



Hibbs•Homes

Smith residence The First Active House in USA

St. Louis Missouri



Smith residence

The First Active House in USA



The first Active House prototype home in the USA is being built in the St. Louis, Missouri area. Such pioneering opportunities usually go to the larger markets on both coasts – but our location in the center of the country is ideal as, according to the International Building Code, it provides the most suitable conditions for such a house.

Climate zones to the north or south have extended periods of colder and dryer, and warmer and more humid conditions respectively. But the primary target zone for this prototype has both extremes and demands a broader spectrum of

specifications for durability, efficient design, construction, development and retrofitting potential.

When the Smith family moved into the First Active House in the USA, it was the beginning of something new as well as a return to the past. David Smith grew up near the Active House site in Webster Groves, MO and even has fond memories of playing wiffleball, a variant of baseball for confined areas, in the yard just across the street from where the house is being built. When David and his wife Thuy decided they wanted to build a new

home, they called on Jeff Day of Jeff Day and Associates, a St. Louis architecture firm they had worked with in the past, to help them begin their journey.

It was Day who proposed to the Smiths that they build an Active House, as he had been discussing this project with home builder Kim Hibbs of Hibbs Homes, and project manager Matt Belcher of Verdatek Solutions. The Active House project was looking for the right family, and after talking with Day, Hibbs and Belcher, the Smiths thought this type of home would be interesting to build and was the right fit for them as well.

The Smiths worked closely with interior designer Kristen Zivic of Lusso at Home and decided on a plan that embraces the character and traditional architecture of the surrounding neighborhood, and yet incorporates the innovative technologies and techniques that represent the best in sustainable and green building around the world. David Smith (CPA and owner of accounting firm Smith Patrick), Thuy (a stay-at-home mother) and their daughter Cameron moved into their new home mid 2013. They could not be happier with all of the benefits that come with building and living in an Active House.

"I always say that our first impression when we moved into the house, was an excellent air environment. One of the nicest aspects about this house was the incredible amount of daylight, which we get into this house. Rarely, do we turn on lights in the house during the day." says David Smiths, father of the family who lives in the Active House. "The really important thing with any project is certainly to build a home which fits the community, fits the neighborhood. And I think our group here did a fantastic job - designers, builders and everybody working together. All in all, the community has loved it and certainly we got a lot of attention. Oftentimes now, when people ask me where I live, I would just refer to it as the Active House. They know where it is."

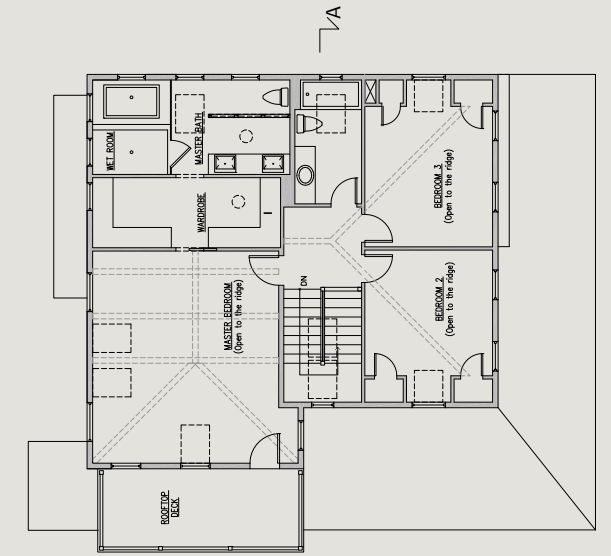
The Active House Prototype Home



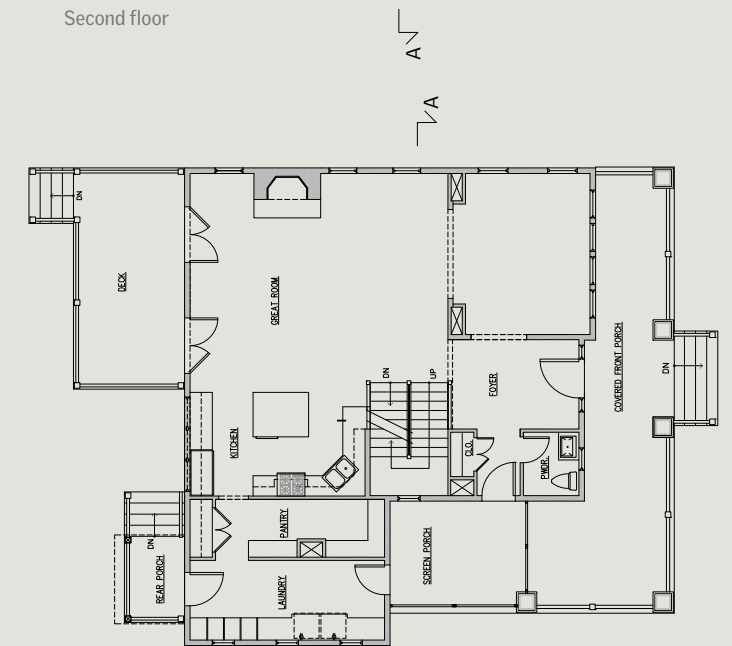
The Active House concept is based on the idea that comfortable and healthy living conditions are compatible with sustainable and energy efficient construction.

