

alp[®] INDUSTRIAL
OZONE UNITS
“for the health of your air”



alp[®] ACX

alperen[®]
ENGINEERING

ALP **ACX** SERIES
PRODUCT CATALOGUE

alperen.com.tr

alp[®] ozone units



Active ozone is not a disinfectant product but a **sterilization** one. **It doesn't** contain any **chemicals** or **toxic matter**.

In an area where **ozone** is applied, all unreachable surfaces touching air are purified from **virus, bacteria** and similar **microorganisms including** door knobs, window handles, closet handles, chair and sofa surfaces.

“Ozone gas has been proven to kill the SARS coronavirus and since the structure of the new 2019-nCoV coronavirus is almost identical to that of the SARS coronavirus, it is relatively safe to say that it will also work on the new coronavirus.”

Thailand Medical Academy

How to use ozone?

There can be two different answers to that important question.

1. Individual user can use the mobile ozone units.
2. Industrial users can apply active ozone units to their central ventilation system.

What is the difference between disinfection and sterilization?

Disinfection, is the act of reducing microorganisms in inorganic places up to the level that they can't spread disease. Chemical methods are mostly used for disinfection. Chemicals such as ethyl alcohol, isopropyl alcohol, formaldehyde, glutaraldehyde, sodium hypochlorite - bleach, povidone iodide, hydrogen peroxide, cresol, lysol are used as disinfectant for this process. The success of disinfection, meaning removal of pathogen microorganisms depends on a multifactorial discipline such as the hygiene of the area, contagion type of microbial agents, density of microorganisms, temperature of the area,, pH level, concentration of disinfectants and the duration of disinfection process.

Sterilization is the act of killing microorganisms and spores in inorganic areas. None sort of chemical is used for the sterilization process with ozone. There is no residue left after the sterilization.

Briefly: Pathogenic and detrimental microorganisms to be disinfected are targeted with disinfection method. On the other hand, the aim of sterilization method is to kill all microorganisms in the matter to be disinfected that are pathogenic or not. Disinfectant are not effective on the bacteria spore in the short run. In the sterilization process, all microorganisms that are both pathogenic and non-pathogenic are destroyed. To sum up all with a sentence: disinfectants inactivates the pathogenic microorganisms while sterilization kills them.

alp[®] ACX Series Industrial Active Ozone Systems

alp[®] INDUSTRIAL
OZON UNITS

“for the health of your air”



Alp industrial active ozone units offer perfect solutions with different application options according to the density and the formation of the pollution in the area.

Thanks to its constantly improving technology, Alp industrial active ozone units guarantee you clean air.

Comparing to disinfection with chemicals, they have significant advantages in terms of care, workmanship, consumables, energy and operating costs. Filter components can be used for decades without any problem by washing.

USING ACX SERIES OZONE FOR AIR PURIFYING:

Air filtrations that are recently used such as G2, G4, F7, F9, H13, H14, are purifying the dust and particles in the air according to their classes quite well. However, bacteria and similar microorganisms that are collected on the surface can be destroyed safely only by ozone.

When active ozone is used in central air-conditioning systems, unwanted odors in the air don't occur and the risk of disease contagion is removed. Ozone fulfils the sterilization by deactivating bacteria and germs in the air. After the ozonizing process is over and the room is ventilated, the ozone molecules will turn into oxygen. There will be a freshness and vitality in the area. Thanks to this future, ozone doesn't leave any residue and doesn't carry the risk of forming a fallout.

As a result of the research on ozonizing, thanks to the fact that ozone is a powerful oxidant, it has been proven that it can be used in the water and the air as

- a germicidal
- an anti-odor
- and a remover of numerous organic molecules that pollutes the environment.

Ozone has destructive effect on all known virus, bacteria, fungus, yeast and mold types. Thus, you can apply active ozone to markets, shopping malls, plazas, hotels, hospitals, factories, educational institutions, production facilities and ventilation units of all indoor areas or air conditioning plants and get rid of bacteria and virus.

The installation of ACX series industrial active ozone units which is designed for ventilation and air conditioning plants is very simple. There is no need for any amendments for the ventilation unit or air conditioning plant. Active ozone unit is connected to fresh air lift unit and used.

Alp industrial active ozone units contain absolutely zero waste. They don't have consumables cost you can use them safely for years by washing them as they get dirty.

