Efficiency and Energy and Atmosphere categories.



WALL SYSTEMS

Owens Corning *CavityComplete* Wall System

For use on masonry structures, the Owens Corning *CavityComplete* wall system meets the performance requirements across both of the LEED Green Building Rating Systems. When combined, each component of the system produces a wall that provides thermal efficiency, continuous insulation, air and water management, vapor resistance and brick ties. In addition, design options are engineered to maximize performance by climatic region.



NUDURA Insulated Concrete Forms (ICFs)

The concrete core structure of the Insulated Concrete Forms (ICFs) from NUDURA make them one of the most energy efficient and airtight wall systems available. ICFs optimize energy performance in homes by reducing drafts and cold spots, providing up to 70 percent energy savings compared to traditional wood building methods. The product also is an effective sound barrier, filtering out unwanted noise, and offers a fire protection rating of up to four hours.

FAUCETS AND FIXTURES

KOHLER *Sensate* Kitchen Faucet

Dirty hands don't need to spread germs through the kitchen. The KOHLER *Sensate* kitchen faucet is touchless; a simple wave of the hand, pan or utensil turns the water on or off. The two-function spray head allows a user to easily adjust the flow from stream to spray.

Delta *Temp2O* Technology

Delta's *Temp2O* technology, used on its showerheads, hand showers and tub showers, gives users greater control over water temperature. The LED digital display shows the water temperature in degrees, while the background color—which changes from blue to magenta to red—makes it clear whether the temperature is safe for family members.

TOTO *Carlyle II Double Cyclone* Toilet

The one-piece high-efficiency *Carlyle II Double Cyclone* toilet by TOTO is a low-consumption unit, using just 1.28 gallons per flush. Its *SanaGloss* ceramic glaze prevents debris and mold from sticking to ceramic surfaces, using fewer chemicals and less water in cleaning. The *Carlyle II* is WaterSense certified.

Kimberly Clark *BLOCK-IT** Housewrap

This cloth-like, non-woven WRB uses in-house technology to create a breathable barrier. *BLOCK-IT** features a unique patterned surface that channels any liquid that reaches the side of the home to the ground. The product meets industry standard tests, as reflected in ICC-ES Report #3641, and also passes the optional ASTM E2273 Drainage Test. It is made in the USA and comes with a 10-year warranty.

Icynene *Classic Max* Spray Foam

Icynene *Classic Max* spray foam can be sprayed throughout the entire residential structure without an ignition barrier, including unvented attics. Requiring just one application, it saves time and money. Its open-cell structure is 100 percent water-blown, and is HFC-and PBDE-free. At R-3.7 per inch, Icynene *Classic Max* offers superior thermal performance. It expands up to 100 times from a liquid state, and has a low exothermic reaction temperature.

Rhino Linings *DuraTite 2.0* Closed-Cell Foam

DuraTite 2.0 closed-cell foam Insulation by Rhino Linings seals and insulates in one step, reducing heating and cooling costs. With a density of 2.0 lbs, it can be used in walls, ceilings and roof decks of residential and commercial buildings. Class I fire rated and ICC rated, DuraTite 2.0 is also GREENGUARD and GREENGUARD Gold certified for Indoor Air Quality. When used with other responsible building practices, it can save up to 50 percent on heating and cooling costs.

CertainTeed *SMARTBATT* Insulation

CertainTeed's *SMARTBATT* insulation creates a healthier indoor environment. Its *MoistureSense* technology blocks moisture from entering when humidity in the wall cavity is low and breathes when it senses high humidity that needs to be released, reducing the potential for mold and mildew growth. Suitable for crawlspaces, basements, bathrooms, laundry rooms, kitchens and exterior walls, CertainTeed minimizes its impact on the environment by reducing energy consumption, conserving renewable resources and lowering greenhouse gas emissions.

Huber Engineered Woods *ZIP System* Stretch Tape

ZIP System stretch tape allows builders to fit sills, curves and corners without piecing tape segments together, reducing labor and avoiding seams or joints that can leak. Made of a composite acrylic, the tape locks out moisture and provides a tight, energy-efficient seal.

