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## Design & Analysis of Thermo Acoustic Refrigeration (TAR)

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### ABSTRACT

From creating comfortable home environment to manufacturing fast and efficient electronic devices, air conditioning and refrigeration remain essential services for both homes and industries. It is becoming increasingly important in the design and development of refrigerating systems to consider environmental impacts. To eliminate the use of environmentally hazardous refrigerants, research efforts are focusing more on the development of alternative refrigerants. An approach in the category of alternative technologies is thermoacoustic refrigeration which produces cooling from sound.

The thermoacoustic effect was first discovered in the 19th century when heat driven acoustic oscillations were observed in open-ended glass tubes. These devices were the first thermoacoustic engines, consisting of a bulb attached to a long narrow tube. It was in the 1980's that thermoacoustic refrigerator was first developed, when a research group at the Los Alamos National Laboratory showed that the effect could be used to pump heat. The technology has seen rapid growth since then, developing it to a promising asset as a clean and environmentally friendly refrigeration method.