ACX series industrial active ozone units are used in all indoor areas not only for the destruction of virus and bacteria but also for the removal of the unwanted odors that cause pollution.

All equipment of ACX series industrial active ozone units are designed in our factory located in Istanbul by the devoted work of our expert

engineers and produced with 100% domestic capital by our production crew with CNC machines of our factory.

When you give us a call on ozone and its application, in order to offer solution to your problem and get the required result, we send the industrial active ozone unit quotation that is prepared according to your needs, to you as soon as possible. After your verification we start the production of the ozonizing system designed according to your needs in our factory located in Istanbul and offer it at your service.

Alp industrial active ozone units offer perfect solutions with different application options according to the density and the formation of the pollution in the area.

Thanks to its constantly improving technology, Alp industrial active ozone units guarantee you clean air.

Comparing to disinfection with chemicals, they have significant advantages in terms of care, workmanship, consumables, energy and operating costs. Filter components can be used for decades without any problem by washing.



alp[®] ACX Series Industrial Active Ozone Systems

alp[®] INDUSTRIAL
OZON UNITS

“for the health of your air”

User Friendly Installment and Working

Alp mobile ozone units are designed and produced for simple use. They are easy to run and use. They are delivered to you as ready to use.

You can run your device right away after you plug it in 220 volt electricity socket. In order to run, all you have to do is to switch the ON button. The device will shut itself down automatically when the process is complete.

Simple Periodical Care

Alp mobile ozone units have very simple periodical care. You can easily manage all cleaning and maintenance process. All you have to do is to briefly vacuum the dust filter in air suction and air vents in the front and back of the device when the dust accumulation occurs.

Low Energy Cost

Alp mobile ozone units have high voltage units developed with special design. The most significant feature of high voltage unit is to consume very low energy despite being highly efficient.

Alp ozone units have special design developed by the R&D department of Alperen Engineering. Versatile maximum security has been provided during the manufacturing of the products.

Long Life Span

Our mobile ozone units are produced of highly resilient stainless material.

Junctures are joint with stainless nut and bolt system. Their structure do not get warped, pierced, broken, torn or fall apart. You can use our products for years without any trouble as long as they are not exposed to physical effect.

Product

Alp mobile ozone units are produced with 100 % domestic capital in our factory located in Istanbul by the technical crew of Alperen Engineering.

Delivered To You As Ready To Use

We deliver our mobile units as ready to use, in package with the specially designed cabin made of aluminum or stainless supplement. When you receive your device, you can run it right away by plug it in a 220 volt socket.

Before using the device, make sure you read the terms of use which is written on it.

Using Alp ACX Series Ozone In Hotels, Houses, Work Places

The frequency of use of the hotel room and other common places, population, external factors and microbiologic charges in air are threatening human health. These charges become chronic through air conditioners and similar devices. This situation causes hygiene problems along with health risk for the next customers.

Smoking, body odors, deodorant and perfumes left by previous guests in hotel rooms disrupt the air quality of the room and cause unhealthy and unpleasant results for the next customers.

alperen[®]
ENGINEERING

TÜRK MALL

TSE-HYB

CE

ISO
9001
CERTIFIED
COMPANY

T.C. BİLİM, SANAYİ VE
TEKNOLOJİ BAKANLIĞI

TURK
PATENT

İSTANBUL
SANAYİ ODASI

alp ACX Series Industrial Active Ozone Systems

It is possible to remove these problems occurring in hotel rooms with portable or stable Alp ozone units. Ozone units enables a clearer and more habitable places by removing virus, bacteria and similar microorganisms.

Using Alp ACX Series Ozone In Cafes And Restaurants



Cafes and restaurants, which are huge part of highly populated cities, host thousands of people in a day. Even though the odor problem has declined in comparison to the past in our country, ozone is still a must.

Using ozone gas is beneficial on so many ways such the disinfection of the common areas in restaurants and cafes, kitchens, tools, equipment, fruits and vegetables, cold air rooms, toilets and bathrooms.

Since it is a way more trustable sterilant in comparison to traditional chemical methods, ozone gas does not harm human beings or equipment. It doesn't leave any chemical or physical residue.

Alp ozone units provides an economic solution by reducing the chemical disinfection cost for cafés and restaurants.

Using Alp ACX Series Ozone In Educational Institutions

It is vital that all educational places, particularly pre-school education which is given at early ages so that our beloved children are raised as educated, healthy, wise and skillful individuals are sterilized and our children are in a healthy environment.

