

Research Assessment #9

Date: February 12, 2021

Subject: Converting Solar Power to Heat Energy

MLA Citation:

Dang, Shuping, et al. "Efficient Solar Power Heating System Based on Lenticular Condensation.", School of Electrical and Electronic Engineering, pp. 1–4.

Assessment:

As I am starting to make my design for the anaerobic digester I have come up with a problem. My sole purpose in creating this anaerobic digester is to make it so that it can be used in virtually any climate so I have to find a method that would allow me to apply heat to my system. One of the ideas that I have for my project is to use solar energy to create heat to allow the anaerobic digester to work properly. I still want the digester to stay environmentally friendly, so I decided to narrow the resources down to eco-friendly choices. Solar power seems to be the best option from my thoughts, so I did some research and got the chance to read an article called "Efficient Solar Power Heating System Based on Lenticular Condensation" to find out how people were able to create a heating system using solar power.

In their design, they used a combination of solar panels as well as sunbeams. In their system, they would gather solar power through the panels, and then it would be connected to sensors to be able to power the circuits. The circuits are also connected to the other part that uses sunbeams. The sunbeams would be captured by using a semi-cylindrical lens to condense the heating. Using this to condense the heat more energy can be produced. All the energy collected is then used to heat up the liquid that will flow to the water box. This a complex system, but it was able to increase the amount of heat that could be produced. Typically solar energy does not bring

in that much energy so it requires a large number of panels to make that happen but combining robotics, sunbeams, and solar panel energy it makes the system more efficient.

Furthermore, applying this technology seems not to be feasible since I do not need such a complex system to produce a large amount of heat. I really just need enough energy to heat it up to promote bacterial growth. This is an amazing system, but I am afraid that this is best to be used for larger scaled projects that may require more heat. I could possibly just only use the solar panels to directly heat up water and then set my digester in the heated water to keep the temperature up.

In conclusion, using solar energy does seem like a great source to heat up the digester, but the one shown in the article may not be the best option. It is a little too complex and I also do not have all the resources and materials that they used to create the system. I propose that I use a simpler method to be able to produce heat energy. This is also the most feasible option because by making it simpler it can be easier for people to use since this is a home system that should be able to be used by anyone without much work.