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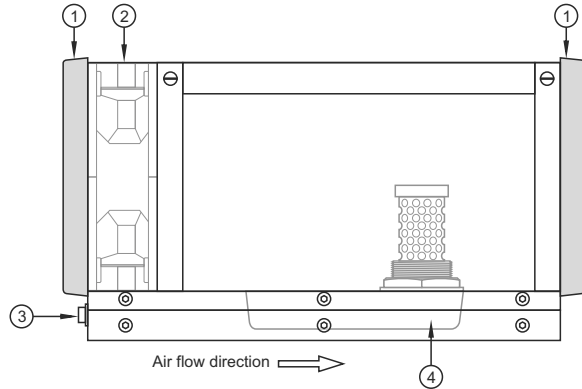
Clean Air Mini 120
Device for Air Purification
with
COLD PLASMA GENERATOR
HPG 1



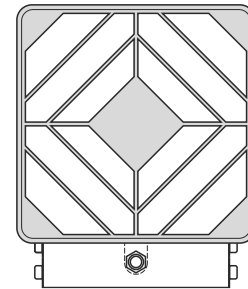
The
Cold Plasma
Generator
eliminated:
Bacteria
Viruses
Mould
Odours

TATA SHEET

Front view



Side view



- ① Air filter with protective grid
- ② Axial-fan
- ③ Extra-low voltage connection jack
- ④ Cold Plasma Generator HPG1

Voltage:	24 V
Power fan:	2,16 W
Power Generator:	max. 5 W
Power total:	7 W
Airflow max.:	111 m ³ /h
Dimension BxHxT [mm]:	245x115x95
Weight:	1 kg

Wall plug transformer

Input voltage:	230V ~/ 50-60 Hz / 130 mA
Output voltage:	24V= / 500 mA

Filter

Intake air-filter:	F120 air filter element IP30
Outgoing air-filter:	F92 air filter element IP30



COLD PLASMA GENERATOR HPG 1-24

The generator is very compact size and has a very low power consumption.
This generator was studied for applications in residential homes and condominiums.

**Each generator can handle from 20* to 100* m³/h of air in Forced Ventilation System.
Each generator can cover from 10* to 50* m² of surface in Ducted Air
Conditioning system & similar.**

***NOTE : For air flow less of 100 m³/h it is advisable to control the generator with a cyclic timer to reduce proportionally the running time.**

The main effect of the high-voltage electric field and high frequency is the creation of a plasma generated in ambient temperature and pressure and therefore commonly referred as **<COLD PLASMA>**.

Cold plasma gives rise to the creation of polarized particles and reactive chemicals, among which H⁺ and OH⁻ which are the most abundant and reactive.

This cold plasma is generated in the air and has at least four effects: Polarization of particles, catalysis of reactions not commonly obtainable at ambient conditions; Sterilization of bacteria & viruses & moulds; aggregation of particles.

The Cold Plasma effects not are selective! This means that the demolition is contemporary on all pollutant, also if the performance can be different from one and other.

The benefits of to install a Plasma Generator are :

- | | |
|------------------------------------|----------------------|
| • Total dusts: | Demolition up to 99% |
| • Metals: | Demolition up to 90% |
| • Ammonia: | Demolition up to 65% |
| • Hydrocarbons: | Demolition up to 50% |
| • Carbon monoxide: | Demolition up to 80% |
| • Nitrogen oxides: | Demolition up to 90% |
| • Sulphur oxides SO _x : | Demolition up to 70% |
| • VOC: | Demolition up to 95% |
| • Total bacteria: | Demolition up to 99% |
| • Total viruses: | Demolition up to 99% |
| • Moulds : | Demolition up to 99% |

If the system is recirculating air, the effectiveness increases, reaching even 100% of demolition in a few hours of operation.

To ensure the best performance and advise on the use of the Plasma Generator will not hesitate to contact us



DATA SHEET HPG 1-24

ATTENTION : The Plasma Generators cannot be used with mixtures of gas and dusts explosive. The risk must be evaluate with experts or supplier, if need to treat this mixtures.