Due to the extreme use and dense population, microorganisms and bad odor are unrestrainable main problems of educational institutions along with common living areas.

In order to prevent many airborne diseases such as cold, tuberculosis, tonsillitis, chicken pox, measles, mumps, chin cough, diphtheria and meningitis, you can use Alp ozone units. Moreover, you can have an extremely effective sterilization purified from microorganisms in ozonized places.

In educational institutions, classes, changing rooms, food courts, shoe racks, hallways, sinks and toilets are the main places requiring ozone.



Using Alp ACX Series Ozone In Restrooms

Odor and hygiene problems are frequently occurring issues in common places, particularly restrooms.

Various chemicals and smell conditioners are used for disinfections. However these type of chemical supplements give only temporary results and cause high prices in terms of high consumable costs.

Alp ozone units can be used in toilets as well since it doesn't leave any residue, doesn't require any charge, doesn't need any consumables and has higher efficiency than other chemicals.

Alp ozone units can be used as stable or portable in toilets or sinks without any modification. They provide sterilization by removing all bacteria and virus causing odor in the area.

Using Alp ACX Series Ozone In Hospitals, Clinics And Pharmacies

One of the most important rules in hospitals and clinics is sterilization. The sterilization of the area and the equipment has vital significance.

In hospitals, clinic and pharmacies, the disinfection of the whole area is provided with Alp ozone units which can be used as either portable or stable. Unlike other disinfection methods that are used, ozone leaves none residue.

It has way more efficiency than chemical disinfectants. Since ozone moves with air, it reaches all spots that are hard to get.



Sterilization with ozone gas lowers the risk of disease contagion down to minimum. Alp ozone units assists to create a healthier environment since it conducts the sterilization process without any chemical waste.

Using Alp ACX Series Ozone In Gym

Due to the body odors such as smell of sweat and feet, there is a disturbance in many gym and changing rooms. When smell conditioners are used in order to remove this negative situation, even worse odors may occur.

Moreover, smell conditioners have negative effect on people having illnesses such as asthma, respiratory irritation and pharyngitis.

It is possible have a health air quality by removing bacteria, virus and similar microorganisms along with preventing odor problem with Alp ozone units.

Using Alp ACX Series Ozone In Food Industry

Ozone is a gas with a very strong oxidation force and the most powerful sterilant known. Due to its high oxidation force, ozone plays an active role in the destruction of bacteria.

In places where food is made, keeping hygiene and sanitation with chemicals causes residue on the products which lowers the quality of it and shortens its shelf life.

The fact that ozone gas leaves no residue or remains enables it to have more advantage than the other disinfectants, especially in the food industry. Ozonization of fruits and vegetables in the storage, delivery and supply fields prevents the contagion of microorganisms to the other fruits and vegetables and other cross contaminations.

Thus the fruits and vegetables remain fresh and have longer lifespan. In places where food is offered for public or group of people, the area of production, service and any surfaces the food touches have to have hygiene and sanitation essentials.

Forks, knives, spoons and similar equipment used according to HACCP system, floors, walls, ceilings, tables, chairs, shelves, in sum, each spot that is in touch with air can be disinfected with ozone.

Ozonized water can be preferred for washing since it is effective on removing agricultural drugs on fruits and vegetables and detracts mangan, chlorine, nitrite and similar matters by oxidizing without leaving any residue.

Along with a healthy production and longer shelf life bacteria, mold and fungus formation is prevented for the fruits and vegetables that are ozonized with Alp ozone units.



Considering positive results during production and storage, using Alp ozone units has significant benefits in food industry as well.

What is Ozone? How is it formed?

Cas number of Ozone is 10028-15-6. Ozone is a powerful oxidant that can go into many chemical reactions with organic and inorganic compounds. Oxidation potential of ozone is higher than many known chemicals. While the oxidation potential of commonly used hydrogen peroxide is 1,77 eV, ozone 2,07 eV comes right after fluorine 3,06 eV and hydroxyl radicals 2,80 eV. Having a very high oxidation potential, ozone is a very efficient sterilant as well. Thus,

it has a significant place in various industries.

Ozone turns into oxygen, its raw material, without any residue.

Ozone is a nonlinear triatomic molecule. It has equal 2 oxygen bonds (1,278 °A) and 1160 49 average bond angle.

