

# **DISINFECTOR** **AIRPURIFIER**



**Technical Catalog April 2021**



## The technology edge for clean air!



## **The technology advancement for clean air!**

**A well-known problem:**

**Smallest particles in the air, called "aerosols" are the main transmission routes of the coronavirus, but also of other types of infections like influenza, SARS, etc.**

**The solution:**

**the effective protection of a powerful air disinfectant - the new DISINFECTOR from Frigoquip!**

**The DISINFECTOR is a highly effective air purification system that provides virus-free air in large spaces such as supermarkets, restaurants, schools and meeting rooms in 5 precisely coordinated steps:**

**1. filtering 2. UVC irradiation 3. hydroxyl disinfection 4. ionization and 5. ozone sterilization.**

**Disinfectors clean the room air with filters, powerful blowers as well as UVC radiators and ionizers and additionally activate it with hydroxyl radicals.**

**On request, powerful ozone generators can be switched on for a limited time (Power Time).**

**The activated air blown out disinfects adjacent air layers and the entire room with walls, furniture and goods is totally cleaned. And the best thing about it:**

**after the work is done, the cleaning agents - the hydroxyl radicals - with a half-life of a few minutes turn back into water vapor and carbon dioxide, i.e. into air, from which they were also produced.**



## The working method of the disinfectant

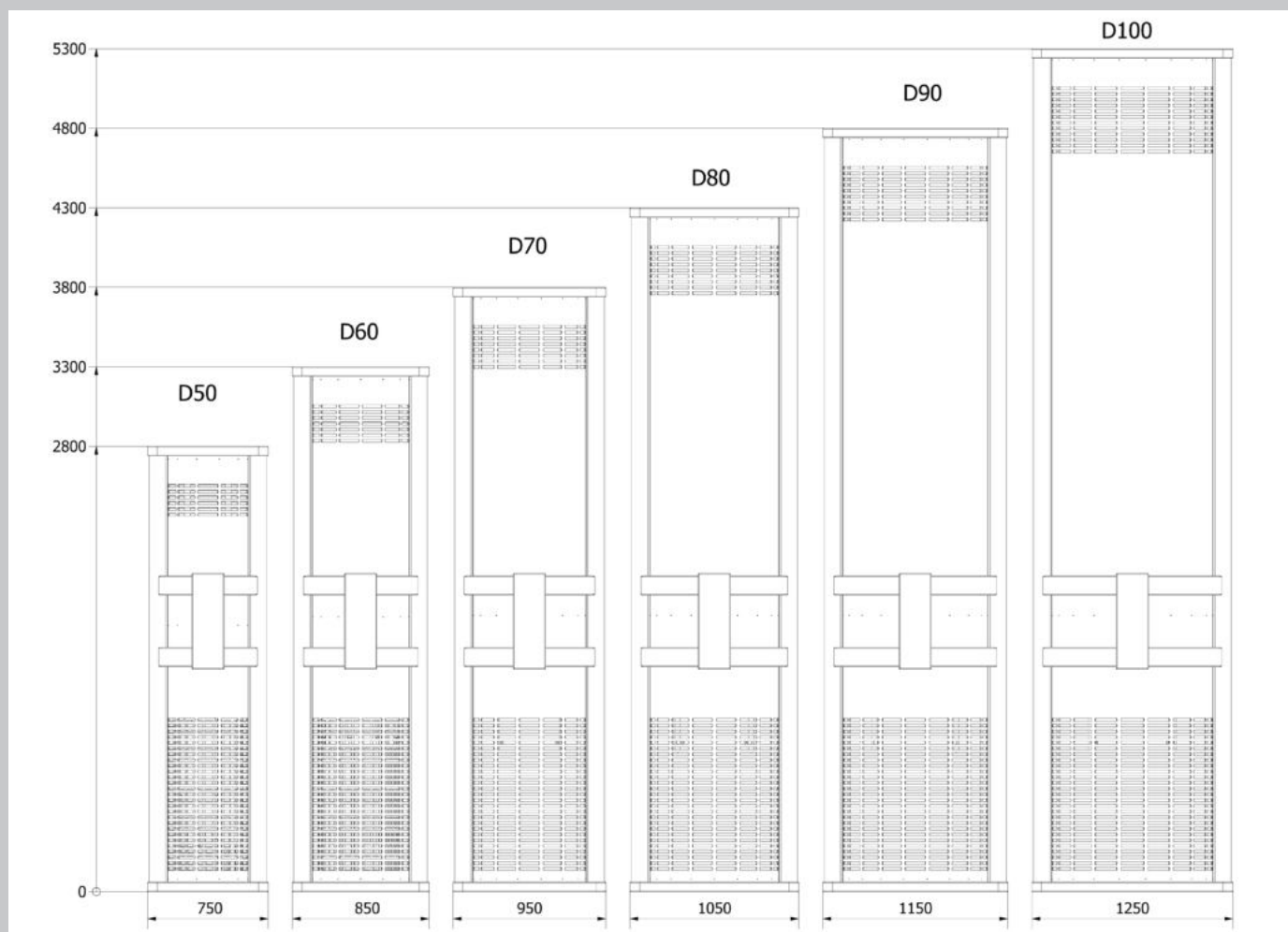


## The special mode of operation of a disinfectator:

The disinfectator cleans the room air from germs, bacteria, viruses and fungi.

1. To do this, it draws in the room air through a filter.  
There, all coarse impurities contained in the air are bound.
2. The filtered room air is then sterilized with the help of very powerful UVC lamps.
3. Then the room air is activated with hydroxyl radicals.  
Hydroxyl radicals are extremely reactive and destroy organic and also inorganic substances present in the air.
4. Oxygen molecules are electrically charged with ionization tubes.  
Negatively charged ions are formed, which, with high energy potential, destroy viruses, bacteria and odor molecules with high energy potential.
5. In the disinfectator there are generators for one of the most powerful air purifiers - ozone. A gas consisting of oxygen atoms  $O^3$ ; which is produced from the room air.  
After a half-life of 30 minutes it decomposes back to oxygen from which it was produced.  
The ozone disinfection - POWER TIME - can be switched on only with a key for the running time of one hour at a time.  
The blower then runs at full power, UVC disinfection, hydroxyl sterilization and ionization are switched off.  
A flashing alarm indicates Power Time.  
People should not be in the room at this time.
6. Finally, the purified and activated room air is blown out of the top of the DISINFECTOR.  
The blown-out air is activated and charged in such a way that adjacent air layers as well as blown-on objects are also disinfected.  
The room air is then sucked in again by the DISINFECTOR and the process starts again.

