Constructing Asphalt Solar Collectors into Waipahu Roads

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Global temperatures are rising at the same rate the society should continue to search for renewable sources of energy to power our cities. Solar collectors are able to transform heat energy into electrical or mechanical energy. Asphalt collectors stand as a niche concept that uses serpentine metal pipe conduits and have hot water running through them. This idea could be further developed if the piping systems were exchanged with a parallel formation and have hot air traveling inside, instead. Similar to updraft chimneys that have turbines inside to generate electricity, hot air can exit out of the new piping system while generating enough electricity for public use. Depicted through our results of the percent change in wind speeds, there is about a 0.372 percent change when concrete and air temperature decreases after each hour. When utilizing SolidWorks to access the thermal analysis before and after the course of each hour with 300 samples, the transient thermal analysis under 3.5 inches of asphalt–its average was 0.04432 Kelvins, greater than the average for the thermal analysis with the 1.5 inches of asphalt, 0.03803 Kelvins. The success of this project would be greater if an actual turbine would be used to calculate the total voltage as this is part of the purpose of this project. Not only would this aid the mechanical field, this encompasses various engineering classes like materials sciences and electronics to take part in the implementation of this project.

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