Name(s)

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Project Number

S0303

Project Title

Using the Venturi Effect to Optimize the Efficiency of an Air Conditioner Condenser

Abstract

Objectives

The objective of this project is to create a way to move air more efficiently using the Venturi effect by a data driven design of optimizing venturi structures.

Methods

We used various tube dimensions, a fan and a DC power supply. We created a system in which air is moved via a fan and is accelerated through fluid mechanics principles of the venturi effect.

Results

By optimizing 4 independent variables, our system of fluid movement was 6% more efficient than that of a high efficiency residential 2 ton air conditioner.

Conclusions

We built a structure for moving fluid(air) that is more efficient than that of a standard air conditioner. Using our measurements of the ideal dimensions of the variables of our system, one would be able to create a significantly more efficient air conditioner condenser.

Summary Statement

Our project uses a fluid physics principle in order to reinvent the structure of an air conditioner, making it more energy efficient

Help Received

My partner and I designed the experiment ourselves but received help understanding the concept of the Venturi effect as well as giving us a DC power supply from out mentor, Pat Benz.