Ozone is an extremely reactive gas which can react in a corruptive and toxic way even in low concentrations. When ozone is inhaled for a long time, symptoms such as the irritation of mucous membrane and head ache occur.

Though there isn't enough information on the problems that exposing to ozone in longer terms might cause, decline in lung capacity and lung diseases have been reported after experiments on animals.

Occupational Safety and Health Administration requires extra precautions when the ozone concentration exceeds 0,1 ppm. 0,1 ppm limit equals to 8 hours of work for 5 days. Netherlands accepts the limit as 0,06 ppm. Acceptable limit which it doesn't exceed 15 minutes is 0,3 ppm. OSHA accepts the limit for situations up to 2 hours as 0,2 ppm. The distinction threshold of ozone odor is approximately 0,002 pm.



The formation of ozone derives from the formation of atomic oxygen radicals.

These radicals form ozone by going into a reaction with molecular oxygen. Thus, all processes that turn

molecular oxygen into oxygen radical

are potentially ozone production reactions. The

energies that make it possible

are electron or photon quantum energies. This situation may occur in natural environment and

the electrons can be provided from high voltage Corona Discharge system, chemo nuclear sources

and electronic processes. Appropriate photon quantum energy can be provided from γ -beams and ultraviolet beam that are below 200 nm.

Oxygen molecule O_2 in the atmosphere turns into free oxygen atom O by splitting with the effect of the high energy radiation that comes from the sun. Later, the free oxygen atoms O combines with oxygen molecule O_2 with the effect of ultraviolet radiation and form ozone molecule O_3 .

Ozone can also be formed out of electrical discharge which consists during lightning. After each lightning and downpour, noticeable fresh and clean odor occurs. This odor belongs to the ozone formed in the air. First out of two methods for industrial ozone production is using 185 nm ultraviolet, the second is dielectric method known as Corona Discharge which has different applications on its own.

In ozone production method with using ultraviolet, a lamp producing 185 nm UV light is used. As the air pass around the UV lamp, oxygen molecules are split into oxygen atoms with the effect of UV. Occurring oxygen atoms combine with the oxygen molecules since they are not stable and form ozone.

Corona Discharge method is an electric discharge that is characterized with corona. It occurs with the ionization of the fluid around the transmission when the electricity field is strong enough. The circumstances should not allow formation of short circuit or arc. The dielectric is the part which makes that happen. Electricity charge forms corona by spreading out of the dielectric surface. A plasma atmosphere occurs as a result of ionization and the ions move the charge to fields which have lower potentials. During the formation of corona, light, heat and sound are composed.

Electrode shape, gas quality and discharge gap are effective parameters. Heat occurs during ozone production with CD method and the heat is required to be kept away from the generator. In order to keep the heat away, there are applications that the discharge tube is cooled with either water or air. Comparing the two method, it can be said that CD method has more advantages due to having long lifespan, producing ozone with higher concentration in smaller size and considering the operating costs. In CD units, it is very important that feeding air is not moist.

Ozone can be described as a chemical compound that is formed by the combining of 3 oxygen atoms. It has an impressive odor and no color. In the atmosphere, oxygen atom is present as oxygen and ozone. Stated as O_2 , two oxygen molecules split when exposed to high tension, combine with oxygen molecule and form ozone O_3 . Ozone is a labile gas. Ozone is formed out of high electricity power occurred as a result of lightings in rainy weather and makes itself known by spreading a fresh odor. Ozone gas filters ultraviolet beams coming from the sun by encircling the outer part of the atmosphere and send them to earth. Ozone layer is very crucial for life on earth. Matters consisting chlorofluorocarbon harm ozone layer by causing thinning or piercing. These matters are chlorine derivatives, polystyrene foams, spray and aureoles.

Ozone is impossible to be stored since it re-dissolves in room temperature and turns into oxygen. It needs to be produced in where and when it is used. Ozone has very high oxidation power due to being a labile molecule.



