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Outlet Water from Air - Condition or Refrigeration would be Pure Habitable Water after Simple Filtration - No Presence of Microbes or Existence of Harmful Minerals

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Abstract: ***Wastage of habitable water is a criminal offence nowadays in the world. We people of Asian continent are facing high humidity from the month of February to October. From industry to home air - conditioning and refrigeration are the essential home appliances now to get relive from extreme heat and humidity. Even we mostly suffer from the crisis of drinking water, knowingly or unconsciously we drainage hues amount of habitable water as daily basis. That scenario are seen in every city or town or rural in areas. By - product water of air - conditioning is purely habitable water which is produced by condensation of water molecules in atmosphere. According to increment of ambient temperature the maximum amount of water molecules can be absorbed in air. It comes out during condensation as of a part of AC machine technique. The water mainly comes out from air, so the condensed water is free of microbes or free of harmful heavy metals. Although it is a free of salt so it taste like distilled water. But it contains some of substance, like dust, carbon compounds and Sulphur compound due to air pollution. Applying some simple procedure of filtration, that water will be habitable which is free of microbes and harmful minerals like Arsenic, Bismuth, and Mercury etc. It would be safer, well - habitable water, and economically cheap and richer than sealed - bottle mineral water.***

Keywords: condensation, compression, distillation, dew point.

1. Introduction

We are using power to make us comfortable during summer or rainy season damping humidity from atmospheric and lowering the ambient temperature using Air conditioning. For preservation of food and cool - up food items we use refrigeration. Due ignorance we drain out the produced water, which are collected due to condensation of water - let suspending in air. That condensing water is an equivalence of distilled water. That drain - out water have no microbial and even no harmful mater which we found from underground water source. We pay huge money to purchase drinking water or sealed bottle water as regular basis. But never think by using a simple filter system that outlet water of condensation can be used safely.

All pacific countries suffers during summer and rainy season due to over sweating and heat. To avoid the problem we mostly use air - conditioning in our house, office, car etc. Not only as home appliance the application of chilling also required in industry, food preservation etc. But here we draw the attention in a small area of exercise to under - stand how much amount of habitable water we are wasting as regular basis day after day.

2. Basic operational technique of Air - Conditioning or Refrigeration and output water as by product

2.1 Compression and condensations

The basic way to cool the air is, evaporate the air by heating or then it is compressed in high enough. The vapors then allow condensing by condensation chamber. The liquid moisture is come out as water. When ambient air is compressed mechanically, the temperature of the air will be high enough, using fact, the excess heat is evaporated. The air is now compressed with an ambient temperature. Now the air is allowed to jet propelled and expanded by expansion valve in the chamber. The sudden pressure change, the air mixture loses the temperature drastically. When air pressure change drastically, due to bellowing temperature moisture in are reach at dew point and makes drops of water. Inner chamber temperature will be low enough and excess water in are will drain out through drainage pipe. So drained out water is purely distilled water in chilled condition. A continue cold water flow will be made in drainage channel of air conditioning unit.

2.2 Possible contamination or pollution within air conditioning water or refrigeration water. Though the unit is installed outside the room and now covered due to continual air circulation. The air content carbon powder, dirt, and other oxides like SO_2, NO_2 are available in ambient airdue to air pollution. So that can be combined with drained cold water also.

2.3 Simple way of filtration: Although the contamination acidic oxide like CO_2, CO, SO_2, NO_2 are very negligible in comparison with dirt in ambient air,. There are two way of filtration system. One, when ambient air is in coming, a dirt protection can be done, or if we draw the air through a air column the dirt and non - metallic oxide will be absorbed. Secondly when the cold drainageswater is collected from Air conditioning as chilled chamber, it to be passes through a cotton pad which separate mud or dissolved oxides easily. The collected water will be totally free of pollutant or contaminations.

3. Statistical Analysis of cold water production

Recurring physical observation shows that collected water amount varies on different parameters.

a) Place to place,
b) Season change round the year.
c) Duration of running of the instruments
d) Capacity of the Air Condition and type of air condition is used.

3.1 In our country, at coastal area AC unit produces water 1 liter per hour per one ton air conditioning. In city area there are maximum implementation of air - conditioning in building, home, market places, corporate office, etc. Duration of machine working also in high level. So we avail maximum distilled cold water that can be compared in city area near costal line in other places of the country. So that amount of water will not be available at Jaipur city at Rajasthan. Which will be much enough in Kolkata of West Bengal, Mumbai of Maharashtra Madras at Tamilnaru

3.2 Seasonal change: In winter approach or in winter the workings AC in cooling condition will be less enough. So collected of distilled water will be less available in compare to February - October of the year.

