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AIR POLLUTANT NEUTRALIZATION DEVICE

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ABSTRACT In This Morden Era We Are Inhaling Air Polluted Air That Needed To Purified.as We Know There Are Many Air Purifier Present In The Market But They Can Not Destroy The Air Pollutants. The Concept Of The Device Is To Neutrilize The Molecules Pulluting The Air. For This Process We Will Use The Concept Of Anode And Cathode Electrodes.positively Charged Ions Will Neutrilize The Negatively Charged Pollutant Ions And Negatively Charged Ions Will Neutrilize The Positively Charged Ions Of Pollutants Thus Providing A Purified And Clean Air To Breath. Initially This Device Is Being Designed Only For Cars After That Is Can Use On A Large Scale.

KEYWORDS : Air pollutant, Pollutant neutralization device,

1. INTRODUCTION

Let us think about the growing environmental problem in current times. Then the answer would be the DETERORATING AIR QUALITY in the atmosphere.

This is causing serious respiratory diseases to all the living beings living on this planet. Here we can take the example of the current air crisis in the capital city of INDIA i.e. NEW DELHI. It is being on the world news since the day it has occurred. Many measures has been taken to reduce it but there is only a little success which has been achieved.

So, the question arises what causes this insane amount of pollution in our atmosphere. There has to be some particles which are being termed as the AIR POLLUTANTS [1].

The basic air pollutants are being classified in some categories which are listed below:

1) **PARTICULATE MATTER**
2) **BACTERIA AND VIRUS CELLS**
3) **ODOROUS GASES AND AEROSOLS**
4) **VOLATILE ORGANIC COMPOUNDS (VOCs)**
5) **CARBON MONOXIDE**
6) **SULPHUR OXIDES**
7) **NITROGEN OXIDES**
8) **RADIOACTIVE POLLUTANTS**

Component	% in Atmosphere	Importance
Nitrogen	78% – 79%	• Dilutes the effects of oxygen • Very important in the growth of animals and plants
Oxygen	21.1 %	• Essential in the lives of animals and plants, for breathing • Is the supporter of burning
Carbon Dioxide	0.03%	• Absolutely essential for photosynthesis (which supports all life on the planet)
Water Vapour	Variable	• Controls evaporation and climatic conditions
Dust Particles	Variable	• Nuclei for precipitation of rainwater

The above table defines the composition of different particles in air. After studying the above table, it can be examined that not only Oxygen is useful, other components of air also have their uses for the humanity to survive.

There are basically two major types of air pollutants:

1) GASOUS COMPOUNDS
2) COMPOUNDS IN SOLID FORM

We are basically trying to target the gaseous compounds with the chemical composition which can be neutralized by using the oxygen ions.

We are making a device to be firstly used in the cars to reduce the pollution in the atmosphere of the car by generating electricity from the battery of the car and inducing the positive and negative ions of oxygen into the air.

Air Quality can only be improved by increasing the amount of positively as well as negatively charged oxygen ions into the atmosphere [2].

The idea relates to a device for producing active oxygen ions in the air for improved air quality, comprising at least one air ionizer and an electric transformer producing sufficient electrical high voltage for air ionization. The air ionizer is coupled to a sensor which detects the oxidizable gas content in the air (air pollution sensor). On the basis of the detected content of such oxidizable gases, the electrical energy which is guided to the air ionizer is transformed by an electrical control device in such a way that only low-level ionization occurs at low concentration of oxidizable gases. Said ionization is sensor-controlled and can automatically be increased to a maximum value when the concentration of oxidizable gases rises.

1. OBJECTIVE

Invisible and often ignored, indoor air is dangerous to human health and damaging to productivity and cognition. Depending on the environment, indoor air can be up to 100 times more polluted than outdoor air – teeming with volatile organic compounds and microorganisms that contain or attach to viruses, bacteria, fungal spores, and pollen.

Humans spend between 80–95% of their lives inside buildings

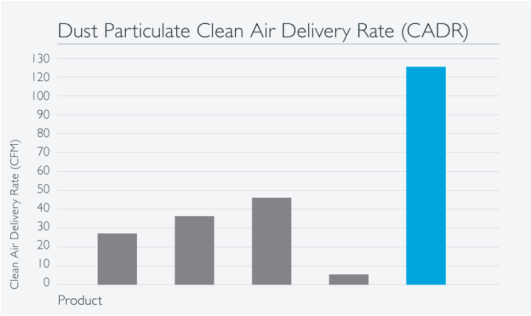
inhaling more than 350 cubic feet of polluted indoor air every day. Exposure to these pollutants can lead to infectious disease, asthma, allergies, headaches and irritation [3].

