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Point Source Power Generation Using a Sterling Engine

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ABSTRACT
Fossil fuels are what primarily provide everyone with energy and power. Scientists and engineers have been searching for an alternative way to provide energy in a sustainable, renewable, and environmentally friendly way. Looking at the constant source of energy provided by the sun, this source could be harnessed in a way that could continually make energy. Using a Sterling engine, the solar energy from the sun could power the engine to produce enough mechanical engines to power a house. This newer technology would help make more of the energy used in the world more environmentally friendly and provide means for single houses to acquire economically feasible, sustainable, and renewable power.

1. Sterling Engine

Heating
• The gas is moved to the heated side of the chamber which will cause its pressure to increase

Expansion
• The air expand and moves the piston upwards creating rotational motion

Cooling
• The displacer is moved back down by the momentum of the rotational motion and allow the air to move to the cooling side, decreasing pressure

Contraction
• The air contracts because of the decreasing pressure allowing the piston to go back to the beginning of the cycle to start again

2. Solar Oven

• Heats to 150°C
• Cooks food fast
• No energy cost to cook
• Environmentally Beneficial
• Healthy

Color
• The darker the better
• Dull better than shiny

Shape
• Shallow better than tall

Thickness
• The thinner the better

3. Solar Stirling Engine

• Solar oven powers Sterling engine
• Uses aluminum reflectors
• Dulled copper to conduct heat
• Vacuum between solar oven and displacer

4. Other Companies

• Converging mirror
• 3 kw design
• 21 feet tall x 15 feet in diameter
• Consumer product
• Follows sun

Our Design Infinia SES Solar Cell
Amount of Energy Producible (kW) 1 3 25 2
Height of System (ft) 3 21 41 1<
Size of Base of System (ft²) 45 225 1400 12
Efficiency (%) 30 24 Unlisted 15

5. Conclusions

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