## Air purification in five coordinated steps



Type	D-50	D-60	D-70	D-80	D-90	D-100
room size	1.500 m³	2.250 m³	3.000 m³	4.000 m³	5.500 m³	7.000 m³
nominal voltage	3~380-480V	3~380-480V	3~380-480V	3~380-480V	3~380-480V	3~380-480V
power consumption	3,0 A	4,5 A	5,5 A	7,0 A	10,0 A	12,5 A
normal air output 50 dB	4.000 m³	6.000 m³	8.000 m³	10.000 m³	12.000 m³	14.000 m³
air output Power Time	5.000 m³	7.500 m³	10.000 m³	12.500 m³	15.000 m³	18.000 m³
UVC-power consumption	760 Watt	1140 Watt	1520 Watt	1900 Watt	2280 Watt	2660 Watt
ozone output	60 g/h	120 g/h	180 g/h	240 g/h	300 g/h	360 g/h
Ionization	60 Watt	90 Watt	120 Watt	150 Watt	180 Watt	210 Watt
output of Hydroxyl	3 x 24 Watt	3 x 36 Watt	4 x 36 Watt	5 x 36 Watt	6 x 36 Watt	7 x 36 Watt
weight	225 kg	325 kg	450 kg	600 kg	775 kg	1000 kg
dimension	75x75x280 cm	85x85x330 cm	95x95x380 cm	105x105x430 cm	115x115x480 cm	125x125x530 cm

## **A Air circulation**

A powerful blower from ebmpapst "made in Germany" permanently sucks the room air through the DISINFECTOR.

The blower circulates the room air several times per hour.

Depending on the number of people in the room and the disinfection technique, the air should be changed about 2 to 3 times per hour.

The capacity of our disinfectors is sufficient for rooms with a volume of 1,500 to 7,000 m<sup>3</sup>.

## **B Air purification by filtration**

The room air is sucked through a pre-filter with a very large surface area in the lower part of the disinfectant.

All coarse impurities in the air are filtered out and remain in this filter.

When a filter change is necessary, a control lamp on the control box lights up.

## **C UVC disinfection**

There are no filters that remove 100% of viruses from the air.

Therefore, after filtering in our disinfectors, the air is disinfected with extremely powerful UVC emitters.

UVC radiation with a wavelength of exactly 253.7nm, which is optimal for this purpose, destroys the DNA of all viruses (influenza, corona, etc.), bacteria and mold spores.

## **D Activation of indoor air by hydroxyl radicals**

Hydroxyl radicals are highly reactive molecules found in the earth's atmosphere where they break down trace gases.

That is why they are also called atmospheric detergents.

The technology for generating hydroxyl radicals was developed by NASA in 1994 to purify the air aboard spacecraft.

Air disinfection and activation with hydroxyl radicals is the only method that can always be used safely in the presence of living beings.

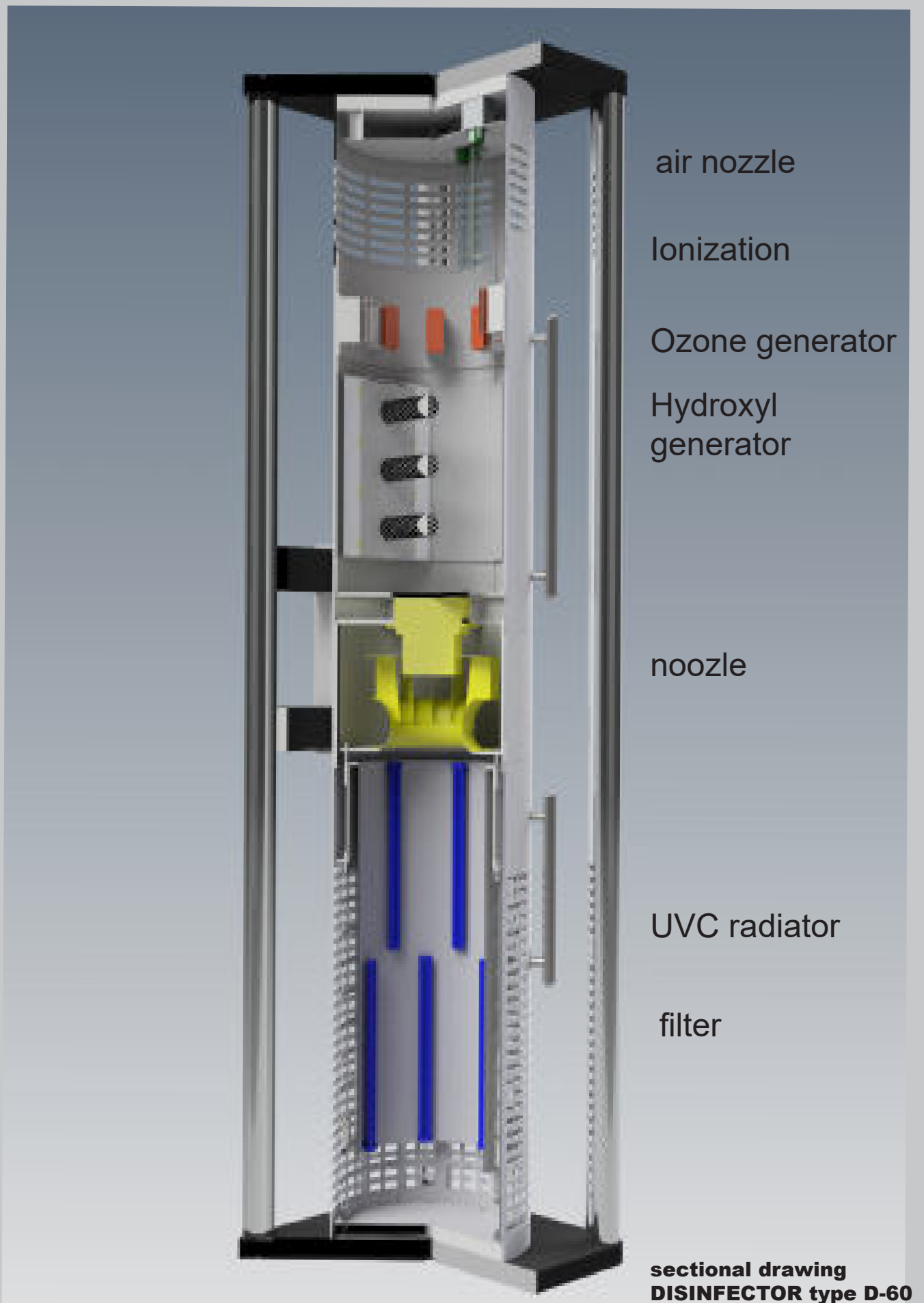
Our disinfectors are equipped with hydroxyl generators of this technology. Hydroxyl radicals (HO) are produced from air using UV rays and titanium oxide as a catalyst.

They destroy viruses, bacteria, mold spores, etc. All pollutants in the air are broken down until only carbon dioxide and water vapor remain.

This indoor air disinfection is safe for humans, animals and plants.



## Air purification in five coordinated steps





## **D IONIZATION**

Air purification by air ionization. Neutral oxygen molecules are negatively charged by "dielectric barrier discharge (DBE)" using special ionization tubes negatively charged.

Oxygen clusters are formed which, due to their high energy potential, have the property of neutralizing viruses bacteria and odor molecules.