Ozone a.k.a.	Triatomic oxugen or active oxugen
Weight of ozone layer	3.29x10 ⁹ ton
Molecule formula	O ₃
Compounds	Oxygen Atom
Molecule weight	48,998 gr
water solubility	1,09 g/L – 0 ^o C
Boiling temperature	-192,5 ^o C
Critical temperature value	-111,9 ^o C
Critical pressure value	-12,1 ^o C
Freezing point	0,57 g/L – 20 ^o C
Heat capacity	54,6 atm – gas
Heat of evaporation	33,3 j/g.mol0C, -1730 C
Oxidation potential	15,19kj/mol,-1120 C / 2,07 V (acidic), -1,24V
Absorption wave length	2537Angstrom - basic
Color -146 ^o C	Light blue liquiid
Color - 220 ^o C	Dark blue crystallised
Color + ^o C	Colorless
Odr	Sharp fresh
Density	2,144
Flammability	Noncombustible
Maximum Field Concentration	0,240 mg/m ³ or 0,05 ppm

Perks of Ozone

- Ozone is the most powerful known oxidant
- It doesn't harm environment
- Doesn't contain any chemicals
- Doesn't leave any residue or remainder after use
- It is anti-bacterial
- It shows effect right away
- It is 3.125 times more effective then chlorine
- It prevents the formation of bacteria, mold, spore, germ and fungus and destroys them
- Prevents the formation of many airborne bacteria
- Destroys the residue left by chemical substances
- Oxidizes odor, bacteria, mold, spore, germ and fungus immediately
- Prevents cattle and other harmful beings from reproducing
- It is safe to use on food
- It cannot be stored and produced where it is used
- It should definitely be used according to the instructions of an expert

Which types of odors does Ozone destroy?

It destroys all sorts of odors such as odor of hospital, smoke, meat, chicken, fish, food, oil, burnt food, water carbon monoxide, onion, garlic, carpet, bathroom, mold, animal, paint, alcohol, coal, gas, medicine, cesspit, garbage, carrion, treatment facility, soot, grill, and fried food.

How does Ozone help disinfection?

Ozone disinfection destroys the membrane of odor molecules and microorganisms by shattering them. Since it destroys the microorganisms it is classified as not disinfectant but sterilitant.

Ozone has 3.125 times more powerful disinfection effect than chlorine under the same conditions.

Ozone gas turns into oxygen, its raw material, without leaving any residue in 30 minutes in open environments and 8-12 hours in closed packages. In order to remove the effect of ozone rapidly, all you have to do is to ventilate the room.

World Health Organization offers ozone sterilization in its report which was published in 1979.

How much ozone should you use?

The concentration of ozone in air and water is called “ppm” which stands for parts per million. 1 ppm ozone in air equals approximately to 2.1 mgr/m³ ozone.

Ozone concentration in air

0,003-0,015 ppm	Odor sensing level
0,003-0,005 ppm	Sea level in a fresh air
0,005-0,010 ppm	Forest air
0,010 ppm	The effects start, the odor is noticeable
0,020 ppm	It destroys the 90% of the bacteria in air.
0,020 ppm-0,050	It occurs in the air after lightnings.
0,050 ppm	FDA constant inhaling safety level
0,100 ppm	FDA time restriction 8 hours/day
0,120 ppm	EPA city air threshold
1,00 – 1,50 ppm	OHSA shocking value
1,000-2,0 ppm	It causes nasal burning, lacrimation, cough, dry throat and local irritation.
5,000-10 ppm	Pulsation, body ache, numbness may be observed. Pulmonary edema will occur if the inhaling continues.
15,0-20,0 ppm	Small animals will die in two hours.
50 ppm	Human life will be endangered in an hour.
0,064 ppm	Good
0,065-0,084 ppm	Medium
0,085-0,104 ppm	Unhealthy for tolerant people.
0,105-0,124 ppm	Unhealthy.
0,125-0,404 ppm	Very unhealthy.

Is Ozone Gas Unhealthy for Humans?

Ozone gas is acquired from air or pure oxygen. Being labile, ozone turns into its raw material which oxygen after accomplishing its mission. It is an organic disinfectant that leaves none residue and it is not unhealthy for humans unless it is inhaled constantly.

There are some restrictions which requires attention on the use of ozone. It is recommended by World Health Organization that the ozone amount in the environment should not exceed 0.05 ppm. Being exposed to ozone higher that amount may cause irritation in the airway. If it is given with limited time, 0,05 ppm doesn't have harm.

Institutions in USA such as EPA, OSHA, USDA and ACGIH has figured that being exposed to 0,10 ppm ozone up to 8 hours doesn't have a negative effect.

Effects of Ozone On Virus

Ozone gas is stronger than other disinfection methods. Ozone destroys the membrane of organisms and has a destructive effect on all known virus, bacteria, fungus, yeast and mold types.