NHB Series Condensing Gas Boilers

Available in four sizes, Navien's new *NHB Series* Condensing Gas Boilers include two stainless steel heat exchangers that resist corrosion and provide a longer life expectancy. The condensing technology offers high efficiency, contributing to a 95 percent AFUE rating. *NHB* boilers carry Energy Star's Most Efficient designation, offering money and energy savings over traditional water heaters.

Noritz *EZTR40* Gas Condensing Tankless Water Heater

Noritz's *EZTR40* condensing tankless water heater was created to replace a traditional 40-gallon gas water heater quickly and easily. Its design eliminates the need for new plumbing as it uses the same vent and gas line, cutting installation time and costs. By eliminating additional work and materials, homeowners receive a faster payback on their investment.

Rinnai *Ultra Series RUR* Tankless Water Heater

Rinnai's *Ultra Series RUR* tankless water heaters save time, money and natural resources through its recirculation technology that aligns to usage patterns. Equipped with an integrated pump, internal bypass line and thermal bypass valve, the product works with a dedicated return line or a cross over valve. *RUR* models deliver hot water fast, wasting less water and saving on gas utility bills.

Daikin *DM97MC* High-Efficiency Gas Furnace

This modulating, variable-speed gas furnace minimizes energy use by running at the lowest possible fan speed, producing just the right amount of heat to maintain a steady, comfortable temperature. The heat exchanger in the *DM97MC* has been redesigned to be smaller and contain fewer total components. The unit delivers up to an AFUE rating of up to 97 percent, and comes with a 12-year unit replacement limited warranty and lifetime limited warranty for the heat exchanger.

Trane *TruComfort XV20i* Variable-Speed Heat Pump

Trane's *XV20i* variable-speed heat pump efficiently heats or cools a home by automatically adjusting the operating speed and BTU of the compressor and fan as the temperature outside changes. The heat pump is one of the industry's most efficient, with ratings up to 20.00 SEER. Users can add Trane *CleanEffects* to filter the incoming air and eliminate dust, pollen and other irritants.

American Standard *4MXW8* Indoor High Wall Ductless Heat Pump

American Standard's ductless heat pump system allows homeowners to complete room additions where installing ductwork is impractical or too expensive, or where the main system lacks capacity to expand. The *4MXW8* indoor high wall heat pump is specially designed to reduce operation noise, while providing efficiency up to 22.00 SEER. Its sleep function saves energy by automatically adjusting temperatures based on set sleeping time.

HEATING, COOLING AND WATER HEATING

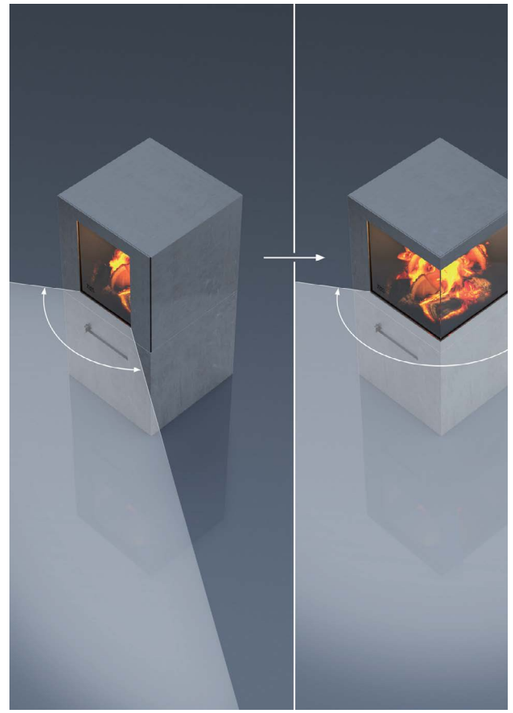
editors' choice THE HOT 50 PRODUCTS 2015

BRZ Brands Heated Wall Panels

These heated wall panels are an energy-efficient alternative to conventional heating solutions. Panels can be used anywhere, and can be easily integrated into new construction or retrofit into remodeling projects. Using a low-profile thermodynamic design, panels heat larger indoor or outdoor areas with less energy. Panels can be wired individually, in series or by zone for maximum energy efficiency.