Air ionization provides fresh air and reduces viruses at the same time,

germs, bacteria and molds. This significantly improves the quality of indoor air.

A healthy working atmosphere is created.

However, the special and greatest advantage of ion air purification is that it binds even the smallest particles that are allowed to pass through other filters.

## **E Activation of the air by ozone in the -POWER TIME-**

Disinfectors are also equipped with ozone generators.

This produces ozone from the oxygen in the air.

It is a very powerful disinfectant and destroys viruses, bacteria and germs. Ozone is unhealthy for living organisms.

It decays back to oxygen after treatment with a half-life of about 30 minutes. To use the ozone for air disinfection, a Disinfecter protected by a key circuit for one hour at a time

-POWER TIME- to work with the ozone generators.

The air in the room is enriched with ozone and activated.

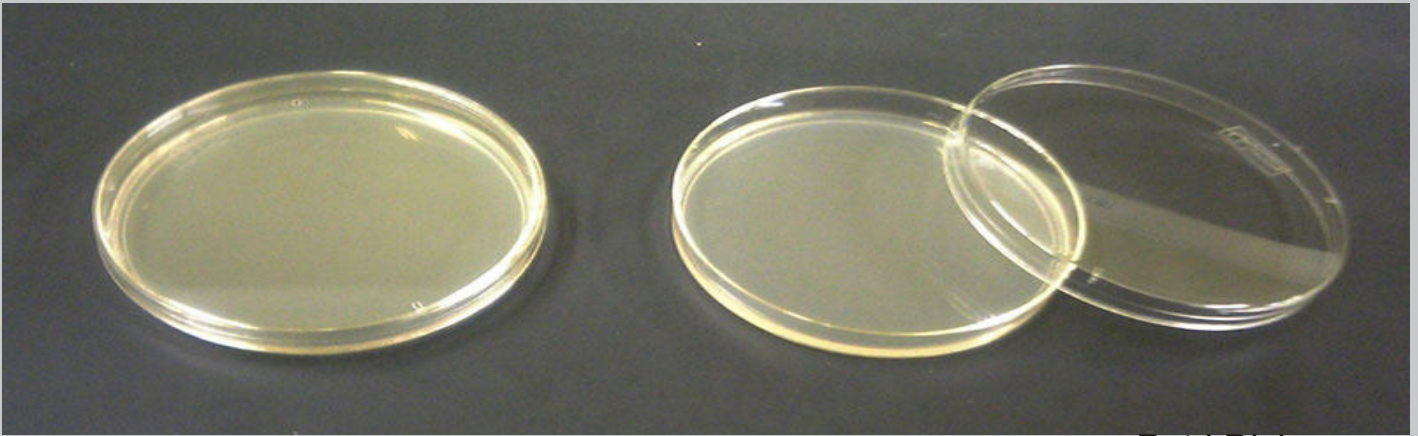
Thus all objects in the room are disinfected to a large extent.

During -POWER TIME- a flashing alarm runs and warns against entering the room. The ozone is no longer perceptible after two hours because it has turned back into air, from which it was also produced in the ozone generators.

produced in the ozone generators.

People should not be in the room during -POWER TIME-.

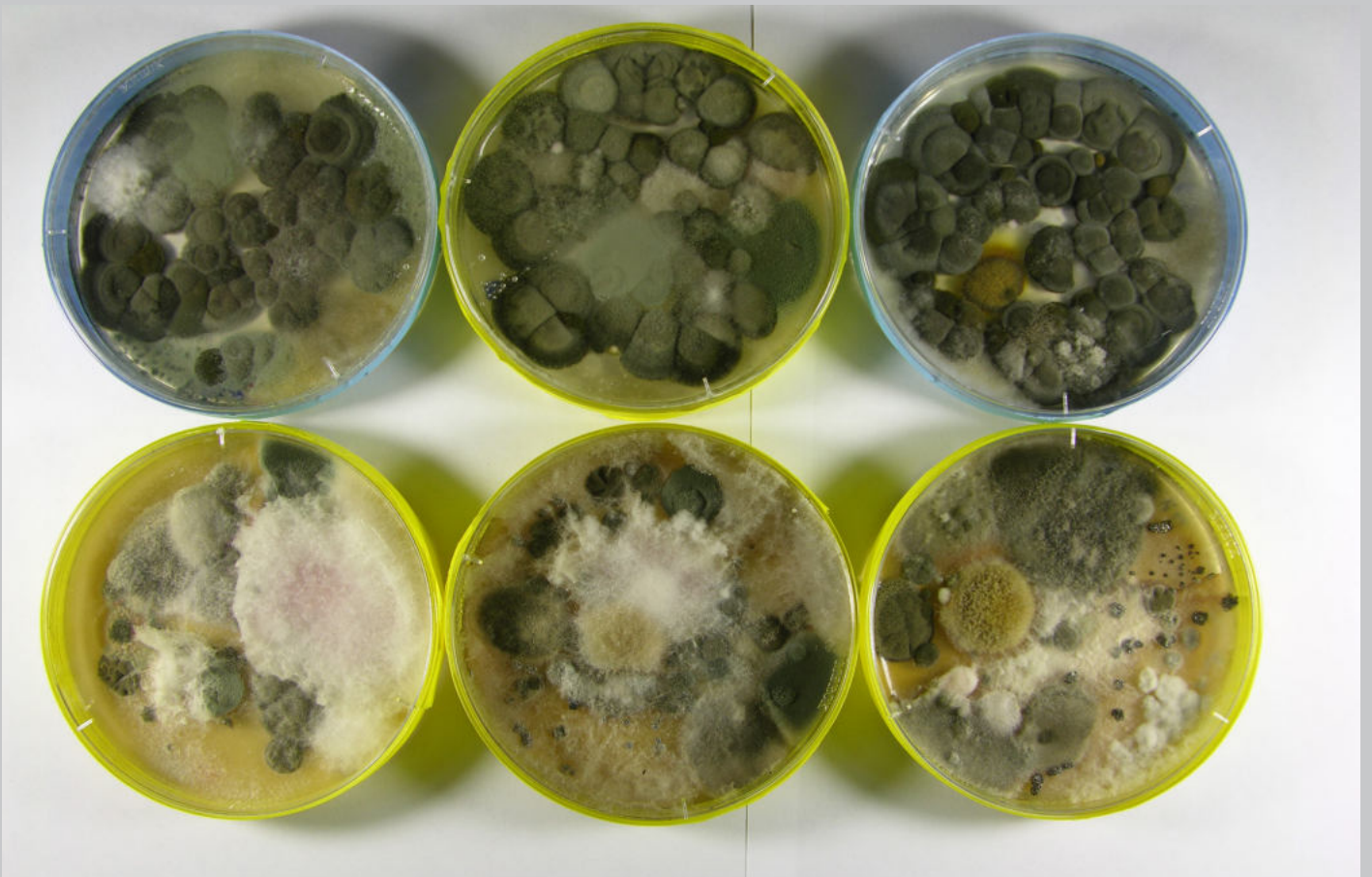
## the Petrishell - Test



new Petri Dishes



incubator



contaminated Petri Dishes

## **A convincing proof - the PETRISHELL -TEST!**

The effectiveness and efficiency of the DISINFECTOR is demonstrated by a simple test.