REDUCTION OF THE AIR POLLUTANTS

We are trying to construct a device which is capable of reducing the air pollutants by oxidizing them using the unstable oxygen ions.

The problem in today's context is the deteriorating air quality which needs to be given attention at the earliest as it is causing harm to the environment as well as the living organisms.

What We Are Trying To Achieve



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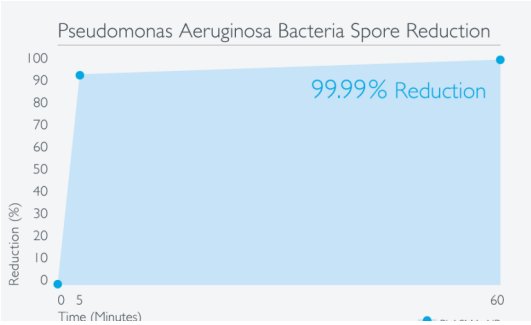
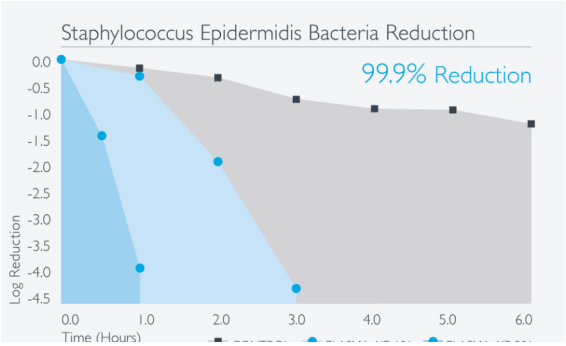
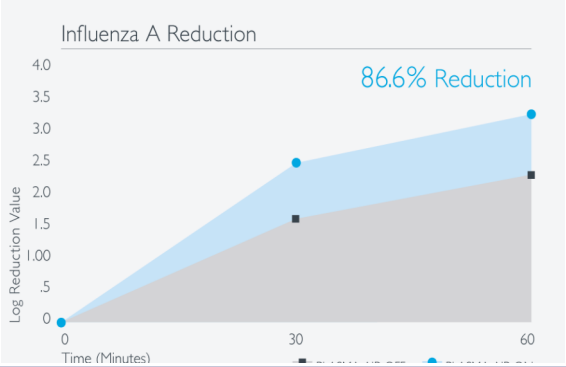


This much reduction of this disease causing Bacteria



Reduction of these Breathing Problem Bacteria



Reduction of this Virus

Understanding The Problem

Healthy breathing air is described as air without substantial parts of noxious gases or noticeable, in many cases unpleasant odorous substances. Healthy inhaled air is to contain a number as low as possible of bacteria, viruses and other germs, which is very important.

Odorous materials drastically reduce the comfort, the condition and the capability to concentrate and thus the life quality of the exposed human being. It can be easily realized that for example the stink of kerosene and other engine exhaust gases renders impossible the tasting of delicious meals or at least substantially reduces the taste in restaurants, for example at airports or close to the road, because the gustatory nerves and the olfactory nerves are blocked to such an extent by the base load of stink that they are unable to perceive any shades. It is also known that the continuous presence in highly charged air renders tired and fatigued. Human beings, which have to work in bad air make after some time significantly more errors as compared to human beings, which work in problem-free air. It is also known that electrostatic charges are generated to an increased extent, if the air present in the room is poor in ions or, respectively, where positively charged ions or negatively charged ions dominate. Such air, commonly designated as "electrically charged" exerts uncontested influence on the vegetative nervous system. Furthermore, damages of electronic apparatus and data carriers can occur based on static charges. In addition, the level of sick people in enterprises, which are not able to offer good breathing air to their co-workers based on bad functioning air conditioning plants, is substantially higher as the level of sick people of enterprises, where attention is paid to perfect air [4].

A fixedly set ionization apparatus cannot lead to a satisfactory solution in these cases, because either the ionization power is insufficient and thereby the smells and germs are not effectively combated or however in case of ionization powers set to a high level contaminant load appear interfering in case of a low air contamination by smellable and possibly dangerous ozone concentrations.

1. TECHNICAL PURPOSE

It is an object of the present invention to create an apparatus for the physical processing of air, in particular of breathing air, which corresponding to the load of the air with smelling materials or exhaust gases is capable to perform an ionization of the air depending on the concentration of the smelling materials or exhaust gases. One of the essential technical problems comprises, to adapt the ionization power of the recited ionization apparatus such that on the one hand an effective combating of smells and germs is furnished and on the other hand however, no excess ozone concentration should be generated thereby.

