

SPRING 2022-2023

GROUP MEMBERS

- Prepared by: Yara kalam
- Ali Sharhan
- Donald Awonsang Jam

The main objective of the air conditioning setup project is to enhance understanding of the role played by each component within an air conditioner. The project involves disassembling and cleaning both the indoor and outdoor units of the air conditioner. Following this, each component undergoes careful examination and evaluation. Finally, the air conditioner is reassembled and placed within a transparent plexiglass enclosure for an informative and visually appealing display.

A mobile phone A plexiglass

SUSTAINABLE CAPSTONE PROJECTS (SCAP)

EXPERIMENTAL AIR CONDITIONING (AC) CYCLE SETUP CONSTRUCTION.

INTRODUCTION

MATERIALS USED IN CONSTRUCTION

- This project was actively carried out in the CIU workshop and the following materials with their descriptions were used; An Air conditioner
- This consisted of both the interior and exterior units, it was an old and used one provided for by the university. A working table
- This is the site where the air conditioner was placed, elevated from the ground in order for the entire team to simultaneously work, observe and study the AC on. A screwdriver
- Two screws in fact all flat headed, came very handy in dismantling the AC by unscrewing the nails in an anticlockwise manner. Provided also by the University. An electric screwdriver
- Chargeable electric screw, it was very useful especially in the outdoor unit of the AC because of the tightly screwed nature which could not be unscrewed by the regular screws. It was provided by the workshop assistant.
- For taking videos and making recordings, provided by `the team members.
- For covering the opened AC to facilitate easy observation. Requesting it from the University.
- A wooden cardboard To be used to mount the AC on it, to ensure more safety and ease when carrying

I. Compressor **II.Condenser:** dramatically as well. **IV. Evaporator:** your home.



CONDENSER CONNECTED TO THE COMPRESSOR.



CONDENSER



evaporater

FINAL PRODUCT

The following points state the role of the main AC components that are visible in the current/final state of the AC:

A compressor circulates the refrigerant and compress it with high temperature and pressure.

compressed air is then sent into condenser to be pressed into a liquid. It cools down slowly with chilled air from fans.

Refrigerant in gas state of high temperature loses heat as it passes through a condenser. As such, it becomes condensed and at the exit it turns into liquid almost

III. Expansion valve:

The refrigerant in high temperature and high-pressure liquid flows into expansion valve. The refrigerant which used to flow in large space now passes through narrow area, and its pressure drops as it goes .When the pressure drops, the temperature drops

The cooled refrigerant, once released by the expansion valve, absorbs the heat energy from the warm air that's brought in from your room's climate and blown over the evaporator coil's tube. Once the refrigerant has absorbed the heat, it evaporates, hence where this part gets its name!. The remaining water vapour from the household air condenses into a liquid that drains into your unit's condensate pan and is transported to be disposed of outside

Our AC has been displayed for each component to be studied and clearly seen. However, as an improvement for this project, a refrigerant gas should be supplied for better project outcomes. Additionally, in a more general scope, a more advanced Artificial intelligence powered models and gadgets can be added to modern Air Conditioning systems.

By the performance of each component, the modern Split-system air conditioners provide a variety of options, they are quieter and more efficient. A split system air conditioner offers consistent, reliable temperature control to the entire home. And, because the system uses filters in the indoor air handler, it can clean your air while it cools it.

. https://youtu.be/nVTdukNJdtM 2. https://youtu.be

CONDENSER



ompressor Works As: - Compressor While Coolin **Evaporator While Heat**

AC simplified units



RESULTS AND DISCUSSION

CONCLUSIONS

REFERENCES