With each DISINFECTOR we supply our customers with a set of Petri dishes and an incubator.

Petri dishes are used in medicine, biology and chemistry for the cultivation of cell cultures.

They contain a gel-like nutrient medium that serves as the basis of life for microorganisms.

These Petri dishes can be used to measure the microbial load in the air by placing the dish without a lid in the room in question. Then the dish with lid is placed in the incubator.

The fewer germ colonies can be seen on the culture medium after the appropriate time, the purer the air is.

With this test, everyone can see for themselves, how thoroughly the DISINFECTOR cleans the room air from viruses, germs and co.



# DISINFECTOR



**IONIZATION  
INTENSITY**



**POWERTIME  
(ONLY OZONE)**



**HYDROXYL  
DISINFECTION**



**UVC  
DISINFECTION**



**FILTERTEST  
(PRESS & HOLD 3 SEC.)**



**FILTER OK**



**CHANGE FILTER**

**FAN SPEED**



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## The power control of a DISINFECTOR

Each DISINFECTOR is equipped with a high-quality SIEMENS SPS control system. This control allows a versatile power control.

For this purpose, the DISINFECTOR is equipped with a lockable switch box, which enables the following air sterilizations possible by pressing illuminated buttons.

### 1. Normal with filtering

**Disinfection capacity = approx. 10%.**

### 2. filtration and UVC radiation 253,7nm

**Disinfection capacity = approx. 60%**

### 3. Hydroxyl disinfection

UV rays in photocatalytic tubes form electron pairs react with water and oxygen in the air and create hydroxyl radicals. These react with organic and inorganic matter in the room air and destroy it until only carbon dioxide and water remain.

Harmless to living organisms.

**Hydroxyl disinfection with pre-filtration + UVC**

**Disinfection efficiency = approx. 90%**

### 4. IONIZATION

By using special ionization tubes, oxygen clusters are created which, due to their high energy potential, have the ability to neutralize viruses, bacteria and odor molecules.

**IONIZATION - HYDROXYL DISINFECTION**

**Disinfection efficiency = approx. 100%**

### 5. Ozone disinfection (POWER TIME) - switchable with key.

In normal operation the DISINFECTOR runs regulated without ozone.

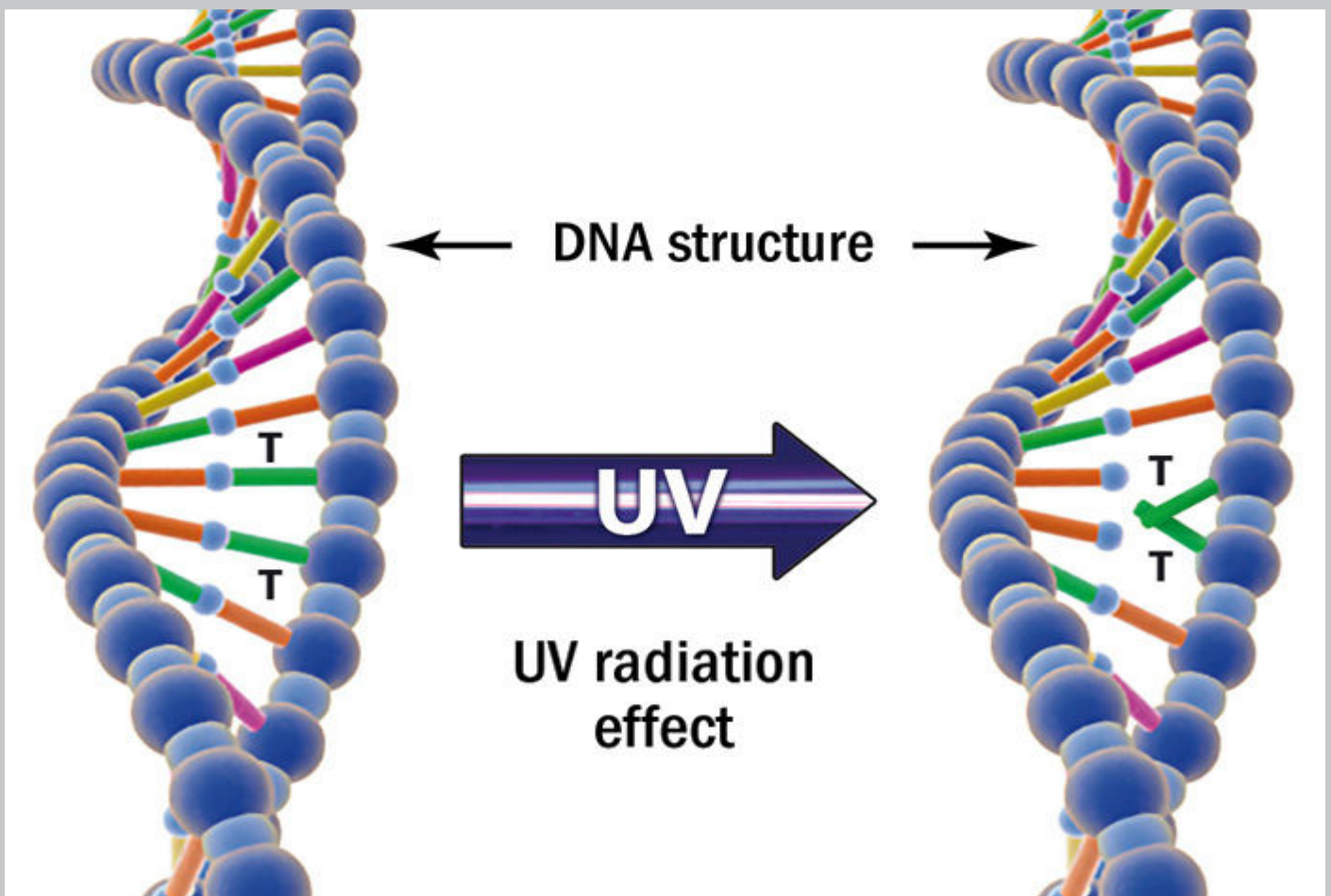
To use the full power, it can operate for one hour at a time with the full power of the ozone generators. Living beings should not be in the room during this time. The air and objects in the room are disinfected.

Ozone is no longer there after two hours. It has turned back into air.

**OZON disinfection**

**Disinfection efficiency = approx. 100%**

### 6. All programs can be switched off at any time during operation.





## **Air disinfection with UVC technology is one of our five air purification processes.**

Immediately after filtering, the room air is passed through an internally mirrored tunnel with many UVC emitters and purified in this UVC radiation hell.

Type C ultraviolet radiation is produced at a wavelength below 280 nm.