Electrical Data

Input power 24 Vdc
Power absorption max 5 W
Operation 100% continuous

Field characteristics HPG 1-24

Cold Plasma field generation in invisible spectrum with DBD.
Ozone generation less than 10 mg/h for unit.
Max air temperature flow = + 60°C

Field Use

For demolition or reduction of VOC, CO, NOx, Hydrocarbons
Organic dust, Bacteria, Viruses, Moulds, in environment when it
Is require a low level of Ozone.

EMC

EMC design is another important feature to ensure the lowest emissions and noise.
All the electronic circuitry and electrodes are wrapped in a special Faraday cage.
On power line is inserted special noise suppressor.
The Faraday cage and the noise suppressor are connected to the grounding wire.

For proper operation and protection of people sure to connect the ground wire!

Build Specification



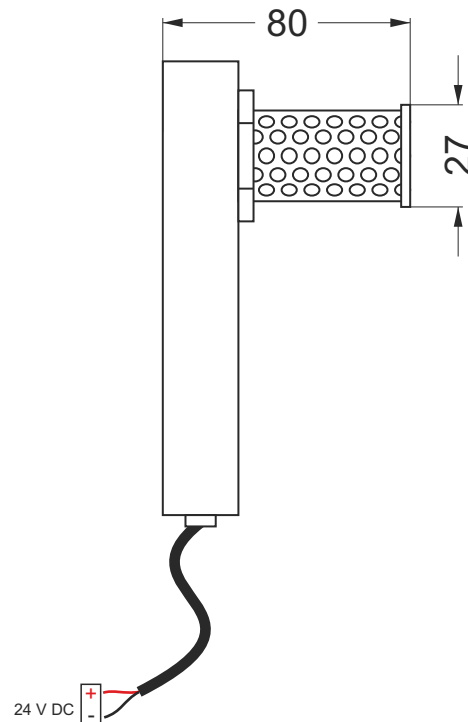
In normal use environment, without very aggressive chemicals, the life of one HPG 1-24 is around 12000 hours. It can be more or less in function of air temperature, working hours at day, chemicals in the flow, and other.

The air flow trough the electrode can have:

