

Research Article

## Performance Improvement of Window Air Conditioner by using Bottle Neck Arrangement

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### Abstract

In present scenario human comfort is the main criteria. For that purpose many Air conditioners are introduced in the market like window AC, split AC and central AC. Not only for human purpose it is become an essential need for Industrial purpose for both small scale and large scale industries. For common household purposes maximum we use Window AC. But during actual use it is not possible to evaluate the performance of an AC with all the parameters like coefficient of performance and cooling effect. Since these are the main parameters for an air conditioner. Without these calculations it is also not possible to know the factors that affecting on the performance of an air conditioner. So in this thesis main concentration is on investigation on performance parameters of air conditioner, for this purpose window AC test rig is prepared. By using this test rig easy to find out the Actual COP. By adding Bottle Neck Arrangement, in order to improve the performance of air conditioner without any extra amount by using of this simple arrangement, with this theses we save the power improve the cooling effect of wind air conditioner especially in summer user can feel more comfort with this type of air conditioner.

**Keywords:** Air Conditioner, COP, Performance Improvement, Bottle Neck set up.

### 1. Introduction

#### Air Conditioning

Air conditioning is a combined process that performs many functions simultaneously. It conditions the air and transports it and introduces it to the conditioned space. It provides heating and cooling from its central plant or rooftop units. It also controls and maintains the temperature, humidity, air movement, air cleanliness, sound level, and pressure differential in a space within predetermined limits for the comfort and health of the occupants of the conditioned space or for the purpose of product processing. The term HVAC&R is an abbreviation of heating, ventilating, air conditioning, and refrigerating.

The combination of processes in this commonly adopted term is equivalent to the current definition of air conditioning. Because all these individual component processes were developed prior to the more complete concept of air conditioning, the term HVAC&R is often used by the industry.

### 2. Refrigerant development

The first air conditioners and refrigerators employed toxic or flammable gases like ammonia, methyl

chloride, and propane which could result in fatal accidents when they leaked. Thomas Mid gley, Jr. created the first chlorofluorocarbon gas, Freon, in 1928. The refrigerant was much safer for humans but was later found to be harmful to the atmosphere's ozone layer. Freon is a trademark name of DuPont for any Chlorofluorocarbon (CFC), Hydrogenated CFC (HCFC), or Hydro fluorocarbon (HFC) refrigerant, the name of each including a number indicating molecular composition (R-11, R-12, R-22, R-134). The blend most used in direct-expansion comfort cooling is an HCFC known as R-22. It is to be phased out for use in new equipment by 2010 and completely discontinued by 2020. R-11 and R-12 are no longer manufactured in the US, the only source for purchase being the cleaned and purified gas recovered from other air conditioner systems. Several non-ozone depleting refrigerants have been developed as alternatives, including R-410A, known by the brand name Puron.

Innovation in air conditioning technologies continue, with much recent emphasis placed on energy efficiency and improving indoor air quality. As an alternative to conventional refrigerants, natural alternatives like COR-744) have been proposed. The Carrier Air Conditioning Company of America was formed to meet rising demand. Over time air conditioning came to be used to improve comfort in homes and automobiles. Residential sales expanded dramatically in the 1950s.

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