SCHOTT *ROBAX* Fire-Viewing Glass

Used on fireplaces and stoves, SCHOTT *ROBAX* glass-ceramic panels give homeowners a view of the flames, while protecting them from flying sparks. The panels also make optimum use of energy through targeted regulation of incoming air and flue gas. *ROBAX* glass can be used with a variety of fuels, including logs, pellets or briquettes.



Grundfos *SQFlex* Solar-Powered Well Pumps

This family of solar pumps is fitted with permanent magnet motors, enabling efficient pumping action from a variety of a supply options. The *SQFlex* will pump water up to 600 feet, and can pump up to 85 gallons per minute for shallow wells, depending on the model. The series includes both centrifugal and helical rotor type pumps; the latter are recommended for wells with dirt, sand, sediment or high mineral content.

Sunny Boy TL-US Series Inverters by SMA America

Just released, the *Sunny Boy TL-US* residential photovoltaic inverter includes the industry's only secure power supply. This unique feature allows the inverter to provide up to 1,500 W of daytime standby power when the grid is down for charging laptops, cell phones and more, without the need of additional, costly batteries. The transformerless design makes for a lightweight and highly efficient inverter.

Nexus *eWater*

The Nexus system uses greywater to heat potable water. Water from the shower, washing machine and sink is captured in the *eWater Collector*, where a heat pump extracts the heat energy via a heat pump evaporator. The refrigerant then cycles from the collector to the *NEXwater One*, an 80-gallon storage cylinder, where it heats the freshwater in the tank via a heat pump condenser. The Nexus system can save up to 3,000 killowatt-hours annually.

Rainwater Collection Solutions *The Original Rainwater Pillow*

The Original Rainwater Pillow is an above-ground rainwater-harvesting system that uses tanks built to fit wasted space that exists in many homes and buildings, such as in crawl spaces, under decks, in parking garages, basements and behind industrial buildings. Water is collected through gutter downspouts and channeled to a pre-filter; it can be used for irrigation, toilet flushing and laundry.

LIGHTING

Philips 60 W Replacement LED Bulb

The Philips energy-saving LED bulb produces soft white light similar to incandescent bulbs. Used for table and floor lamps, open pendant fixtures and ceiling fixtures, its unique shape provides long life, with an estimate of 22.8 years based on three hours of usage per day. Energy Star certified and fully dimmable, it replaces 60-watt incandescent bulbs, using 82 percent less energy.

SolaTube *SkyVault Series*

SolaTube's *SkyVault Series* allows architects and builders to control the placement of natural light in large volume spaces. Featuring advanced optics and progressive engineering, the series uses modular components that can spread light evenly, enhance light capture, control focus or combine these effects to meet the specific needs of any commercial project.

INDOOR AIR QUALITY

Behr *Premium Plus* Interior Paint

Behr *Premium Plus* interior paint is GREENGUARD certified, and offers homeowners more than 4,000 color choices in semi-gloss, flat, eggshell and base finishes. The zero-VOC formula is a low-odor and self-priming product, offering a durability level that resists mildew and stains and holds up to scrubbing.

Panasonic *WhisperRecessed LED* Ventilation Fan

The easy-to-install *WhisperRecessed LED* from Panasonic is a quiet and energy-efficient ventilation fan for bathrooms. The Energy Star fan and light fixture complies with ventilation standards required by LEED and uses an LED bulb, which produces little heat, contains no mercury and uses less energy than CFL bulbs.