3.3 Duration of running Air - conditioning or chilling unit. In office or market place it would be not less than 10 hours per day. Except Sunday or holidays or any power cut happens. In an average, not less than 10 hours per day. In industry, it's also not less than 10 hours per day and varies according their system administration.

3.4 Production of cold distilled water: The amount of cold distilled water depends on type of machine is used. High capacity or Centralized AC will produce much more amount of water per hour. Different technology adoption the amount of by - product water will also to be varied.

4. Limitation, Obligation and Pre - cautions

There are some limitations over use of water in public habitation purpose. Is it filtered in proper way? Storage and pipeline are wel - maintained. Recurring check up of filtering system is necessary.

We are mostly habituated to have underground water i.e. Mineral water. So we not like to take that sort of distilled water. It is like curry made without salt. Secondly a liter of mineral water we purchase from retail shop paying Rs.20.00, but cold distilled water from AC need not to pay anything.

In another way we are paying electricity cost and cost of the machine to produce distilled water, but drainage the water is a great loss of country, society, and family. It is ignorance. If we not consider that would be a route of wastage of money.

4.1 Utilization of free habitable water hubs in locality:

The huge amount cold distilled water is produced from every mansion or building. The proper pipe lining network it can be collected, filtered and store in suitable storage. That can be easily accessed in locality. Although free is route of wastage. So by pay negligible money it can be availed. Especially, in town or city area, a huge demand of habitable water as regular basis, specifically in day time. Secondly it can be commercially used in battery industry or in battery repairing shop or vehicles, where huge amount of distilled water are required to repair battery renovation. A good business can be made by selling distilled water. Even in health care and medicine manufacturing unit, there also a huge demand of distilled water. Simultaneously public awareness should be done as early as possible to avoid wastage of water and energy.

a) Facility of drinking water, in town or thick locality, the AC by - product distilled cold water will be the major help for water supply organizations.
b) Regular habitable cold water can be supplied in AC compartment in Train Services. Long - journey or super facility Buts Service can also provide the distilled cold water, during long journey.
c) In battery manufacturing unit, the demand of distilled water is high.
d) Battery repairing units consume high amount of distilled water.
e) In medicine industry or laboratories in college or university distill water source will be major one.
f) Except above utilities the distilled water required high enough in other industries also.

4.2 Filtering systems

Where AC by - product water is allowed for drinking water, some pre - cautions or measures are required to make water habitable.

The possible impurity or pollutants are present in AC by - product water

Atmospheric carbon - di - oxide after dissolving in water makes carbonic acid. Partially mixed SO_2 makes – HSO_3sulphonic acid. Along with these gases dust or dirt, sands also there. A cotton pad may remove the mud or dirt or debris. Now the percentages of metal oxide are very negligible in presence. If the water is pass through charcoal chamber, the most of the pollutants will be absorbed by carbon chamber. The water then can be habitable.

5. Statistical Analysis

Sl No	Date	Place Sample	Time Start	Time End	Ambient Temp Degree Centrig	Humidity in %	Duration of Time minutes	Sample amount ml	Amount of Water ml/h	Amount of Water per Day (8 hours)	AC - Machine Capacity
	Date of Data Collection	Location of different places	Starting time to collect water	Ending time to collect Water	Ambient temperature	Ambient humidity	Water collecting period	Water collected	Per hour water collection	Considering office time duration 8 hours	Air Conditioning Machine load

1.	10.07.19	UEM - Jaipur	1.35 PM	2.05PM	370C	52%	30 minutes	360ml. water in 20 0C	360 x2=720 ml. per hour	5760ml or 5.76 Liter	1.5 Ton
2.	10.07.19	Contai, Midnapur W. B	2.35 PM	3.05 PM	310C	74%	30 minutes	512 ml. water At 310C	1024ml per Hour	7168ml or 7.1 Liter	1.5 Ton
3	10.07.19	Kolkata, Park Circus W. B	1.00 pm	2.05 pm	290C	75%	30	512 ml. water At 290C	1024ml per Hour	7168ml or 7.1 Liter	1.5 Ton
4.	10.07.19	Patna Bihar	1.35 PM	2.05 pm	360C	43%	30 minutes	360ml. water in 20 0C	330 x2=660 ml. per hour	5760ml or 5.76 Liter	1.5 Ton

Data collection and calculation in respect to humidity and temperature in respect to 1 Ton load split AC.