The technology we use for air sterilization/disinfection is based on UVC low-pressure emitters that radiate at a wavelength of exactly 253.7 nm.

This wavelength is very close to the optimum for absorption of DNA and RNA. Genetic material in the cell nucleus of microorganisms is destroyed by the radiation. Airborne germs are killed, viruses inactivated.

Aerosols are particles of saliva or breathing fluid. They are produced when we speak, shout, sing, cough, sneeze or simply breathe.

Because of their size - particles are smaller than 1 micrometer ( $\mu\text{m}$ ) - aerosols can linger in the air for up to several hours and travel longer distances. Inhalation of infectious aerosols causes infection not only in the eye, mouth and throat areas, but also deep in the lungs.

Our UVC system for air disinfection is effective against these aerosol infections. The blower draws the room air through a filter - very powerful UVC lamps inactivate practically all airborne microorganisms. The inactivated viruses also include the Corona pathogen.

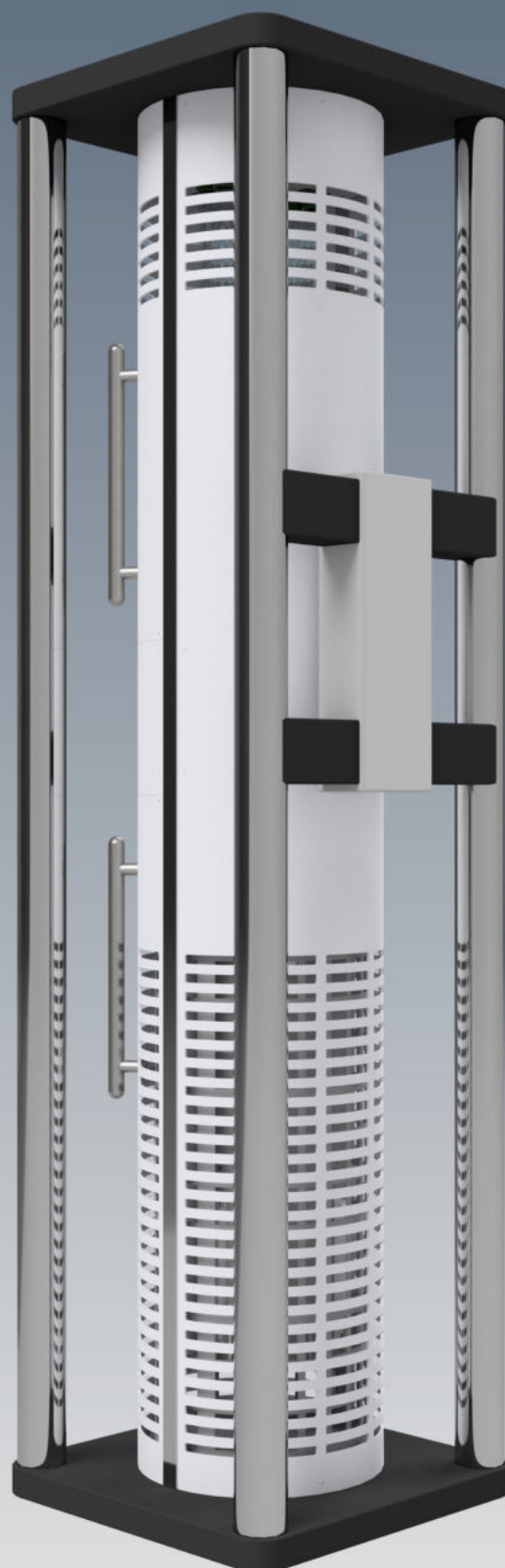
The DISINFECTOR works unobtrusively, very quietly and is built for continuous operation. The high-quality, sturdy metal housing is resistant to UVC radiation and permanently protects the user and lamps.

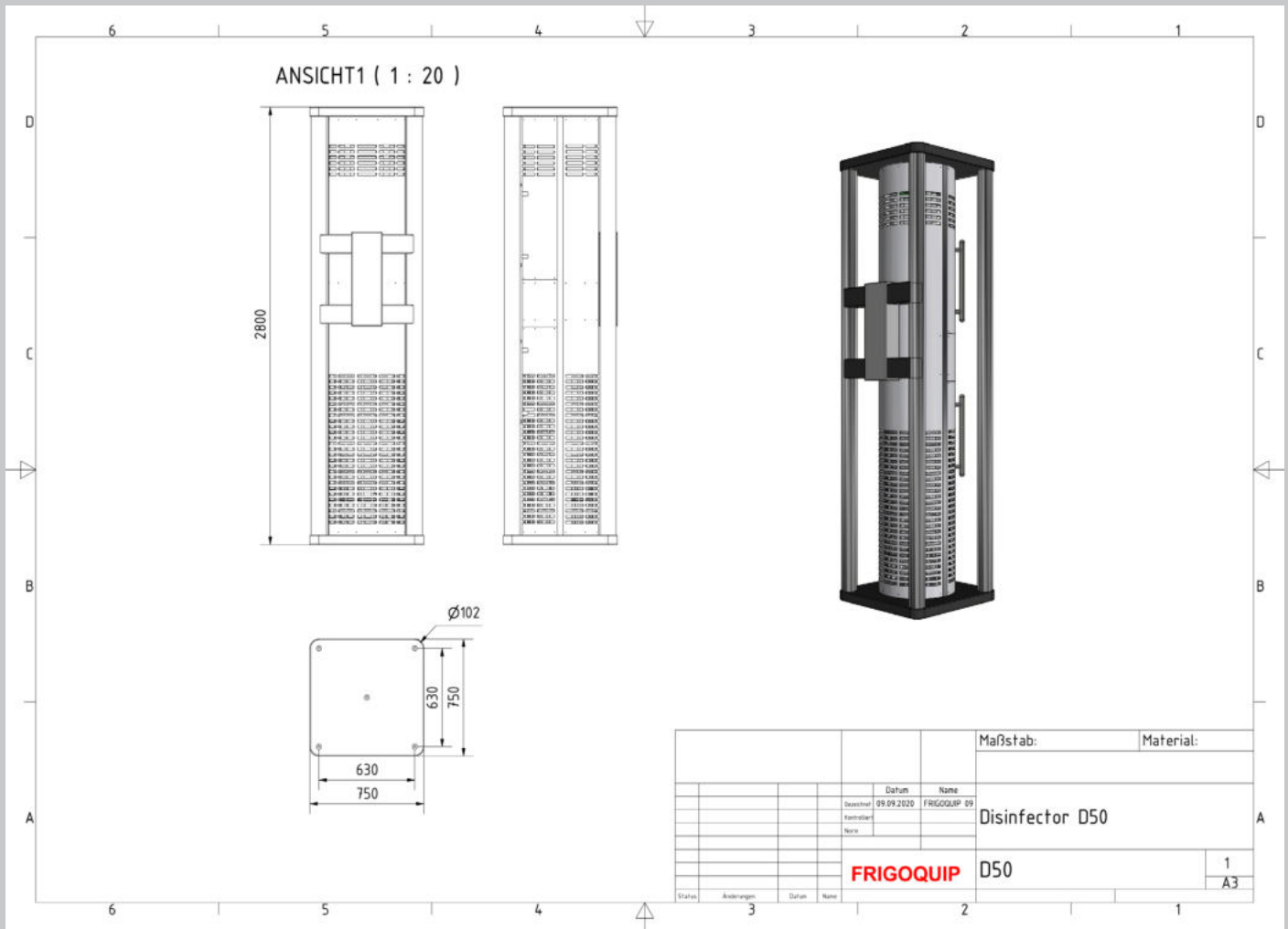
The UVC lamps used are specially designed for disinfection against infectious viruses, bacteria and germs at 253.7 nm. We only use tested brand-name lamps with a predicted service life of approx. 10,000 operating hours.