Lauzon *Pure Genius* Flooring

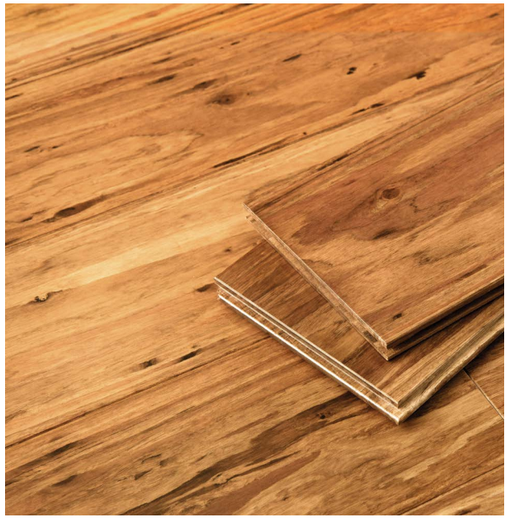
Forget smartphones, Lauzon's *Pure Genius* flooring is a smart floor. A unique finish containing titanium dioxide reacts with sunlight and artificial light to break down airborne toxins, such as VOCs. The filtering power of *Pure Genius* flooring is the equivalent of having three mature trees in your home, purifying the air up to 85 percent and reducing potential carcinogens that may lead to allergies and asthma.

Mohawk *SmartStrand Forever Clean*

Mohawk *SmartStrand Forever Clean* carpets are suitable for families with kids and pets due to its *Nanoloc* spill protection technology that offers permanent built-in stain and soil protection. *SmartStrand* is made in part from annually renewable plant-based material. The carpet cleans with water and doesn't require the use of cleaning products that emit fumes. The carpet's durability extends its life, reducing the need for replacement.

Cali Bamboo *Greenclaimed* Eucalyptus Flooring

Greenclaimed eucalyptus flooring offers wood grains usually associated with traditional timbers with twice the hardness. Made from eucalyptus, a renewable material that reaches full mass every 14 years, this flooring offers a 50-year residential warranty and a scratch-resistant finish. Ultra-low VOC, the product has no added urea formaldehyde, and offers glue-free click-lock installation.



Fireclay *EDGE* Tile

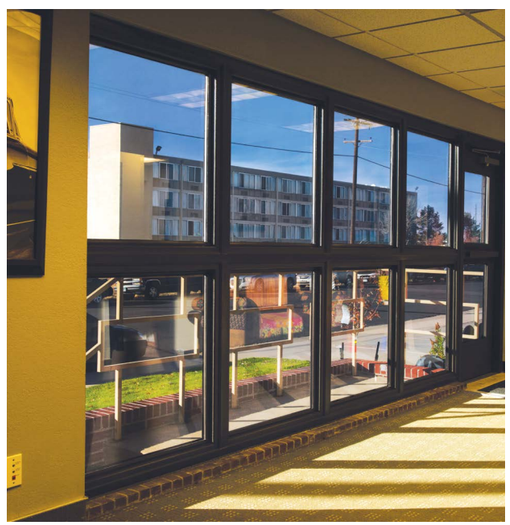
These large-format tiles are handmade in the U.S. using 70 percent recycled materials and sustainable manufacturing processes. Offered in three sizes, 3' x 9', 3' x 18' or 6' x 18', *EDGE* is the largest handmade tile available. Tiles come in 12 classic colors and are installed with minimal grout lines for a timeless look. They are suitable for use on walls, floors and counter surfaces.

Loewen Windows

Made with FSC-certified coastal Douglas fir, Loewen's metal-clad wood windows provide a tight weather seal. The triple-glazed option provides true 1/2" airspaces between panes of glass for added insulation. A hidden venting channel allows built-up condensation to escape, increasing seal and sash life, and the extruded metal cladding is available in 70 color and finish options.

RavenBrick *Smart Window*

RavenBrick's patented thermochromic filter technology automatically controls the amount of light, heat and unwanted glare that passes through glass without the need for manual controls, wires or electricity. Saving up to 30 percent on heating and cooling year-round, *Smart Windows* are designed for commercial, residential and industrial buildings and can be custom designed for new developments or retrofitted to fit existing windows.



