**A067 ENGR**

**Ductless HVAC System with ERV for a Residential Building in Atlanta, Georgia.**


## Abstract

Heating, Ventilation and Air Conditioning system (HVAC) system is an important aspect to consider in the design and construction of residential building. In this project, our team followed HVAC codes and standards produced by ASHRAE to properly regulate the comfort of facilities. Our team will design a ducted HVAC system just for learning purpose and gaining knowledge to design a traditional duct design, but in our design our HVAC system will be ductless, along with an EVR system added to the building. The load calculation for the HVAC design was completed in this project by analyzing the building floor plane as well as using manual J. The HVAC component's units were chosen based on load calculations. The building had to be divided into separate zones, with each zone requiring its own computation to determine the air flow in cubic feet per minute. Based on its location, each building has a different design load. Construction type and materials were specified. Sheet metal ducts will be used in this design project. Duct sizes and velocity of the air were calculated manually using a Ductulator. Estimated energy usage was calculated to display to the customer how much the HVAC units cost to run over the course of a year in HVAC design. RESCheck was performed and passed a compliance check to ensure that the HVAC design met the energy requirements. The HVAC system layout of the building is done using Wrightsoft software. The Energy Recovery Ventilation is our main concern beside designing the HVAC system. A ductless HVAC system, a ducted or ductless ERV system for the building, energy consumption calculation for the ductless HVAC and the ERV system, and materials selection for all equipment for ductless HVAC and the ERV system for the building will be designed.