Active House is a holistic specification, meaning it takes into account everything involved with a house – the resources used to construct a building, its impact in terms of energy and water consumption, occupant comfort and even such external parameters as storm water run-off. Several prototype homes have been built around Europe, and one in Russia, using the Active House principles, which were proclaimed in Brussels in April 2010. These geographical areas have provided a wealth of experience and knowledge of durable construction in harsh climatic conditions and planning for dense concentrations of population. This experience also includes dealing with scarcity of materials and managing the impact of those population densities on existing and future resources. These issues, combined with an ever-increasing demand for energy, created an opportunity to merge that knowledge and experience to address these issues, while promoting better comfort and health for building occupants.

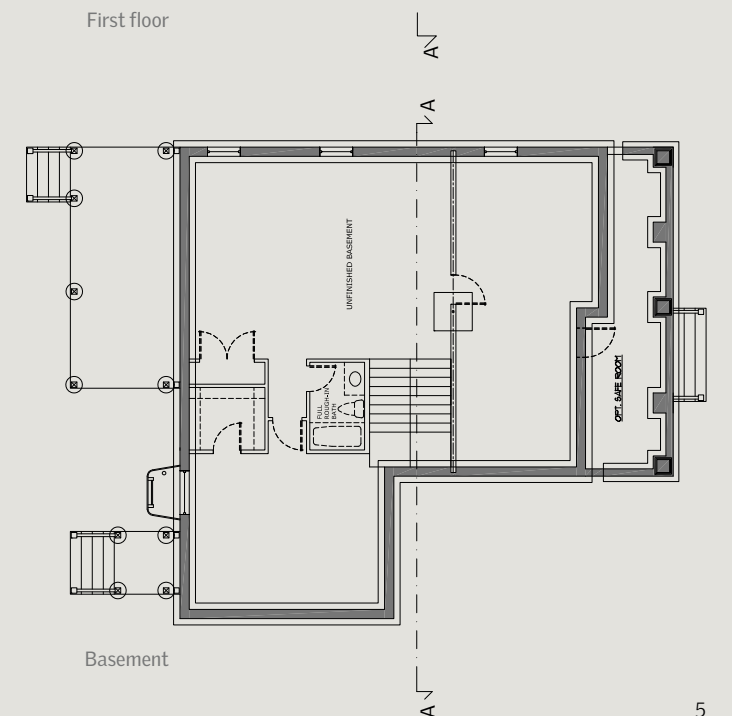
In the United States, the resource efficiency in today's American green standards (like Green Globes) stems from post-war construction and the limited amount of natural resources such as timber, due to deforestation. The continued growth in demand for energy efficient developments, buildings, new homes and retrofitting of the 128 million existing homes that account for the bulk of the nation's residential energy consumption, means that innovative concepts capable of addressing this energy efficiency are crucial. Sound business planning, including risk management, is also essential to be able to operate and compete in the rapidly evolving construction market.



Second floor



First floor



Basement

Buildings that give more than they take

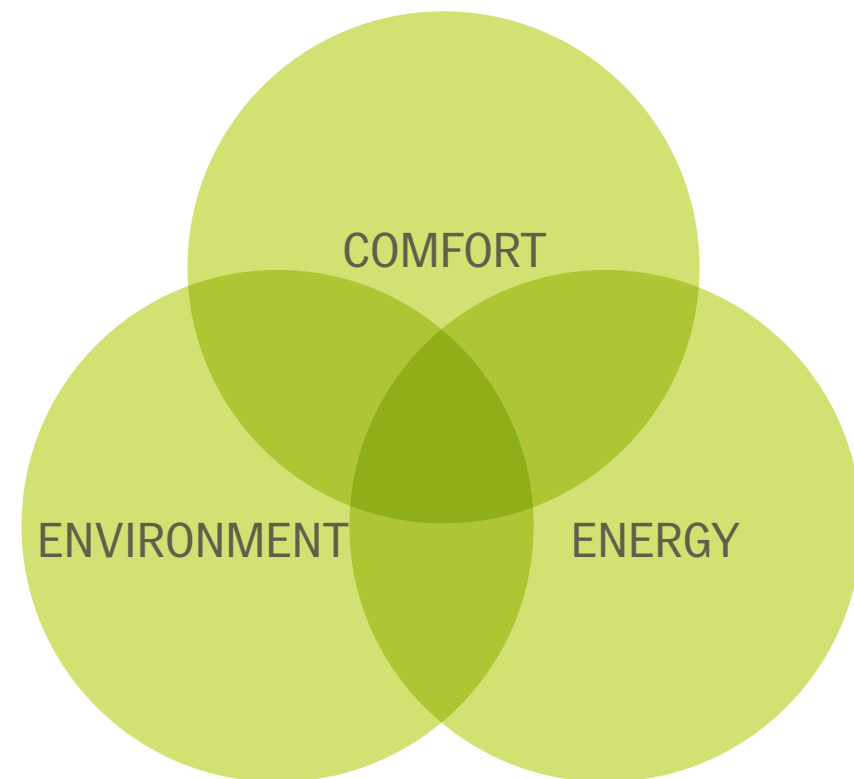
Active House is a vision of buildings that create healthier and more comfortable lives for their occupants without impacting negatively on the climate – moving us towards a cleaner, healthier and safer world.

The Active House vision defines highly ambitious long-term goals for the future building stock. The purpose of the vision is to unite interested parties based on a balanced and holistic approach to building

design and performance, and to facilitate cooperation on such activities as building projects, product development, research initiatives and performance targets that can move us further towards the vision.

