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Design AND Fabrication OF Homemade Air Conditioner

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Abstract
Human always tries for better comfort and sophistication at each level of his life. Considering air conditioning, evaporative cooler are used in less humidity and dry climate. The limitation of evaporative cooler is that it is not suitable in humid environment and also their performance is poor in the places where ventilation is not proper.
The objective of this project is to increase the effectiveness of the ordinary table fan by using simple mechanism and overcome the limitation of evaporative cooler.
In this project the table fan is wound with copper tube by copper wire. Vinyl tube is connected with one end of the copper tube and another end of vinyl tube is connected with pump. Pump immersed in the cooling chamber. Vinyl tube is connected with another end of copper tube another end of vinyl tube is immersed in the cooling chamber. Fan and pump connected with electricity pump and is sucks the cool water from the cooling chamber.
Index Terms-evaporative cooler, copper coil, pump, cooling chamber, refrigerant.

I. INTRODUCTION

World is always trying to invent new one. Somebody tries to find new one and tries to modify an ordinary one to implement a technology. Energy plays an important role in the material, social and cultural life of mankind. This is the result of population growth and increase in the standard of living which is directly proportional to energy consumption. In practice air conditioner and air cooler are widely used in the world. These electrical devices consumed more electrical power and it is not benefit for the poor people. In practice power shortage is also occurred. These problems are rectified by modification of ordinary table fan.

In summer season, the ordinary table fan gives small amount of cold air in the room. So the table fan is modified by using copper tube and Special design Cooling Chamber. In this project the cooling of air by using cold water or any other refrigerant which is circulated in the copper tube for the purpose of reducing the heat in the surrounding environment is of great importance in widely distributed villages with little or no rural electrification and also in the urban areas where power shortage is often in practice.
In this project the ice cooler chamber for storing the cold water or cold ice bars or ice cubes which whose temperature decrease as time passes. This cold water or refrigerant is circulated through the copper tube with help aquarium pump which kept water cold for long times. The fan blowing against the copper tube which gives more cooling air in the surroundings.

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II. AIM AND OBJECTIVE.

2.1 Aim

1. To increase the efficiency and effectiveness of ordinary fan.
2. To satisfy maximum thermal comfort condition in minimum investment of energy.
3. To Decrease the room temperature.

2.2 Objective

1. To achieve 6°C to 8°C of temperature drop by using simple mechanism.
2. To achieve optimum design with minimum capital investment.
3. To utilize various resources from home and surrounding effective manner.
4. To present this innovative idea in various engineering colleges and in conference preceding.

III. COMPONENTS AND WORKING

3.1 *Components*

- Copper coil
- Two clay pots
- 48 LB Patio leveling sand
- Dry ice, Exhaust fan
- Polyvinyl tube
- Refrigerant such as water, Glycol etc.

3.2 Working

The components are arranged according to the Schematic diagram. The cooling System contain

refrigerant like water or glycol whose temperature decreases as time passes. This refrigerant passes into the copper coil which wounded on the front panel of the Exhaust fan with help of Aquarium pump .In this process the air coming from the exhaust fan passes on the surface of copper coil .The heat transfer takes place from low temperature to high temperature that is copper coil absorb the heat from air and given to the refrigerant which is flowing in the coil .After that the heated refrigerant collected in the Cooling Chamber and recalculated in the coil. The specification of cooling chamber is that the temperature of refrigerant decreases with help of clay pots ans sand. The special sand is used that is 48 LB patio leveling sand whose property is the decrease the temperature as time passes.

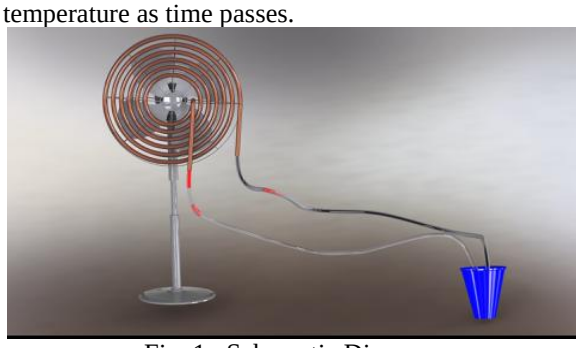

Fig. 1. Schematic Diagram

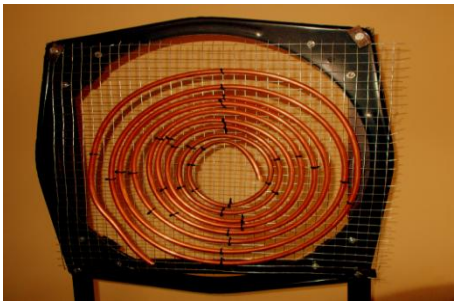

Fig. 2. Copper coil wounded on Front panel of fan

Fig. 3. Cooling Chamber System

IV. CONCLUSION

Various observations and results obtained from the project work tell that, Suggested new design is more beneficial nd it is good advancement in the Conventional design of fan.

Observations of the psychrometric chart shows that, after obtaining same temperature drop by using conventional design and by homemade air conditioner, increment in the cabin's relative humidity is lesser in case of homemade air conditioner.

V. Acknowledgments

Working on this project was one of the wonderful and existing experiences in our life. This project not only bears testimony of extensive efforts but also reflects co-operations, help and guidance, which we received time to time from college.

It is obvious that we acknowledge the help without which the project would never have been completed.

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REFERENCES

[1] J.O.Olorunmaiye (2008). Evaporative Cooling of Water of in earthen pots in Quiscent Air, NSE TECHNICAL TRANSACTIONS VOL.31.NO.3.

[2] Professor Wasim Sama n;Dr. Frank Bruno;Ms. Ming Liu(2009):Technical background Research on evaporative air Conditioners and feasibility of Rating their water consumption berry.

[3] GEOFFREY MILBURN(Sept 2005);Analysis of a Homemade Air Conditioning Unit .