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Polyurethanes was key to building the house of the future: the Virginia Tech Lumenhaus

Have you ever wondered what houses will look like in the future? Well, you might want to ask a group of students from Virginia Tech University in the United States, who stand behind the Lumenhaus project. Inspired by the Farnsworth House by [Mies Van Der Rohe](#), (which was built in 1951 and considered as one of finest examples of modern architecture), the students decided to create the most energy efficient and environmentally friendly pavilion today.

With support from the Virginia Tech University and a group of sponsors, they were able to write an architectural plan and soon create a prototype. Recognition came quickly - they won the [European Solar Decathlon 2010](#) and their house has been viewed by hundreds of thousands of people.



Lumenhaus at night – Creative Commons License

The house itself is impressive. It uses the most environmentally and energy efficient materials available to date, combined with their excellent health and safety record. One of the materials they used was closed-cell insulation foam made from polyurethane – a regular PU foam used in our homes. The team of architects applied it in the walls and movable panels of the house.

Just like any [passive house](#), **the cornerstone to maximum savings and environmental benefits is insulation and air-tightness**. Without these key elements, the potential of innovative technologies and smart construction goes to waste. As they noted, using polyurethane foam allowed tighter enclosure and significantly increased thermal resistance.



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In fact, the **thermal resistance of the house is five times higher than for an average house!** This led to a very high energy savings rate, which has been recognised at the European Solar Decathlon 2010 awards. In addition, the polyurethane foam they used for insulation does not contain CFCs or HCFCs.

[Click here for the Lumenhaus [video](#) (Youtube)]

Another striking feature is the house's use of solar power - the rooftop photovoltaic system has the ability to vary its angle. This way it can maximize the efficiency of the power gained from the sun. Further efficient use of the sun can be found in the house's open configuration – it has adjustable walls on the North and South side. It also features a concrete floor with a radiating heating system and contains a multitude of energy efficient appliances, all of which can be controlled with your Smartphone.

[The Virginia Tech Lumenhaus project](#) is one of the most efficient and stylish houses of 2010, and polyurethane has been an essential part of this inspiring project. Once again, just another example of how polyurethanes contribute to **improving lives and protecting the planet in new ways every day.**