The Active House principles propose a target framework for how to design and renovate buildings that contribute positively to human health and well-being by focusing on the indoor and outdoor

environment and the use of renewable energy. An Active House is evaluated on the basis of the interaction between energy consumption, indoor climate conditions and impact on the environment.



The Active House key principles are as follows:



COMFORT

- a building that provides an indoor climate that promotes health, comfort and sense of well-being
- a building that ensures good indoor air quality, satisfactory thermal climate and appropriate visual and acoustical comfort
- a building that provides an indoor climate that is easy for occupants to control and at the same time encourages responsible environmental behaviour.



ENERGY

- a building that is energy efficient and easy to operate
- a building that substantially exceeds the statutory minimum in terms of energy efficiency
- a building that exploits a variety of energy sources integrated in the overall design.



ENVIRONMENT

- a building that exerts the minimum impact on environmental and cultural resources
- a building that avoids ecological damage
- a building that is constructed of materials that can be recycled.

Active House Radar evaluation



An Active House is the result of efforts to actively integrate the three main principles of comfort, energy and environment in the design of a building and in the finished building.

The Active House Radar shows the level of ambition of a building in each of these three main principles, each of which are further sub-divided into three parameters. For each of these parameters, the level of ambition is indicated by four levels ranging from 1 to 4, where 1 is the highest level and 4 the lowest. As long as the parameters in each principle are better than or equal to the lowest

level of ambition, the building is an Active House. The Active House Radar has a dual function.

Upon completion of the building, it is a tool for displaying the ambition reached with the building and the calculated values. When the building is inhabited, the Radar can also be a useful tool for monitoring, evaluating and improving the building.

The Smith residence - The first Active House in USA, St. Louis performs as presented on the diagram above.

The house has a good performance in the parameters regarding the indoor environment, though it also receives low scores regarding energy and environment. A main reason for the poor score in energy and environment is that the house is built with the great respect to the American building tradition, which is much different from modern European energy optimized buildings. The use of air condition and gas as primary energy source has a negative impact on the performance, even though these are common technologies in dwellings in USA.





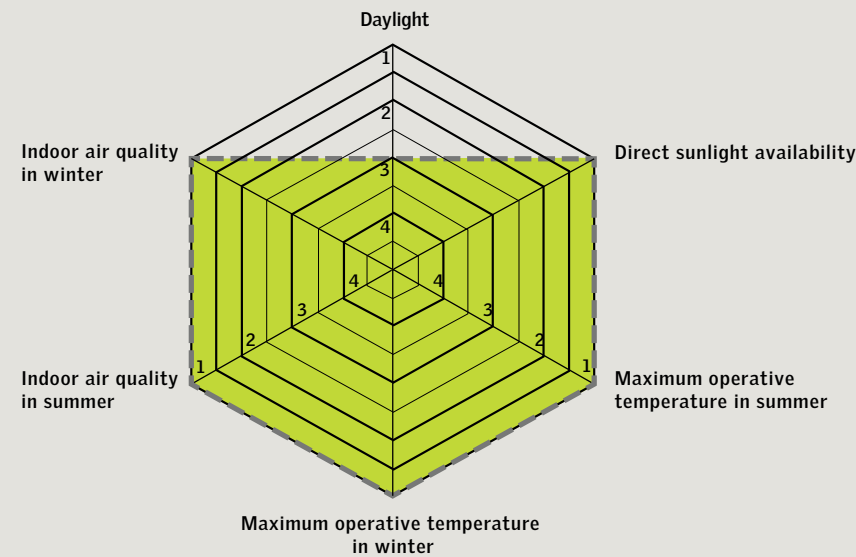
Comfort

A healthy life feels good

The Active House specifications state that good indoor climate should also be compatible with energy efficiency. And the first Active House in the USA shows how that can be achieved.

A great indoor climate is easily recognisable – it feels good. But to obtain it, several factors must be taken into consideration. The Smith residence uses a number of technologies to create an indoor climate that is pleasant and easy to regulate.

Active use of daylight and fresh air not only ensures a comfortable home, it also has a number of positive effects on our senses, concentration and health. High levels of daylight exposure and a well ventilated environment boost our immune system and make it harder for bacteria to survive. Access to daylight also energizes us and enable us to experience the change of weather and surroundings.