Viruses are free, small pieces that consist of crystals and macromolecules. Unlike bacteria, they can only reproduce in the host cell. Ozone harms the viral RNA by penetrating nucleic acid core through proteic layer and destroying the virus. Ozone that is used in higher concentrations, destroys the capsid or outer protein shell with oxidation.

Effects of Ozone On Bacteria

Bacteria is a microscopically small, unicellular

being. Bacteria is covered with membrane which is relatively solid. Their lives are controlled by a complex enzymatic system. Ozone interferes the metabolism of bacteria cells by inhibiting and blocking the enzymatic system from working. Sufficient amount of ozone gets broken in the membrane and that leads the destruction of the bacteria.

Effects of Ozone On Fungus

Candida, Aspergillus, Histoplasma, Actinomycosis and Cryptococcus are among the fungus families that are inhibited and destroyed when exposed to ozone. The walls of fungus are multilayered and consist of approximately 80 % carbohydrate, 10 % protein and glycoproteins. Many disulfide bonds enable ozone for oxidative inactivation. However, in any case, ozone has the capacity to taint the cellular organelles by spreading into the organism cytoplasm through fungus membrane.

Effects of Ozone on Corona Virus

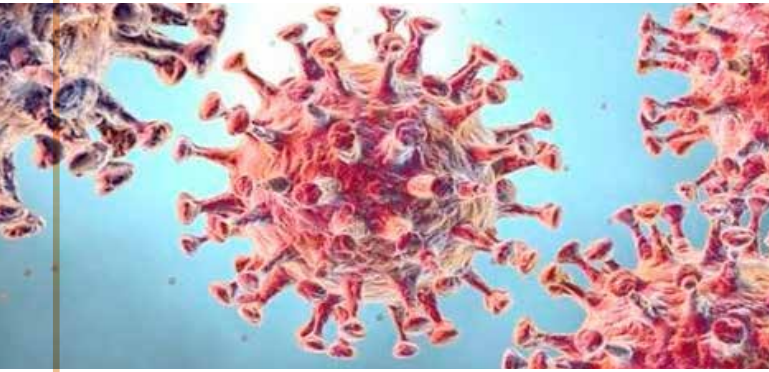
Ozone is effective on destructing many viruses and microorganisms such as sars, legionella, mers and h1n1 Influenza.

Being an extremely effective sterilization product, ozone gas is used in living spaces since it destroys the bacteria and virus. Even though there hasn't been a study on the effect of ozone on COVID-19, B. Hudson, Manju Sharma, and Selvarani Vimalanathan conducted a disinfection process with ozone gas in an area where is contaminated

with Murine Coronavirus form the Coronavirus group except for Influenza virus, Vacciniavirus and similar, in their research called “Development of a Practical Method for Using Ozone Gas as a Virus Decontaminating Agent” in 2019 and no virus including Murine Coronavirus could resist against ozone gas.

We would like to share the related parts from an article called “Health on Coronavirus and its Relation with HVAC” prepared by Mr. Serdar Ulu and Mr. Aytekin Çakıron on the effect of ozone on Coronavirus.

CoV is a virus family without an oxidative protection that would choose animals as hosts in the earlier phases but in recent years, infects humans with the mutations of first MERS, than SARs, and now Covid-19. nCov is a strain that hasn't been identified on humans before.



Coronaviruses are zoonotic, meaning they can be infected among animals and humans. Elaborated researches has detected that SARS-CoV infects from bearcats to humans and MERS-CoV infects from dromedary camels to humans. Some of the known coronavirus circuits among animals that doesn't infect humans yet.

Among the infection symptoms are respiratory symptoms, fever, cough, shortness of breath and air hunger. In more serious cases, the infection can cause pneumonia, serious acute respiratory syndrome, renal failure, cardiovascular disease and even death in result.

Especially for kids, these risks may be eluded lightly without symptoms since the related receptors that enable the virus hold onto the lungs are not yet fully developed.

Washing hands regularly, covering one's mouth and nose during cough and sneeze, cooking meat and eggs well are among the recommendations for preventing the infection from spreading out. One should stay away from anyone who shows signs of respiratory diseases such as coughing or sneezing.

Technically speaking, the solutions to that two problems seem easy by using engineering. An infected person can spread the contagious particles out through a sneeze. What matters is that the particles hang in air in a distance that equals to a human height. If an effective air filtration system steps in the same area, the risk can disappear. (HEPA filtered)

In addition to the filtration system, Ozone generator / UV equipment which is to be integrated into the HVAC system can provide the safety of the area for the potentially infected area or the disinfection of the infected area.