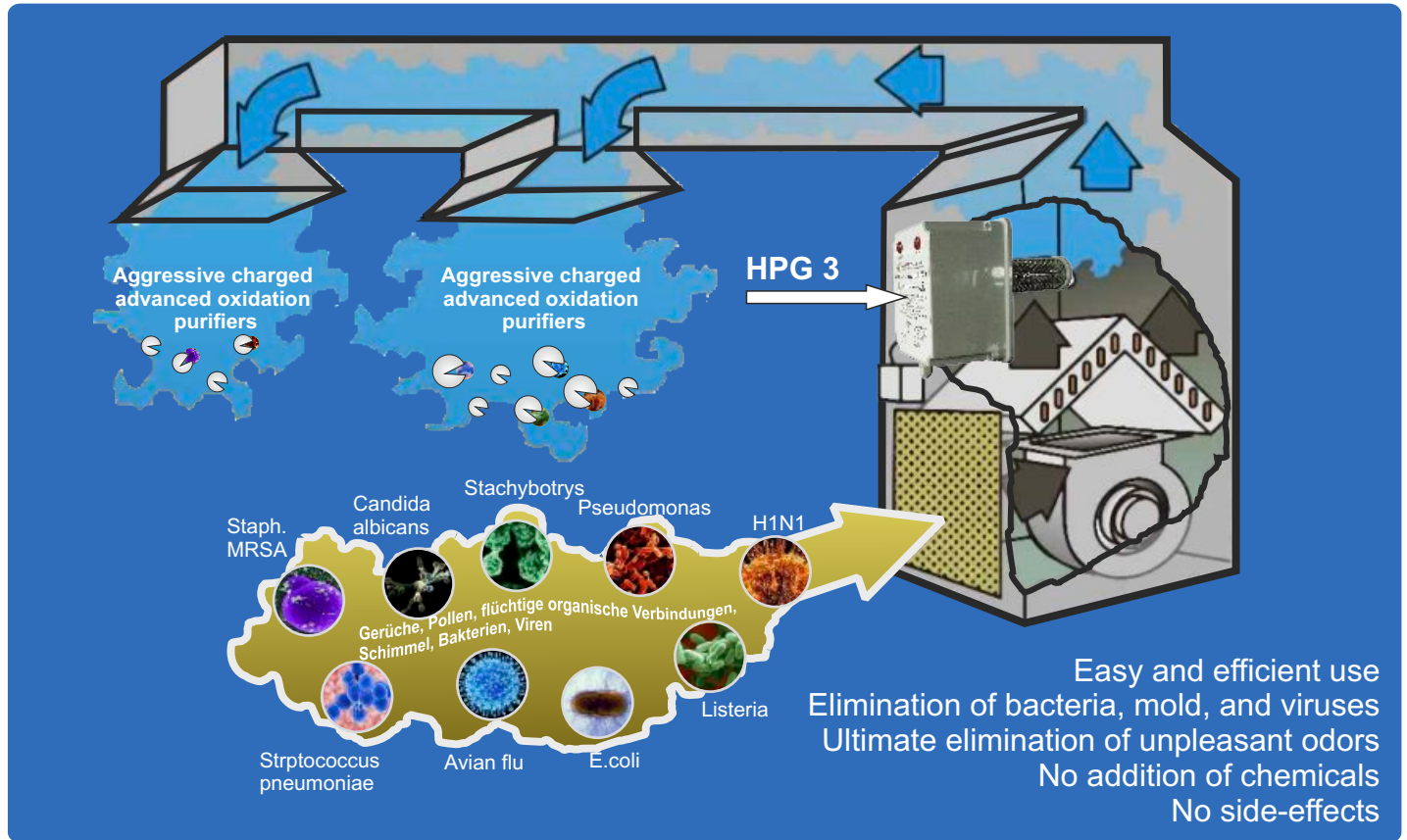
Max Temperatur = + 60°C
Min Temperatur = - 10°C

The inside air temperature of build GP:

Max Temperatur = + 40°C
Min Temperatur = - 10°C



Main principle of a professional air purification system for air ventilation- and air conditioning systems



Virulent germs

It has been proved that bacteria and viruses are more often related to the genesis of cancer, than commonly assumed.

Cancer is the most dreaded diseases in Germany. At present, there are known more than 100 different types of cancer. Scientists were able to prove that the initial cause for cancer is significantly often related to viral, bacterial, or parasitic infections. Recent studies have shown that one in six cases of cancerous diseases is caused by an infection. In 2008, 1.5 billions of deaths could be related to gastric bacteria (*Helicobacter pylori*), human papilloma-virus or hepatitis and other pathogenic viruses.

A study conducted by the World Health Organization WHO and published in the trade journal "Lancet Oncology", points out to the importance of the inoculation and use of antibiotics against bacteria.

Professional air purification system with unique qualities

The issues related to antibiotics are commonly known; viruses and bacteria adapt to them and develop immunity against the agent. Hence, antibiotics lose their effectiveness.

Wouldn't it be a better decision to destroy viruses, bacteria, mold, and other micro organisms before they even get the chance to make us sick or infect us?!

Mold, viruses, bacteria, and odors are present in every interior, which is absolutely normal, actually. However, if their concentration starts to increase, we get sick. This affects especially day care centers, schools, nursing homes, residential care homes, hospitals, hotels, restaurants, the food industry and many others.

Our air purification system are outstanding for their easy and fast effectiveness, elimination of bacteria, germs, and mold, as well as for their capability of killing unpleasant odors without the use of chemicals or side-effects in the long run.

The air purification systems are suitable for all purposes.