The DISINFECTOR is a closed UVC air purifier system. The disinfection takes place inside the DISINFECTOR. No UV radiation penetrates to the outside through the stable metal housing. The disinfection takes place safely and without any harm to persons. Infectious aerosols, viruses and germs are constantly eliminated.

The DISINFECTOR air purifier is developed and manufactured in Germany. Thus, we have complete control over all manufacturing steps and materials.

## DISINFECTOR type D-50





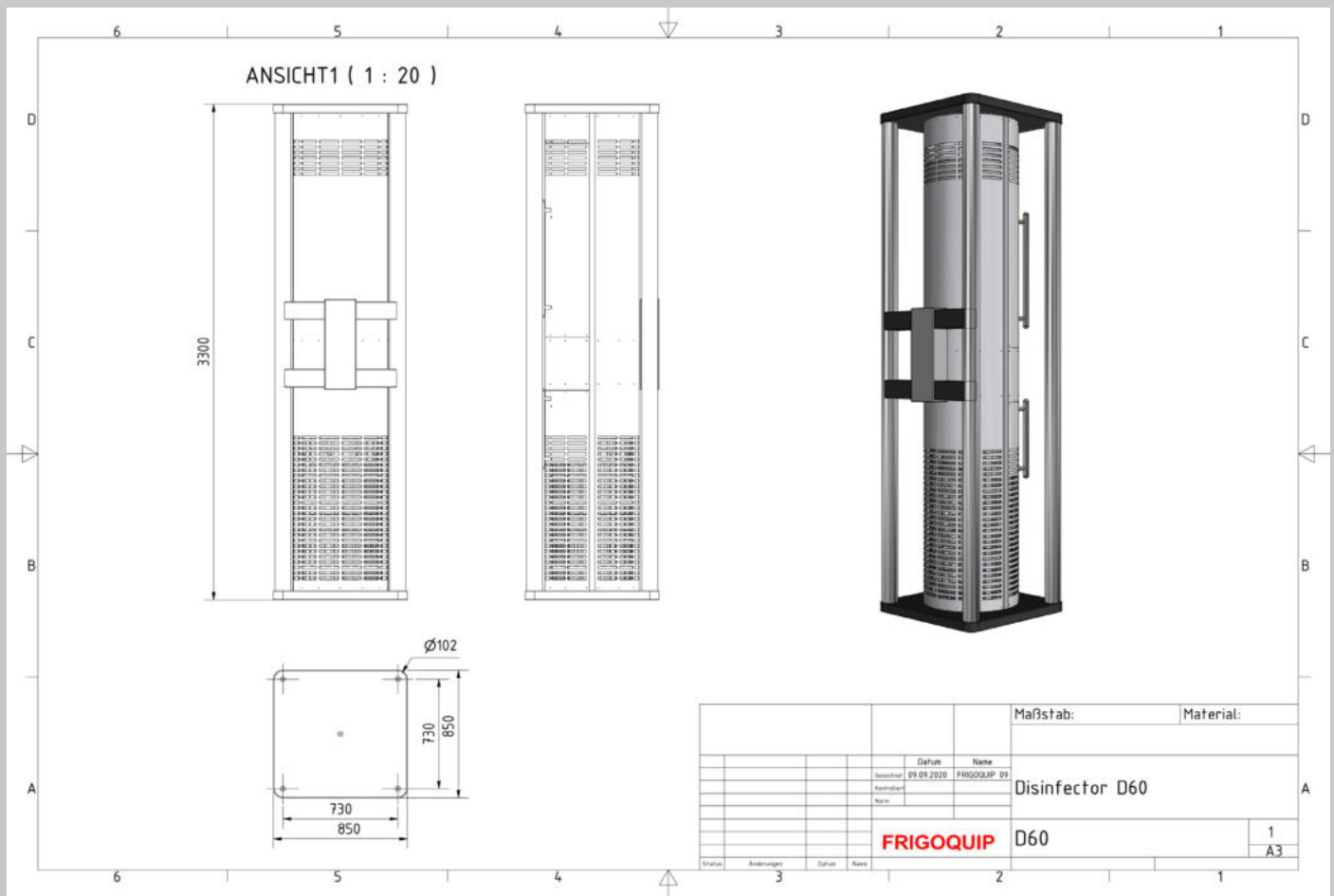
## DISINFECTOR type D-50

technical data - normal mode		technical data - Power Time	
rated voltage	3~380-480V/50Hz /60Hz	duration Power Time	60 minutes
air output soft	3.500 m³/h / 45 dB / 10 m	air output Power Time	5.000 m³/h
air output normal	4.000 m³/h / 50 dB / 10 m	noise at 10m distance	65 dB
Hydroxyl power	3 x 24 Watt		
Ionization	60 Watt	OZONE Performance Power Time	4 x 15 = 60g/h
UVC power	760 Watt	<b>Power Time:</b> In normal operation, the DISINFECTOR runs regulated. At the push of the button Power Time it is possible to use the full power of the ozone generators and the blower for one hour. People should not be in the room during this time. The air and objects in the room are largely disinfected. The ozone is no longer perceptible after two hours because it has turned back into air from which it was also produced.	
room size	1.500 m³		
power consumption	7,3 A		
dimension	75 x 75 x 280 cm (LxWxH)		
weight	225 kg		