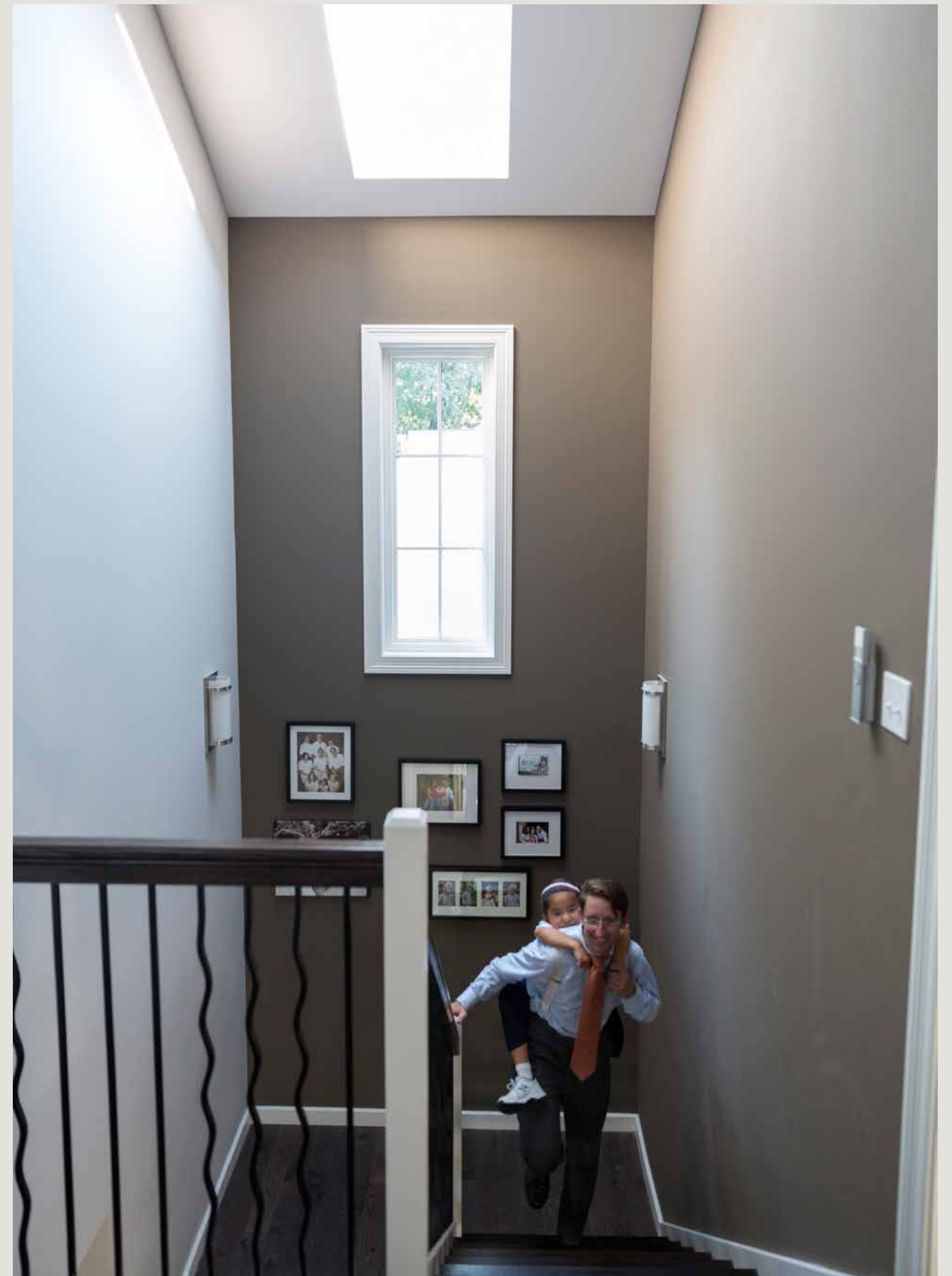
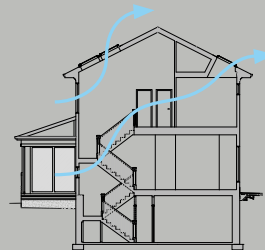
Natural ventilation

Buildings with poor ventilation can be the cause of a range of disorders and discomforts for residents. Natural ventilation can help prevent such disorders. Active House makes use of air flow inside the building, so humidity and particles are led actively out of the house, which will consequently always feel fresh and inviting.

"The natural ventilation control system in the Smith residence is an excellent technology," says Professor Robert Reed. "Natural ventilation is preferred to air conditioning any time the weather is acceptable. However, in much of the USA

our weather is too hot and humid during the summer to use natural ventilation extensively."

In the Smith residence, natural ventilation is combined with air conditioning and heating for ultimate comfort.



Daylight

Living in daylight

Generous amounts of daylight create a light and pleasant atmosphere in the house. The orientation and design of the house make it possible to utilize daylight more actively. The energy requirement for basic lighting in large parts of the house is minimized by effective use of daylight.

The Smith residence was designed with a view to optimal daylight conditions. "This is one of the biggest differences between the high-performance homes we've built to date and the Active House," says home builder Kim Hibbs of Hibbs Homes. "The more we've learned about the approach, the more we endorse and embrace the emphasis on daylighting."

Apart from creating a pleasant indoor environment, natural daylight is good for the economy too. It helps save on electricity costs because less artificial lighting is required. Another proponent of making

active use of daylight in buildings is Associate Research Professor Dr. Robert Reeds, PhD, of the University of Missouri. As a specialist in energy efficiency, especially in Midwest climate conditions, he advocates that home builders should apply concepts of construction that are complimentary to the topography of a site: existing trees and the orientation of the sun. Simple considerations that can, in conjunction with new technologies, make a big difference in the costs of building and maintaining a home. Professor Reed welcomes the way natural daylight can enhance the life of a house's residents. "Buildings with daylighting have a much more attractive appearance internally, and are also more visually appealing from the exterior," says Professor Reed.