These applications may be conducted by indoor mobile units as well. Microorganisms of Coronavirus family can resist ozone for 0,3 seconds (Thailandmedical Academy).

0,03 – 0,05 ppm concentration gives rapid results in constant applications in areas. For shocking applications, the value can be increased up to 1-1,5 ppm (OHSa).

Ozone provides cleaning for general places. However, since the Covid 19 virus is quite new, there hasn't been clinical results yet.

In order to prevent contact, it is important to rub the inner and outer parts of the hands with a soap or a detergent for 20 minutes following the basic hygiene rules and dry them with a paper towel without touching anywhere.

Some Of The Other Industries Where Ozone Is Used

- Instead of prechlorination in drinking water treatment plants,
- Drinking water bottling facilities, in filling water or rinsing water,
- Waste water, for the removal of COD oxidation organic matter,
- Ozonizing in iron – mangan oxidation and filtration for keeping the water away,
- Oxidation of nitrite to nitrate,
- Oxidation of toxic substances such as cyanide, phenol, azotoxides, pesticides, chlorinated hydrocarbons,
- Removal of color in waste water,
- Optimization of biological treatability of waste water and increase of the BOD / COD rate,
- Oxidation of organics in air that smell,
- Dosing ozone instead of biocide in cooling towers,
- Cleaning production lines in industries such as drink and food produced with CIP chemicals,
- Circulation water of swimming pools,
- Fish hatcheries,
- Chicken farms,
- Animal shelters,
- Chemical industries for chemical synthesis,
- Paper industry for bleach with chlorine – chlorine dioxide,
- Medicine for treatment and protection,
- Cold rooms for the extension of fruit and vegetable lifespan,
- Spice processing plants,

- Food factories,
- Removal of agricultural drugs,
- Destruction of mold, bacteria and similar microorganisms,
- Removal of burnt odor after fire and
- All the other unwelcome odors are removed with ozone.

Samples From Industrial Ozone Use

With its ventilation system applies in all buildings, Dubai International Airport is shown as the largest HVAC system with ozone. There are ozone sensors and controllers and VOC sensor and controllers over 300. There are many small ozone generators in HVAC channels applies with ozone and VOC sensors. Ozonized ventilation system is used in all indoor areas, including cargo terminals.

The following evidence has been found after the one-year work of the system

- The passengers and the staff have a pleasant air quality without the disturbing odors which are common in crowded airports.
- Ozone system provided large amounts of financial saving comparing to carbon filters. The problems such as high cost of carbon filters and how much space they take up are gone.
- High energy saving has been provided on the air quality increase.
- Maintenance cost has been decreased since the HVAC system inhibits mold formation.

You can clean your living spaces of virus, bacteria and unwanted odors by installing ACX series mobil ozone units which are designed and produced by Alperen Engineering into your air-conditioning plants or ventilation systems.

alp[®] ZFX SERIES mobil ozone units



You can use Alp ZFX series mobile ozone units in all indoor areas such as pharmacies, offices, houses, work places, factories and means of transport.

It is very important to follow the terms of use while using the mobile ozone units.

USE OF ALP ZFX SERIES MOBILE OZONE UNITS:

- ▶ Alp ZFX series mobile ozone devices are designed to sterilize your indoor areas.
- ▶ They are portable and weigh 3.600 gram.
- ▶ They run silently.
- ▶ Before use;
 - Evacuate the room.
 - Run the ozone device.
 - Ventilate the room after the ozonization.
- ▶ In order to run Alp ZFX series mobile ozone devices all you have to do is to turn on on-off switch. It has quite simple use.
- ▶ It doesn't contain any chemicals or drugs.
- ▶ The air in the area is used to produce ozone.
- ▶ Ozone is produced with the method of corona discharge.
- ▶ It doesn't have any sort of consumables cost.
- ▶ It doesn't leave residue after ozonization.
- ▶ It works with 220 volt energy.
- ▶ Ozone generator must be replaced with a new one after 9.000 hours of working.
- ▶ It has very low energy consumption. Depending on the model, it consumes either 100 or 200 watt energy.
- ▶ You can use the polyurethane filter in air suction again and again by cleaning after it gets dirty.

“for the health of your air”