## DISINFECTOR type D-60



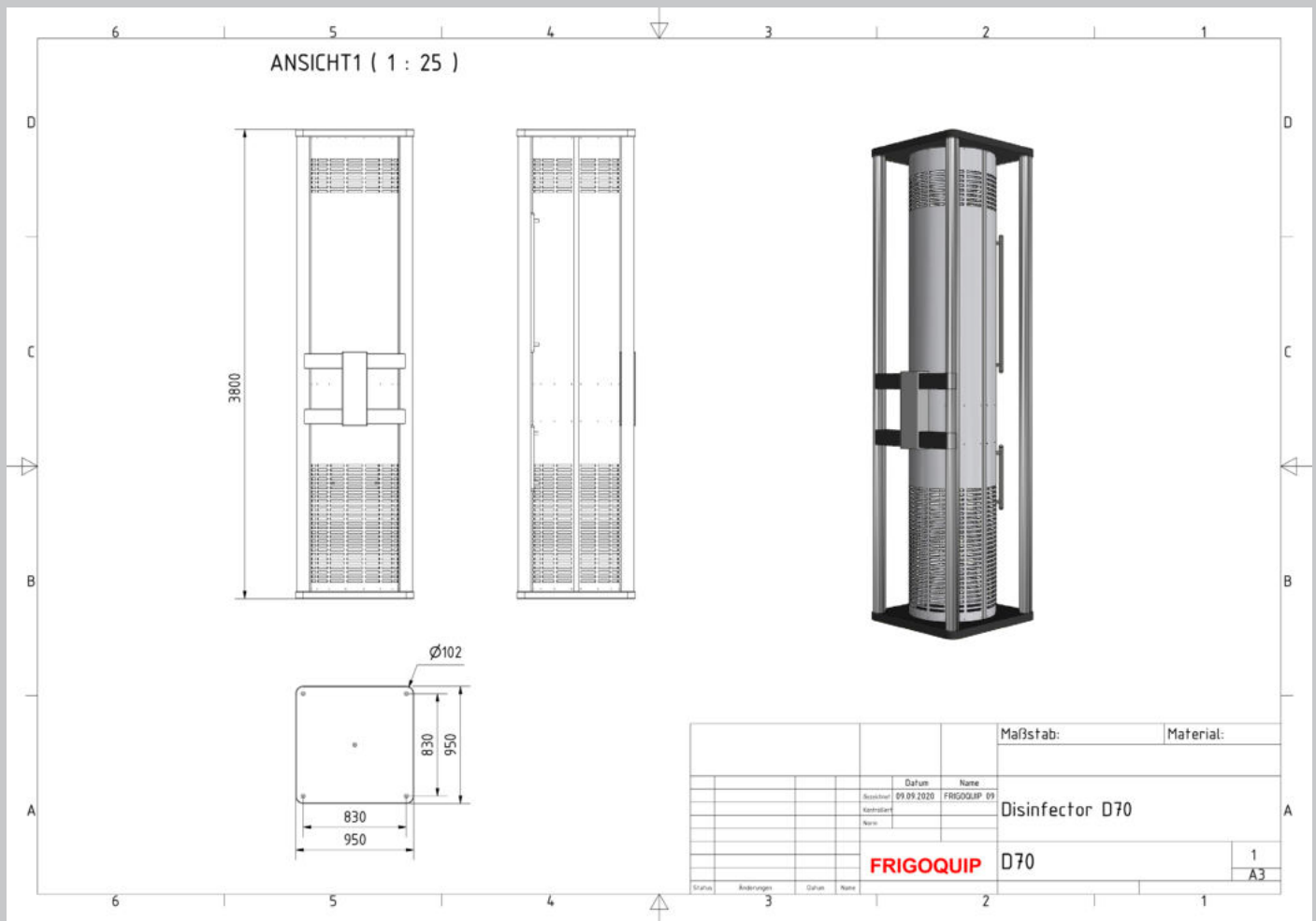


## DISINFECTOR type D-60

technical data - normal mode		technical data - Power Time	
rated voltage	3~380-480V/50Hz /60Hz	duration Power Time	60 minutes
air output soft	5.000 m³/h / 45 dB / 10 m	air output Power Time	7.500 m³/h
air output normal	6.000 m³/h / 50 dB / 10 m	noise at 10m distance	65 dB
Hydroxyl power	3 x 36 Watt		
Ionization	90 Watt	OZONE Performance Power Time	8 x 15 = 120g/h
UVC power	1140 Watt	<b>Power Time:</b> In normal operation, the DISINFECTOR runs regulated. At the push of the button Power Time it is possible to use the full power of the ozone generators and the blower for one hour. People should not be in the room during this time. The air and objects in the room are largely disinfected. The ozone is no longer perceptible after two hours because it has turned back into air from which it was also produced.	
room size	2.250 m³		
power consumption	4,5 A		
dimension	85 x 85 x 330 cm (LxWxH)		
weight	325 kg		