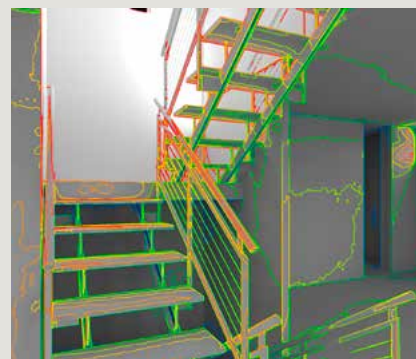


Daylight factor

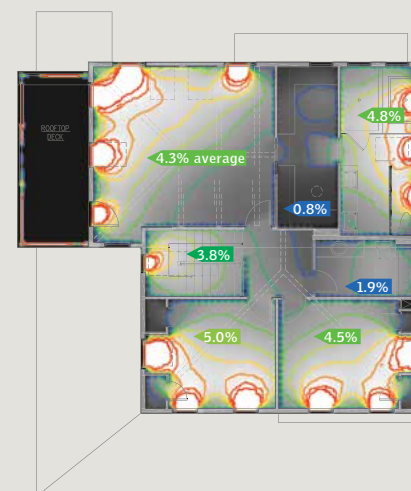
The daylighting performance of the house has been specified using the daylight factor (DF) as indicator.

The daylight factor is a common and easy-to-use parameter for the amount of daylight in a room. It expresses the percentage of daylight available inside, on a work plane, compared to the amount of daylight available outside the building under known overcast sky conditions. The higher the DF, the more daylight is available in the room. Rooms with an average DF of 2% or more are considered daylight. A room with an average DF of above 5% will appear strongly daylight.

The daylight factor analysis was carried out using computer simulations made by the VELUX Daylight Visualizer 2, a software tool dedicated to daylighting design and analysis. For more details and to download, visit <http://viz.velux.com>. The figures on the right show the daylight factor level on the second floor and the impact of the installed skylights.

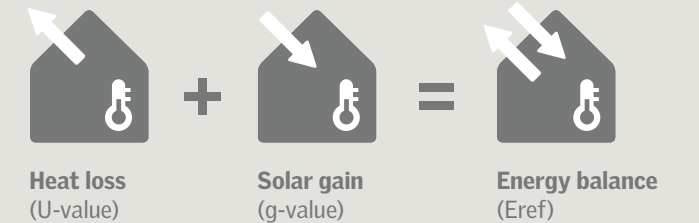


Staircase with VELUX Skylights



Second floor with VELUX Skylights

Energy balance



To measure the energy balance in a building using the advantages of daylight and energy from the sun, it is important to calculate the total energy framework. This means not only looking at how much heat is lost through the windows and skylights, but also including the contribution to the heating of the house in winter.

The term energy balance is used to describe the energy characteristics of a window and skylights – the balance between solar gain and heat loss. The energy balance is calculated as the sum of usable solar gain through the window during the heating season minus any heat loss. Energy balance is a more accurate way of describing the energy characteristics of a window than just the U-value, as the energy balance includes both U-value and g-value to provide a more complete picture.

Home automation

Control your environment

Light, fresh air, the optimal use of space – all at the touch of a button – that's what you get with VELUX home automation systems. For more than 30 years, we have developed the world's most advanced electrical skylight and roof window product range.

Our prime focus has always been to provide the most innovative means that empower the user with maximum control over their environment. At the top of the list is our new electric, ventilating "no-leak skylight" combined with our new Pick&Click™ blinds. This system provides full control over the amount of light, heat and fresh air that enters your room. The advanced RF remote allows the users to create advanced programs that automatically control the window and blinds, maximizing energy efficiency.

Meet your own personal light and fresh air requirements today with VELUX blinds, and electric and manual controls.





New standards

During the building of the Smith residence, a range of newly established standards such as the ANSI-700 National Green Building Standard, Energy Star, Builder's Challenge, and Indoor Air and Water Sense Programs were incorporated into our quality management program, ensuring a building that combines innovation with well-known solutions.

The first Active House in the USA was constructed with a systems-based approach to quality and continuous performance testing of the existing site redevelopment and design. We have thus been able to identify components that are competitive with the traditional counterparts while outperforming them in energy efficiency, CO₂ emissions, conservation of resources, environmental impact, maintenance costs, and occupant comfort. In addition, low-impact site renovation and storm water control improvements have been added to improve the home site.



Energy

Decreasing consumption and improving living

Energy independence

Societies all over the world are facing a challenge of finding new ways to enhance energy independence while ensuring healthy, safe and pleasant living conditions. Active House USA combines the most advanced building innovations with systematic performance tests and careful attention to its surroundings. The result is a home that is more comfortable, healthy and easy to operate, at the same time as keeping energy consumption to a minimum.

Solar orientation

Orienting the design of the house to the sun's path, is an important element of site planning for successful performance of the home. Proper solar orientation allows us to take advantage of the sun's rays for passive solar heating and cooling and allows us to tap into something truly amazing – free energy. A well-designed and correctly-oriented house not only focuses on healthy comfort, but also increases solar heat gain in winter and reduces unwanted heat in summer. This simple consideration can reduce a house's energy use considerably and at no extra cost – for the entire life of that building.

Correct solar orientation can also provide glare-free natural light throughout the house. Although it is desirable to limit north-facing glazing to avoid cold temperatures, incorporation of a balance of vertical daylight from the north, as provided by VELUX Energy Star qualified Sun Tunnel or traditional skylights, ensure a constant natural light with less glare.

Passive solar design

The design which includes daylight in energy calculations reduces the need for artificial lighting and reduces utility usage and bills. As a bonus, using less artificial lighting cuts the amount of heat generated in the house which, in turn, further decreases the demand for air-conditioning in summer. Passive solar design is one of the most effective ways in which we are incorporating the sun's power to enhance the energy efficiency of Active House USA.