Honeywell *Lyric* Thermostat

Honeywell's *Lyric* thermostat is a completely automated system that regulates your home's temperature when you're away. Its geofencing technology adjusts the thermostat based on your location by syncing with your smartphone. You can also fine tune for comfort based on temperature and humidity. In addition, the motion-sensing display lights up as you approach.

Carrier *Côr* Smart Thermostat

Developed in partnership with ecobee, Inc., this thermostat is compatible with many brands of heating and cooling systems. It monitors energy usage and turns the data into actionable energy reports, available through the *Côr* thermostat web portal. One-touch customized tips help users
save even more. Altogether, homeowners save an average of 20 percent on their heating and cooling energy costs.

Green Edge *EDGEhome* System

Green Edge's *EDGEhome* system replaces existing switches, outlets and lighting fixtures with wireless sensors to offer smart home capabilities without rewiring. Using a smartphone or tablet, homeowners can regulate energy usage down to an individual outlet for smarter energy consumption decisions, with savings estimated at 20 percent of electricity costs.

WiserAir from Schneider Electric

Schneider Electric has developed a platform of connected thermostats, cloud services, and digital interfaces designed from the ground up with utilities in mind. Part of Schneider Electric's *Wiser* energy management system, *WiserAir* combines intuitive thermostat controls, powerful weather forecasting and alerting, informative messaging and customizable energy efficiency and peak demand experiences, delivering a unified digital experience across the thermostat, mobile, tablet and web interfaces.

Big Ass Fans *Haiku* with *SenseME* Technology

The 60-inch *Haiku* by Big Ass Fans is designed for homes and small spaces, and is made from sustainable moso bamboo and a durable glass-infused matrix composite. Holding the top Energy Star ranking for ceiling fans, *Haiku* exceeds energy efficiency requirements by more than 450 percent. Seven speeds allow for greater cooling control, and the *SenseME* technology automatically adjusts for optimum performance.

Schlage *Sense*

With its first *Bluetooth*-enabled lock, Schlage offers another option for keyless entry. Designed to work with Apple's *HomeKit,* the locks can be accessed with the dedicated *Sense* app, which allows users to manage up to 30 codes from an iPhone, iPad or iPod Touch. The locks can also be controlled with *Siri* voice commands.

Uponor Radiant Heat *Climate Cŏntrol* Zoning System

The radiant heat *Climate Cŏntrol* zoning system from Uponor uses wireless technology to adjust room temperatures throughout a home, using up to 12 thermostats. Homeowners can view the settings of any room from a single location and easily program vacation and setback schedules.

Rheem *EcoNet*

EcoNet is an integrated system for managing heating, cooling and water heating equipment, which account for more than 65 percent of a home's energy use. *EcoNet* saves energy by programming a desired heat and cool range based on usage. A continuous fan keeps temperatures even and constantly filters the air. The system also monitors accessories, such as humidifiers, air filters, UV lights and ventilators, and provides an alert when they need attention.

trutankless Water Heaters

The average household wastes 16,000 gallons a year waiting for water to heat up. Due to its sleek and compact size, trutankless water heaters can be installed near a central point of use to save water and maintain near 100 percent efficiency. The company's downloadable app allows users to enable economy mode and calendar settings to further reduce power consumption.

ClimateMaster *Trilogy 45 Q-Mode (QE)*

This award-winning geothermal heating unit is the industry's first fully variable geothermal heating and cooling system driven by communicating controls to deliver high efficiencies. The *Trilogy 45 Q-Mode* features a variable-speed compressor, variable-speed fan and variable-speed loop pump; full-time variable water heating saves even more energy. An Internet-connected *iGate* system allows for remote diagnosis and control. The unit boasts an EER of 45 and a COP of 5.1.

Bosch *Remote Room Controller*

The *Remote Room Controller* from Bosch Thermotechnology uses a Wi-Fi connection to monitor and adjust heating and hot water from a smartphone or tablet. Using a programmable room thermostat with an integrated temperature sensor, the device displays scheduled settings, outdoor temperature, current heating and hot water production status as well as overall energy consumption, helping homeowners manage utility bills and reduce energy usage.