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*Garbage is Good: Gasification as Green Energy*

The purpose of my project was to determine if a small-scale gasifier could be constructed using household materials, and whether household garbage is an effective fuel. In modern day society most of our daily activities require electricity. Recently there has been a push to generate electricity from renewable sources, including wind and solar. Unlike the burning of fossil fuels, electricity generated from renewable sources is generally non-polluting and environmentally friendly. Garbage can be converted to electricity via gasification. Essentially, waste is converted to gas by exposure to extreme high temperature. This gas is flammable and can be used to power gas/steam turbines. After building several prototypes, my final up-draft design (V3) successfully gasified a test fuel. The V3 was constructed of three layers of aluminum cans held together with nails and temperature-resistant molding clay. Insulation was wedged into the spaces between the cans. This insulation acted to keep the heat inside the gasification chamber, ensuring high heat and high quality gas. Internal temperatures were monitored using a thermal couple, while gas production was assessed by flame generation. Unfortunately my attempts to gasify raw household garbage were unsuccessful in this mini-gasifier. However, I was able to gasify pelletized garbage. In contrast to raw garbage, pelletized garbage is ultra compact and nearly devoid of moisture. These results suggest that in the future it may be possible for individuals to power their homes with their own garbage; essentially creating green energy and depleting the world's landfills all in one step!