Energy efficiency

The Building Envelope consists of the floor, walls, windows, doors and roof of the home. The Active House USA envelope offers all the benefits of the traditional building envelope and a great deal more. Thanks to use of Structural Insulated Panels (SIP) from Insulspan, it is more durable and energy efficient; and it allows the occupants to live in quieter and safer comfort while spending less on utilities. The exterior walls of Active House USA are designed and constructed to guarantee that the home will perform effectively and efficiently without energy loss or mould concerns. Along with our quality-managed sealing program, the SIP system offers a superior energy rating of R25 for walls and R45 for roof panels.

The Roofing

The Roofing on Active House is fitted with solar-reflective Solaris tiles from CertainTeed. They are coated with reflective granules to reflect most of the sunlight and heat and prevent the penetration of UV rays, protecting the roof and keeping it cooler. The tiles, therefore, last longer and the climate inside the home can be controlled more efficiently.

Windows and Doors

In addition to the VELUX Skylights and sun tunnels, the Active House USA uses window manufacturer, Loewen, and doors from Webster. The windows are all constructed with high-performance, low-e glass with argon between the two panes. By using a denser gas, such as argon, the insulating performance of the window is enhanced dramatically. In addition, a metallic coating used on the glass greatly reduces the heat transfer, or emissivity, of the windows. Non-toxic sealants around windows and doors on the interior, durable caulk around the exterior, and foam insulation in door jams tighten the envelope to prevent air leaks and reduce heat transfer. And at the end of the Loewen windows long design life, the entire windows and doors are recyclable.

HVAC

The Heating, Ventilation and Air Conditioning (HVAC) equipment and installation in Active House USA have been designed by the engineers at Scott Lee Heating Company, who analyze the HVAC system in relation to the conditions created by using the solar design, the airtight envelope and the sealing of air leaks.

Active House USA is fitted with the new Lennox SLP98V; 98.3%-efficient furnace and XC21, 19 SEER Air Conditioner, which is the most efficient and quietest available.

With dramatically reduced heating and cooling demand through design and construction, the small amount of heating and cooling that is needed, will be provided at the highest rate of efficiency. Similarly, new HEPA filters and recovery ventilation systems will help maintain improved air quality inside. These types of products make the building perform better at a greatly reduced cost.

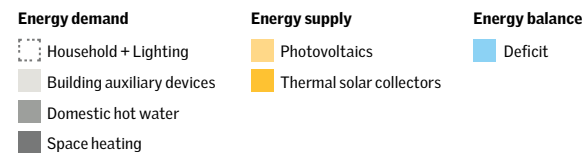
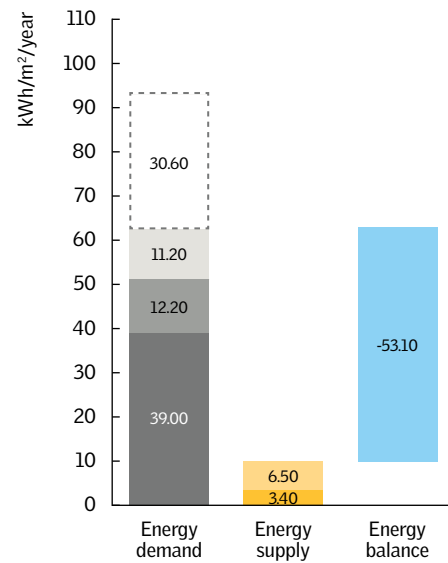
The Active House HVAC system incorporates a natural ventilation system into the mechanical HVAC system. The centrally located stairwell together with VELUX Skylights atop the stairwell, and windows in the stairwell provide light to the center of the home. The skylights are motor operated to provide a natural draft in the house, with fresh air supplies.

Heat, humidity and moisture sensors automatically operate the opening and closing of the vents, and the HVAC system depending on local climate conditions. The system can also be manually controlled via a central panel in the home or by using a smart phone.

Water Heating Design

The Water Heating Design for efficient heating and distribution is part of Active House USA's holistic approach to the construction of the house. Hot water is provided primarily by the Solar Thermal System. There is also a highly efficient natural gas backup for high demand situations, with a power ventilator on the heater to control combustion products and preserve indoor air quality.

An efficient water heating design reduces the amount of energy lost in transit, which reduces the homeowner's operating costs. The initial construction costs are also lower. One method to maximize operation of the water heater is for example, reducing placing the washing machine as close to the water heater as possible. Laundering clothes accounts for approximately 23% of indoor water use each month.



We have installed an efficient, cost-effective PEX piping systems which by using tubing can be threaded throughout the house. PEX systems have about 90% fewer elbows, on average, than copper piping, and no chemicals are used for connections. It also takes less energy to manufacture and is a recyclable product.

Solar Power

Solar Power is provided by a photovoltaic system designed by Micro Grid. Active House USA's location has peak annual energy demands for both heating and cooling. However, they are usually limited to short periods, and for the rest of the year more power can be generated than the house requires for its operation. When the amount of energy used equals the amount of energy generated, a house is defined as a "Net Zero Energy".

Natural Gas

Natural Gas is another energy source used in Active House USA, readily available from a local supplier. Laclede Gas Company. Natural Gas is a clean, low-cost, domestic energy source, and provides an opportunity to broaden our energy resources for the customer. With our holistic approach to energy efficiency, there are plans to provide additional natural gas car charging station in the garage, giving the owners very cost-effective, sustainable fuelling options for their vehicles.

