

## Non-Confidential Description - PSU No. 0719 "Thermoacoustic Piezoelectric Power Generator"

### Keywords:

Thermoacoustics, piezoelectricity, power generation, waste heat, thermal power generation

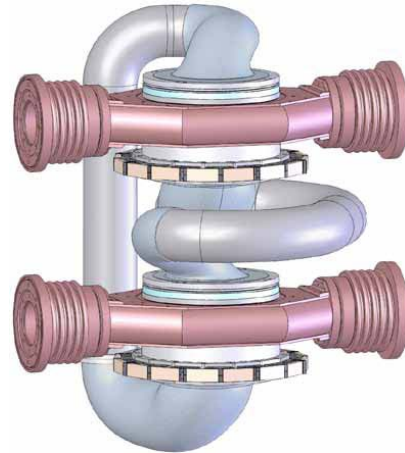
### Links:

[Inventor Website](#)

[U.S Patent #7,081,699](#)

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### Background

Oscillatory heat engines, including thermoacoustic engines, can be used as refrigerator or heat pumps, but can also be used as prime movers by accepting heat flow into the engine at high temperatures while rejecting the heat at lower temperatures and converting some of the thermal energy into gas pressure and volume oscillations. Proper design of such a thermoacoustic engine can lead to the creation of a high energy acoustic field that can be used to induce vibration in coupled structures.

### Invention Description

This invention describes a thermoacoustic engine that operates using an input stream of heat to generate an acoustic field which excites a piezoelectric generator to produce useful electric power. The device can be configured to accept a waste, or rejected heat stream in order to produce and recover useful electrical power. A prototype has been constructed that demonstrates the feasibility of the invention by producing electric power from a rejected heat source. The device can be made to be portable for field deployment, or could be used integrated with a rejected heat source.

### Advantages/Applications

- Utilizes rejected heat streams to generate electrical power
- Portable or integrated into existing systems to recover heat and generate power
- Relies on inert gases for operation, no ozone depleted gases used
- Good source of alternative energy production