Recommendations on the application

The product covers a vast field of applications. The effectiveness of Clean Air has been proved in all kind of interiors and enhances the air quality to a considerable degree. We constantly breathe in numerous types of molds, bacteria, spores, and vapors or odors. Basically, this is nothing out of the ordinary, unless the threshold concentration is being exceeded. Troubles may occur when the air is flooded with too many organisms, which is mostly accompanied by unpleasant odors. The consequences for the human body are reflected in a susceptibility to annoying infections of the throat, sinuses, and respiratory system.

The device can be applied wherever the air quality of interiors is supposed to be enhanced.

Some examples:

Medical and health care

- ✓ Hospitals
- ✓ Residential care homes and nursing homes
- ✓ Research centers
- ✓ Hospices
- ✓ Funeral parlors

Educational and schooling facilities

- ✓ Schools
- ✓ Universities
- ✓ Training centers
- ✓ Day care centers
- ✓ Gymnasiums
- ✓ Lunchrooms

Public facilities

- ✓ Movie theaters
- ✓ Restaurants
- ✓ Hotels
- ✓ Fitness centers
- ✓ Indoor swimming pools

Interiors suitable for the use of the device

- Storage rooms for waste and refuse containers
- Temperature-controlled storage rooms and warehouses
- Basements
- Laboratories
- Offices
- Sanitary facilities
- Waiting lounges
- Entrance lobbies
- Conference rooms
- Briefing rooms



COLD PLASMA GENERATOR

COMPARISON BETWEEN THE DIFFERENT TECHNOLOGIES FOR AIR PURIFICATION

The Indoor and the Outdoor Air contain many pollutants that can be classified as follow:

- A** Gas and steam (CO, CO₂, SO_x, NO_x, VOC, Radon, Ammonia, Hydrocarbons, etc.)
- B** Biological contaminants (Bacteria, Viruses, Mold, Spores, organic materials, etc.)
- C** Solids as Dusts & Smoke (Rubber, Minerals, Paper, Microfiber, etc.) classified in PM.
- D** Liquids as Fog or Suspension (Water, Gasoline, Oil, etc.)

			EFFECTIVE ON (1)	EFFICIENCY (1)	INIZIAL COST (1)	SELECTIVE (1)	RIGENERABLE (1)	AVERAGE LIFE (1)	OVERALL DIMENSIONS (1)-(2)	PRESSURE DROP (2)
1	MECHANICAL FILTER	STANDARD	C	LOW-MEDIUM	LOW	YES	YES	LOW-MEDIUM	MEDIUM	MEDIUM
2	MECHANICAL FILTER	HEPA	B+C	HIGH	LOW-MEDIUM	YES	NO	LOW	MEDIUM	MEDIUM-HIGH
3	ELECTROFILTER	ESP	C+D	MEDIUM-HIGH	MEDIUM	YES	YES	HIGH	MEDIUM	LOW
4	ACTIVATED CARBON	STANDARD	A+B	MEDIUM	MEDIUM	YES	NO	LOW	MEDIUM	MEDIUM-HIGH
5	ACTIVATED CARBON	IMPREGNATED	A	MEDIUM-HIGH	MEDIUM-HIGH	YES	NO	LOW	MEDIUM	MEDIUM-HIGH
6	IONIZING		C+D	MEDIUM	MEDIUM	YES	YES	HIGH	LOW	LOW
7	IONIZING + UV		B+C+D	MEDIUM-HIGH	MEDIUM-HIGH	YES-NO	YES	HIGH	LOW	LOW
8	PHOTOCATALYTIC		A	LOW	HIGH	YES	YES	HIGH	HIGH	LOW
9	COLD PLASMA		A+B+C+D	MEDIUM-HIGH	MEDIUM	NO	YES	HIGH	LOW	LOW
10	COLD PLASMA	+ WATER	A+B+C+D	HIGH	MEDIUM-HIGH	NO	YES	HIGH	MEDIUM-HIGH	LOW-MEDIUM

- NOTES :
- (1) Average rating of the different systems on the market.
 - (2) Rated at equal flow of treated air at standard conditions



LEHNERT-VIVEX ENGINEERING GROUP + PRODUCTION GERMANY



LEHNERT Clean Air Industries & Partner since 1968

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