Performance Verification

As a prototype home, an additional part of the building process will be post-occupancy performance verification. The High Performance Buildings Research Center at the University of Missouri-Columbia Energy Efficiency Research Consortium (MUEERC) will conduct digitally monitoring and measure Active House USA's energy use and indoor air quality for a minimum of one year. In addition, The Active House Alliance and VELUX Group will participate in the ongoing testing, data collection and dissemination in association with MUEERC, the project manager at Verdatek Solutions LLC and the builder, Hibbs Homes LLC.



The unique challenge

Our strategy with Active House USA is that we are being guided by the culture and well-established architecture standards of the Old Webster district. We have taken traditional home design and made it into an Active House. The end result is a home that is built in harmony with the character of the surrounding neighborhood, but that outperforms them significantly over its life with minimal operation, energy, and maintenance costs.



Environment

Paying respect to history, nature and community

The first Active House in the USA has been built in the well established neighborhood of Webster Groves, a St. Louis suburb where historic buildings, beautiful surroundings and a strong community all add to an environment that attracts families in search of a good life.

The site of the Active House is located about two blocks from the downtown Webster Groves business and shopping district. Here, Hibbs homes and their clients, the Smith family, found an opportune site for the family's new home. The site had an existing bungalow-style home on it that was vacant and in severe disrepair. With the old building removed, the site was perfect for an infill replacement home.

Recycling Teardown Components

When removing the existing house, Hibbs Homes applied a teardown practice focused on reuse and recycling. "We keep a lot of material out of landfills simply by the way we handle teardowns," builder Kim Hibbs explains. "In fact, our teardown practices have allowed us to greatly diminish disposal costs. As the cost for materials and the demand for them increase, it has created a situation where good materials that have historically been considered as consumables now carry a commodity status, giving them real value. Our customers are very excited about this value-added process; it allows them to participate with us in being environmentally responsible, and it does not increase the costs of tearing down the older house or constructing a new infill house," says Kim Hibbs.

The removal of the old house on the Smith residence site also benefitted a humanitarian organization. "We have deconstructed much of the existing home with Habitat for Humanity taking a large amount of materials for repurposing," says Kim Hibbs.

Reusing Infrastructure by Building Infill Housing

Cities all over the world are struggling to reduce urban sprawl and create and maintain high-quality housing. Infill houses can be ideal in achieving these goals. In short, infill housing recycles previously developed sites. The most obvious advantage of infill housing is that the infrastructure already exists: streets, water, sewerage, electricity and transport systems. Infill houses help renew neighborhoods and create and maintain convivial communities in which people want to live.

There are numerous advantages to infill housing:

- It maintains and increases property values
- It can cut down on commute times, save gas and decrease automotive pollution
- It reduces highway congestion and cuts spending on new roads
- It puts residents within easy reach of mass transit and the city's cultural attractions.

Webster Groves is an area known for its well preserved historic buildings and abundance of trees and parks. Creating an infill house here required careful attention. "We had to follow fairly strict design standards to comply with surrounding homes," Kim Hibbs explains.

The result is a house that has all of the qualities of a traditional Webster Groves residence: a spacious building with a large porch, several storeys and a balanced appearance. But while the house looks traditional, the materials and devices used in the Smith residence are all state of the art in terms of energy efficiency and indoor environment. The first Active House in the USA shows how infill housing can be constructed with great respect for an area's history, environment and local community.

Construction in progress



Matt Belcher, Active House project manager, and the Smith family just before demolition begins.



Construction has officially started. Major project partners and Jeff Smith turn the first patch of soil.



Cameron Smith, daughter of the owners, turns the first spade of soil at the groundbreaking ceremony.



Groundbreaking for Active House USA, 2 May 2012.



Structural beams being set to carry the SIP roof panels.



Everything is coming together perfectly.

The no-leak skylight Available in Deck and Curb Mounted Versions

The VELUX deck-mounted and now curb-mounted product family is designated

The No-Leak Skylight. It carries the new 10-year installation warranty plus 20 years on glass, 10 years on product, and five years on blinds and controls. Features include: three layers of water protection; advanced LoE3 glass for better energy efficiency, higher visible light transmittance and improved solar heat gain performance; money-saving, pre-finished, white frames and sashes; pre-mounted brackets for quick installation of sunscreen blinds; lower roof profile with an updated, curved, architectural design; and a neutral grey color to blend with most roof materials.

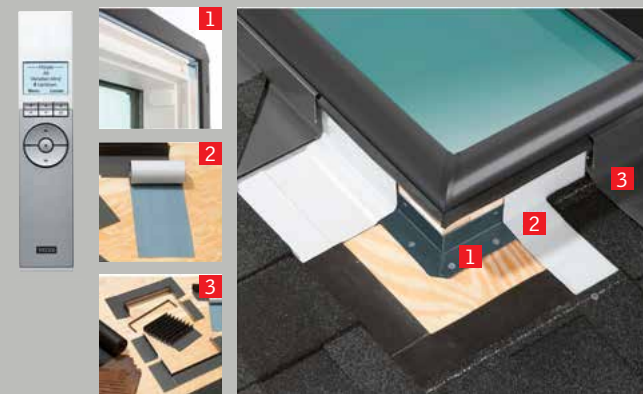
Electric controls

From our innovative remote control to our home automation integration kit, the VELUX Group provides the most technologically advanced products in the skylight industry.

