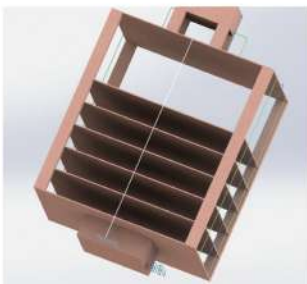
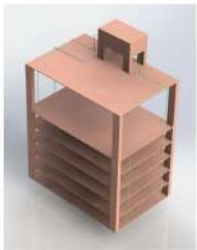


Abstract

In this era of global warming and climate change, cooling system has become a necessity. But our traditional cooling systems are not environment friendly nor power efficient. In search for an alternative geothermal cooling and heating were studied in this work.

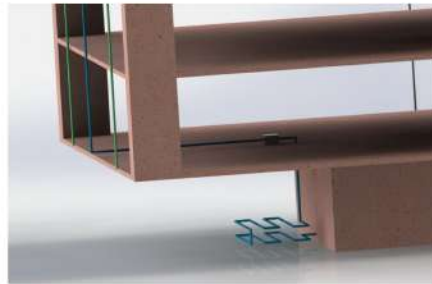
Introduction

Geothermal technology harnesses the Earth's heat. Just a few feet below the surface, the Earth maintains a near-constant temperature, in contrast to the summer and winter extremes of the ambient air above ground [1]. In this study we tried to demonstrate the idea of cooling and heating using geothermal effect more efficiently. It is the most environment friendly heating or cooling system at this moment.

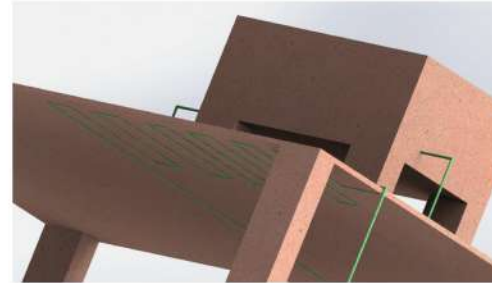
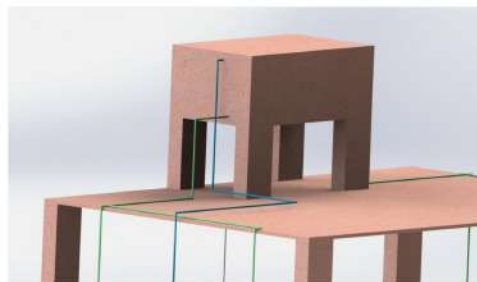


Method

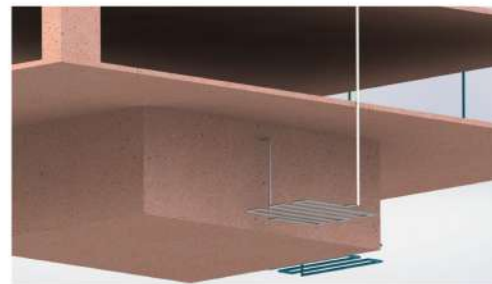
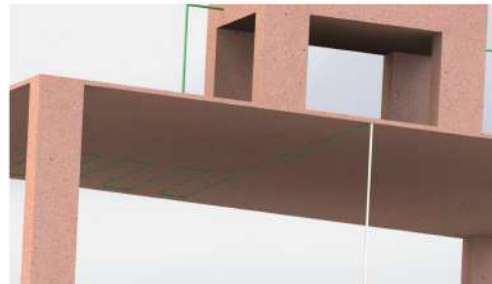
Most likely in residential or commercial buildings there are two water storage tanks. One is underground water reservoir (UWR), and another is rooftop water reservoir (RWR). In this model we have used these two tanks and some piping to cool or heat our model.



In the figure we can see that there is a blue pipe which is connecting the UWR to RWR. With help of a pump the water moves from UWR to RWR. In this process the water gets more cold because of the condenser shape of the pipe and geothermal effect. The pipe is made of two different materials. The underground part is made with high conductive material and, the upper part of the pipe is made with low conductive material.



Then the water enters the RWR. RWR is also made with low conductive material. So, the temperature of water remains same. RWR supply's water to the whole building. Some of the water from RWR is used to cool the building.



After cooling the building, the water gets heated. This heated water is then carried through a pipe to the UWR. On the way to UWR the heated water is again cooled with geothermal effect.

Result

Geothermal cooling systems are normally 25 to 50 percent energy efficient than traditional HVAC systems [2]. With this new model we hope to have more energy efficient cooling and heating.

Conclusion

This system needs more testing and calculations to conclude that if the system is usable or not.

References

1. Geothermal Heating and Cooling Technologies. (2021, June 16). US EPA. Retrieved June 25, 2022, from <https://www.epa.gov/rhc/geothermal-heating-and-cooling-technologies>
2. Energy, D. (2020, June 5). Geothermal Cooling - Everything You Need To Know. Dandelion Energy. Retrieved June 25, 2022, from <https://dandelionenergy.com/geothermal-cooling>