

Noel Yi

February 7, 2023

House Zero

House Zero, located in Austin, Texas, is a 3D-printed residential building that has garnered significant attention in the world of architecture and sustainability for being designed as net-zero energy. The building was created in collaboration between the technology company ICON and the architectural firm Lake Flato, and it has been recognized as the 2022 Builders' Choice Project of the Year.

The first aspect of House Zero's sustainability is its use of 3D printing technology. 3D printing is a process where a machine builds a structure layer by layer using a digital model. This process is highly efficient and reduces waste, time, and manpower compared to traditional construction methods. The walls were printed in just 10 days, and it was made from a sustainable material called Lavacrete, a mixture of concrete and volcanic ash. This material has a low carbon footprint and is abundant in the region, making it an environmentally friendly choice for construction. Additionally, these walls, due to being 3D printed, can be a part of the design language of the house rather than traditional cast-in-place concrete. However, it's very hard to create horizontal cantilever forms that could potentially be the roof. Due to these limitations, natural wood was used due to being rapidly renewable and locally sourced.

Another aspect of House Zero's sustainability is its design. The building was designed with passive solar principles in mind, meaning that it maximizes natural light and airflow to reduce the need for heating and cooling. The building is also designed to be highly energy efficient, with a tight building envelope and geothermal heating and cooling system, which provides energy-efficient heating and cooling. This also includes the use of double-paned windows, insulation, and efficient lighting. The house is also designed with a focus on renewable energy sources, with a large rooftop solar panel system that provides the house with all of its

energy needs. The house also has an energy-efficient plumbing system, with low-flow toilets, shower heads, and faucets. The electrical system of the house is also designed with a focus on sustainability and efficiency, with the use of LED lighting and energy-efficient appliances. This means that the building will use less energy over its lifetime, reducing its carbon footprint and helping to mitigate climate change.

In addition to its environmental impact, House Zero also has a positive impact on the local community. The building was created as a model for sustainable housing and is intended to be affordable and accessible to a wide range of people. By creating an innovative and sustainable housing solution, House Zero is contributing to a more sustainable future for both the local community and the world as a whole.

Essay generated by ChatGPT and edited by Noel Yi

ChatGPT Prompt: In an academic tone, will you please write me an essay about the sustainability of House Zero located in Austin, Texas by ICON and Lake Flato?



References

<https://www.dezeen.com/2022/03/04/icon-lake-flato-3d-printed-house-zero-austin/>

https://www.builderonline.com/design/awards/3d-printed-house-zero-recognized-as-2022-builders-choice-project-of-the-year_o

<https://www.designboom.com/architecture/3d-printed-house-zero-icon-lake-flato-austin-texas-01-02-2022/>