KLR 100 advanced RF remote control unit (VSE, FS, VCE, FCM and QPF).

The most advanced skylight remote control unit on the market. It can operate skylights and blinds individually or as part of a group.

Advanced RF technology allows the user to operate skylights and blinds from anywhere in the house. Create programs to control the skylight and blind automatically, based on time of day, day of the week or month of the year. Set the skylight to close automatically after a certain period of time of opening.



3 layers of water protection for deck and curb-mounted Patented deck seal technology

1. The pre-attached deck seal on all deck-mounted skylights provides a watertight connection between the frame and roof deck for a leak-proof installation.
2. Adhesive underlayer for secondary water protection against the harshest weather conditions.
3. Engineered flashing for easy installation and primary water protection

VELUX products

The First Active House in USA

The VELUX Group creates better living environments with daylight and fresh air through the roof. The VELUX product program contains a wide range of roof windows and skylights, along with systems for flat roofs. The Group also supplies many types of decoration and sun screening, roller shutters, installation products and products for remote control. The VELUX Group, which has manufacturing companies in 11 countries and sales companies in just under 40, represents one of the strongest brands in the global building materials sector and its products are sold in most parts of the world. The VELUX Group has about 10,000 employees and is owned by VKR Holding A/S, a limited company wholly owned by foundations and family. For more details, visit www.velux.com.

In America, VELUX products are available nationwide through home centers, building material suppliers, lumberyards, and independent door, window, and roofing retailers as well as through a network of VELUX trained and certified installers. Company daylighting products include an extensive line of fixed skylights and venting, manual or electric powered fresh air skylights, complimented by a complete selection of functional and stylish blinds in patterns and colors to compliment room decor. Wall mounted or hand held remote units are available to control both electric model skylights and blinds. Also available are VELUX Sun Tunnel™ tubular skylights in both domed and low profile flat glass models. VELUX No-leak skylights are ENERGY STAR® qualified. The VELUX Group also offers an extensive line of commercial daylighting products. Complete product information, as well as local supplier and installer information, is available at www.veluxusa.com.

VELUX skylights

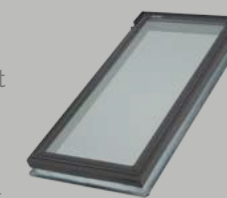
Model VSE

Electric venting deck mounted skylight (VSE) Designed for deck mounted installations, the VSE electric venting skylight is the perfect daylighting solution for overhead applications. It admits abundant natural light and opens at the touch of a button to let in fresh air. And if you forget to close it, the VSE also closes automatically in the event of rain.



Model FS

The FS fixed skylight, designed for deck mounted installations, is perfect for visually-expanding areas such as hallways, stairwells, and other closed-in, dark spaces that can be transformed with light and sky views. It provides an economical choice in creating a spacious home that is filled with natural light.



VELUX sun tunnel™ skylight (TLR)

The model TLR utilizes a rigid tunnel delivering bright, natural light and is perfect for installations that require longer tunnel lengths. Low profile glass design creates sleek appearance in any tiled roof.



Sunscreening products

Elegantly designed VELUX blinds for easy control of heat and light in the home. Adding VELUX blinds to roof windows can increase comfort and reduce heat loss by as much as 21% with the energy blind – lowering heating bills while enhancing comfort.



The First Active House in USA

Developers and partners:



Hibbs Homes is a leading custom, green homebuilder based in St. Louis, MO. Since beginning the company in 2004, owner and general contractor Kim Hibbs has worked throughout the area with a highly skilled team and subcontractors to build high-performance, custom homes for a variety of price ranges and lifestyles.

Hibbs Homes built one of the first gold-level, green-verified homes in the St. Louis area, and is on the forefront of green



Verdatek Solutions is a construction firm specializing in green homes, light commercial construction, agricultural building and low-impact development. It is owned and operated by Matt Belcher, a nationally recognized green builder, consultant and educator. He has been actively involved in the St. Louis construction industry for three decades, including six years as a building code official, and has recently become a consulting partner and project manager with Hibbs Homes.



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The Active House Alliance
Active House is a non-profit organization supported and managed by a group of Alliance Partners, but also a network where you can contribute to the website activehouse.info with news, knowledge and you can contribute to the ongoing debate.

Ambition of the Alliance
The ambition for the Alliance is – in the common interest of its members – to cre-

ate a viable, independent and international influential alliance, which supports the vision of buildings that create healthier and more comfortable lives for their residents without impacting negatively on the climate and environment – thus moving us towards a cleaner, healthier and safer world.

Our wish is that Active House becomes the future principle for new buildings and renovation.

building science and practices. The company has been recognized by communities for its dedication to preserve the character and history of the neighborhoods it works in when building new homes.

Kim Hibbs is a Certified Green Professional through the National Association of Home Builders and is active in the St. Louis Home Builder's Association, where he serves on the Board and begins his term as President in 2016.

Matt was recently named Director of the High Performance Buildings Research Center Department for the new University of Missouri Energy Efficient Research Center (MUEERC), and is Chair of the NAHB's Green Building and Energy subcommittee, serving on their Construction Codes and Standards committees. Matt was also appointed by the ICC to serve in the development of the new International Green Construction Code and was recently appointed to the ICC's Residential Energy Committee.

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Midwest Energy Efficiency Research Consortium



Supporting Organizations:





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