6. Figures

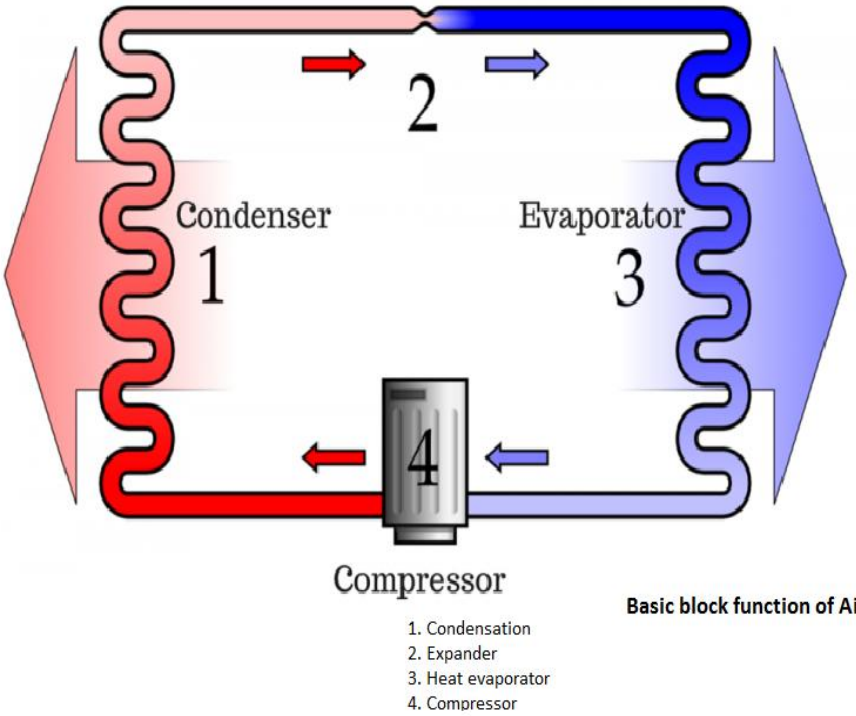

Figure 1

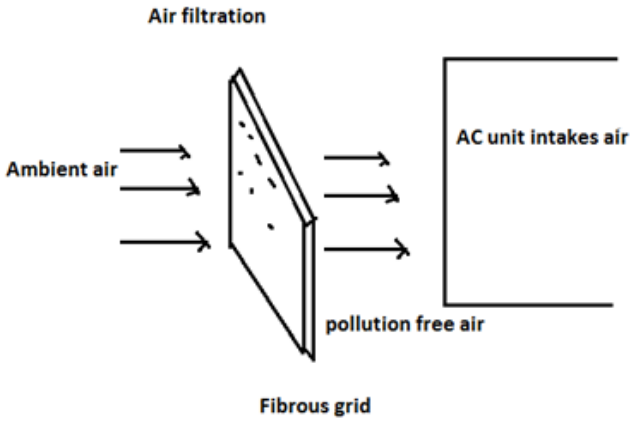

Figure 2

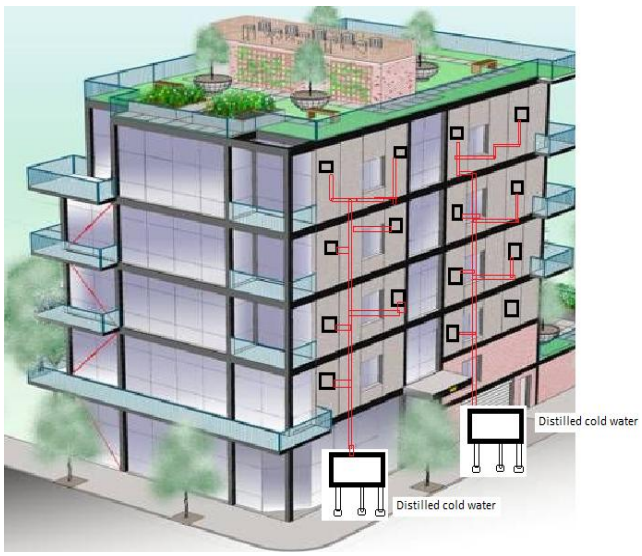

Figure 3

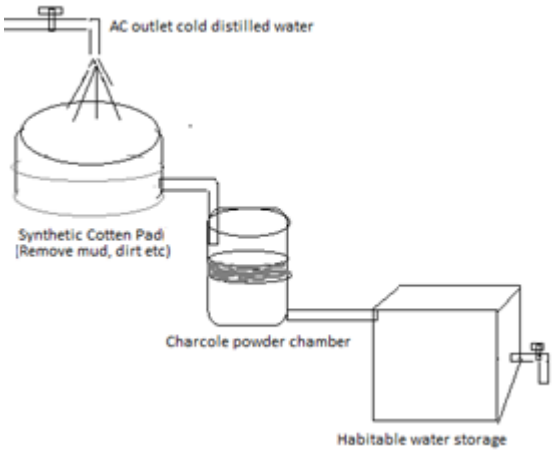

Figure 4

AC by - product water is also habitable

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