Literature Review

1) In particular when knowing the fact that annually more than 40,000 people become sick with fatal results in Germany by airborne infections, for example in hospitals, in restaurants, and in means of mass transport, as was determined by a scientific study of the Robert-Koch-institute (Bundesgesundheitsblatt Issue 7/96, Page 246).
2) The cost of these nosocominal infections are estimated by the authors to be more than 3 billion German Marks. odorous materials drastically reduces the comfort, the condition and the capability to concentrate and thus the life quality of the exposed human being.
3) It can be easily realized that for example the stink of kerosene and other engine exhaust gases renders impossible the tasting of delicious meals or at least substantially reduces the taste in restaurants, for example

at airports or close to the road, because the gustatory nerves and the olfactory nerves are blocked to such an extent by the base load of stink that they are unable to perceive any shades.

4) It is also known that the continuous presence in highly charged air renders tired and fatigued. Human beings, which have to work in bad air make after some time significantly more errors as compared to human beings, which work in problem-free air. It is also known that electrostatic charges are generated to an increased extent, if the air present in the room is poor in ions or, respectively, where positively charged ions or negatively charged ions dominate. Such air, commonly designated as "electrically charged" exerts uncontested influence on the vegetative nervous system.
5) Furthermore, damages of electronic apparatus and data carriers can occur based on static charges. In addition, the level of sick people in enterprises, which are not able to offer good breathing air to their co-workers based on bad functioning air conditioning plants, is substantially higher as the level of sick people of enterprises, where attention is paid to perfect air.
6) The passengers in a motor vehicle are annoyed and at times damaged in their health based on the exhaust gases of other motor vehicles. The journal "Scientist", issue September 1996, cites in this context a Danish investigation, according to which the risk to become sick with lung cancer is for bus drivers 50 percent higher than in a comparison group of persons. Sensible known steps for reducing the emissions of passengers of motor vehicles are for example sensor controlled ventilation systems, wherein the inflow of outer air is stopped always then and switched to circulating operation, when the vehicle reaches a zone of increased contaminant concentration.
7) Furthermore active carbon filters are known and are employed, which have a limited retaining capacity relative to some gases and vapours and of course dust and pollen. Larger concentrations however cannot be retained by the filters. In addition, there exist filter passing gases such as for example the poisonous carbon monoxide and finest dust and soot, such as are given off for example by diesel motors, which are considered to be cancer promoting.
8) In general the known ionization apparatuses are furnished with a hand operated switch, with the aid of which taps at transformers can be switched with the effect, that different voltages are fed to the ionization tube in order to be able to adjust in this fashion the power of ionization.

2. WORKING PRINCIPLE

The solution of this object comprises an apparatus of the initially recited kind, wherein the air ionizer is coupled to a sensor, which sensor determines the contents of the air in oxidizable gases (air quality sensor) and based on the determined contents of such oxidizable gases.

The fed in electrical energy is changeable by way of an electric control device such that in case of low concentrations of oxidizable gases only a low ionization power is furnished, which can be increased controlled by a sensor and automatically with increasing concentration of oxidizable gases to a maximum value.

An ion counter disposed after the air ionizer detects the number of the ions present in the air and acts through an electric circuit such onto the device or, respectively, the air ionizer, that in case of a low ion number the ionization power of the air ionizer is increased sensor controlled and automatic, and preferably continuously, and in case of a high ion number the ionization power of the air ionizer is decreased sensor controlled and automatic, and preferably continuously. Thus the control of the ionization power of the air ionizer is connected according to the gas load of the air, in particular of the breathing air.

An electrical control unit connected to the electrical supply, to the air ionizer, and to the sensor, which electronic control unit changes the electrical energy fed in to the air ionizer based on the content of oxidizable gases in the air as determined by the sensor such that in case of a low concentrations of oxidizable gases present in the air then only a small ionization power is effected, wherein the ionization power of the air ionizer increases to a maximum value as automatically controlled by the sensor and the control unit when an increase in concentration of oxidizable gases is sensed by the sensor.

3. CONCLUSION

As a result of making this device, air can be made sufficiently pure so that we can inhale it without causing any harm to our body.

Initially, we are trying to make this device for a small enclosed area as to be installed in car. If it is successfully been built, then this device can also be made for larger areas like:

1) Homes
2) Offices
3) Community Centers
4) Malls
5) Clubs
Etc...

There is only one need for this device to work i.e.

UNINTERRUPTED POWER SUPPLY.

This device can cause precautions from many of the diseases caused by the Bad Air Quality residing in the atmosphere.

The main motive to make this device is to ensure that the air pollution is minimized, if not completely rectified, so as to make breathing easy and people don't need to wear masks even when they are in a secluded area.

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