## DISINFECTOR type D-70





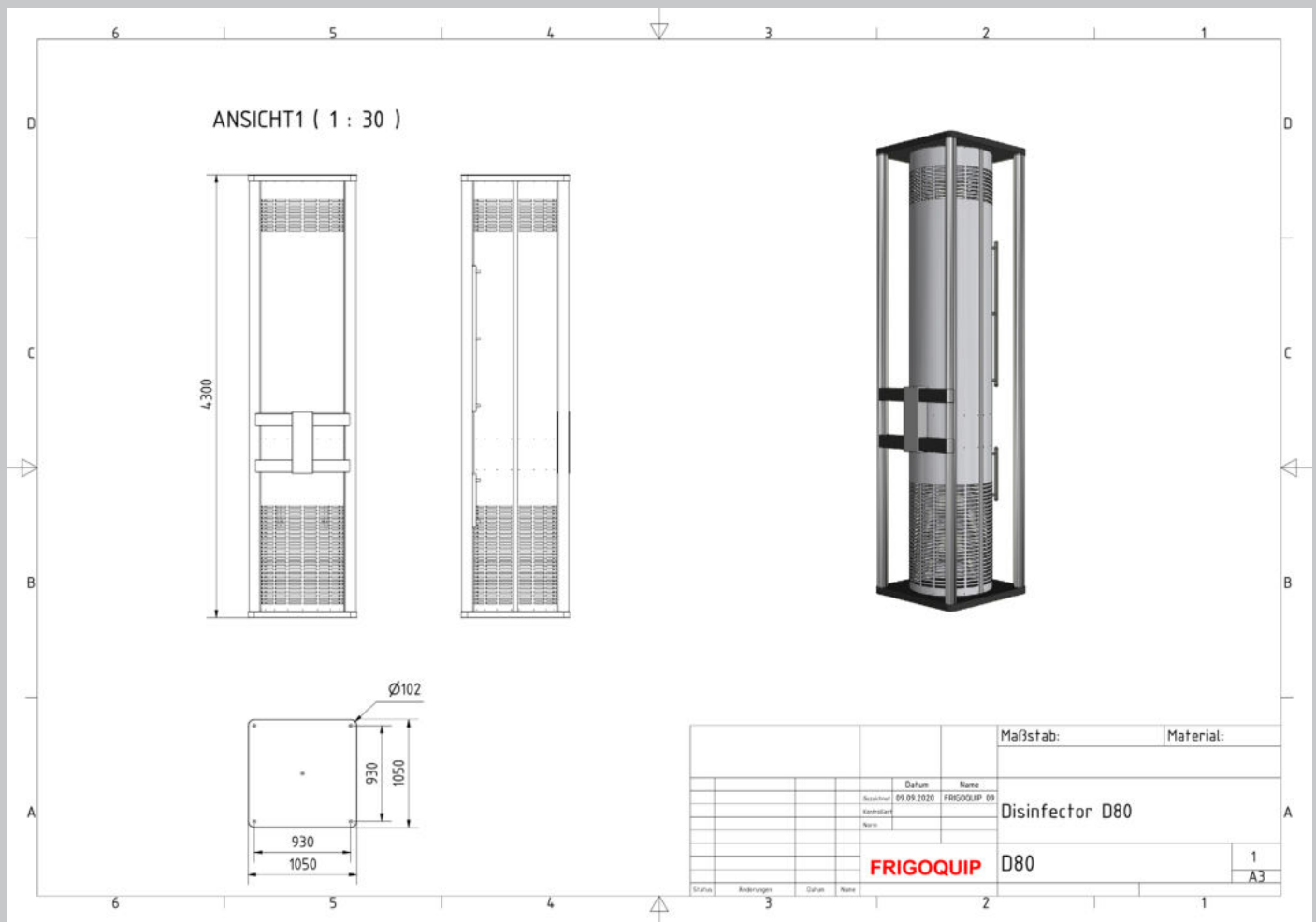
## DISINFECTOR type D-70

technical data - normal mode		technical data - Power Time	
rated voltage	3~380-480V/50Hz /60Hz	duration Power Time	60 minutes
air output soft	7.000 m³/h / 45 dB / 10 m	air output Power Time	10.000 m³/h
air output normal	8.000 m³/h / 50 dB / 10 m	noise at 10m distance	65 dB
Hydroxyl power	4 x 36 Watt		
Ionization	120 Watt	OZONE Performance Power Time	12 x 15 = 180g/h
UVC power	1520 Watt	<b>Power Time:</b> In normal operation, the DISINFECTOR runs regulated. At the push of the button Power Time it is possible to use the full power of the ozone generators and the blower for one hour. People should not be in the room during this time. The air and objects in the room are largely disinfected. The ozone is no longer perceptible after two hours because it has turned back into air from which it was also produced.	
room size	3.050 m³		
power consumption	5,5 A		
dimension	95 x 95 x 380 cm (LxWxH)		
weight	450 kg		



## DISINFECTOR type D-80

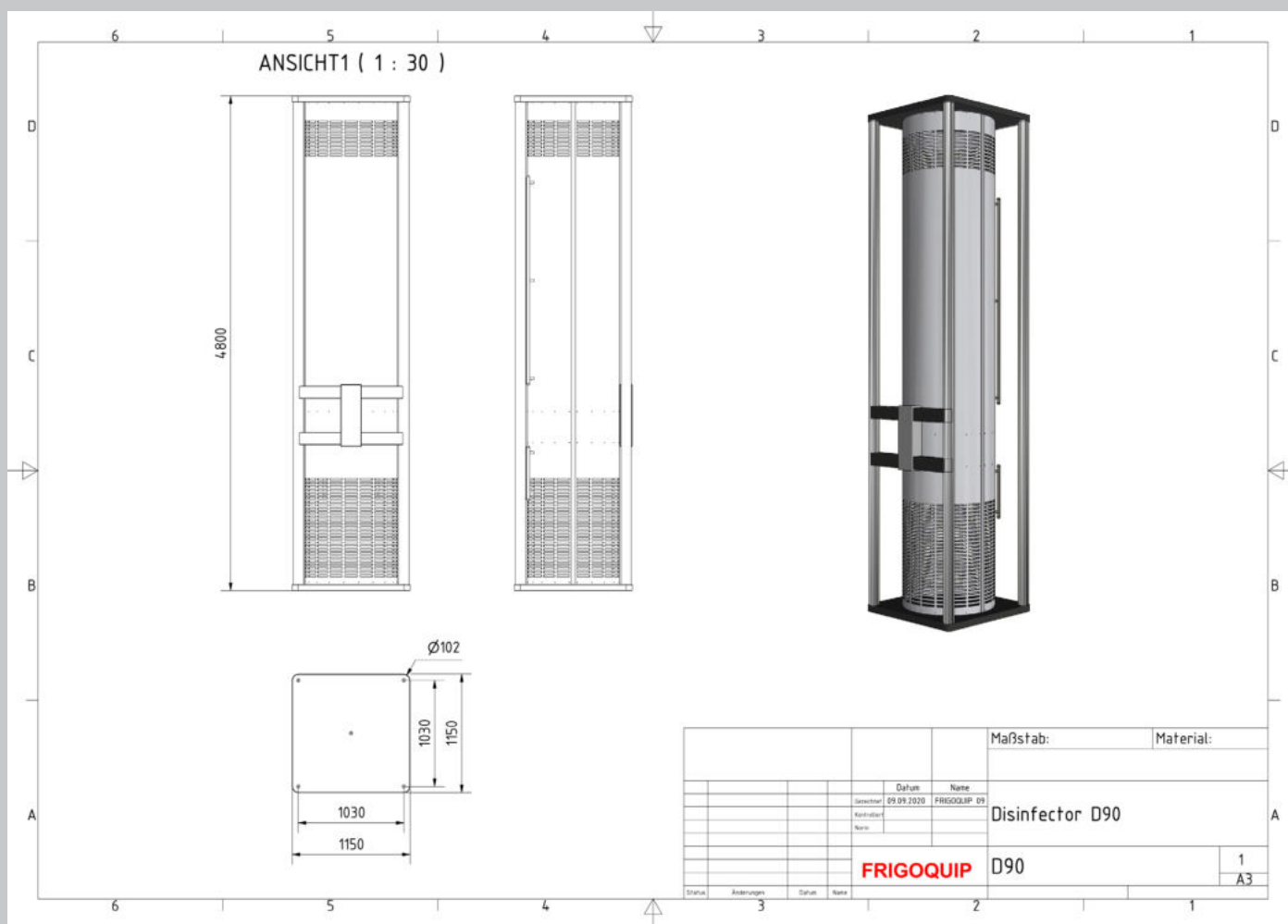




## DISINFECTOR type D-80

technical data - normal mode		technical data - Power Time	
rated voltage	3~380-480V/50Hz /60Hz	duration Power Time	60 minutes
air output soft	8.500 m³/h / 45 dB / 10 m	air output Power Time	12.500 m³/h
air output normal	10.000 m³/h / 50 dB / 10 m	noise at 10m distance	65 dB
Hydroxyl power	5 x 36 Watt		
Ionization	150 Watt	OZONE Performance Power Time	16 x 15 = 240g/h
UVC power	1900 Watt	<b>Power Time:</b> In normal operation, the DISINFECTOR runs regulated. At the push of the button Power Time it is possible to use the full power of the ozone generators and the blower for one hour. People should not be in the room during this time. The air and objects in the room are largely disinfected. The ozone is no longer perceptible after two hours because it has turned back into air from which it was also produced.	
room size	4.000 m³		
power consumption	7,0 A		
dimension	105 x 105 x 430 cm (LxWxH)		
weight	600 kg		





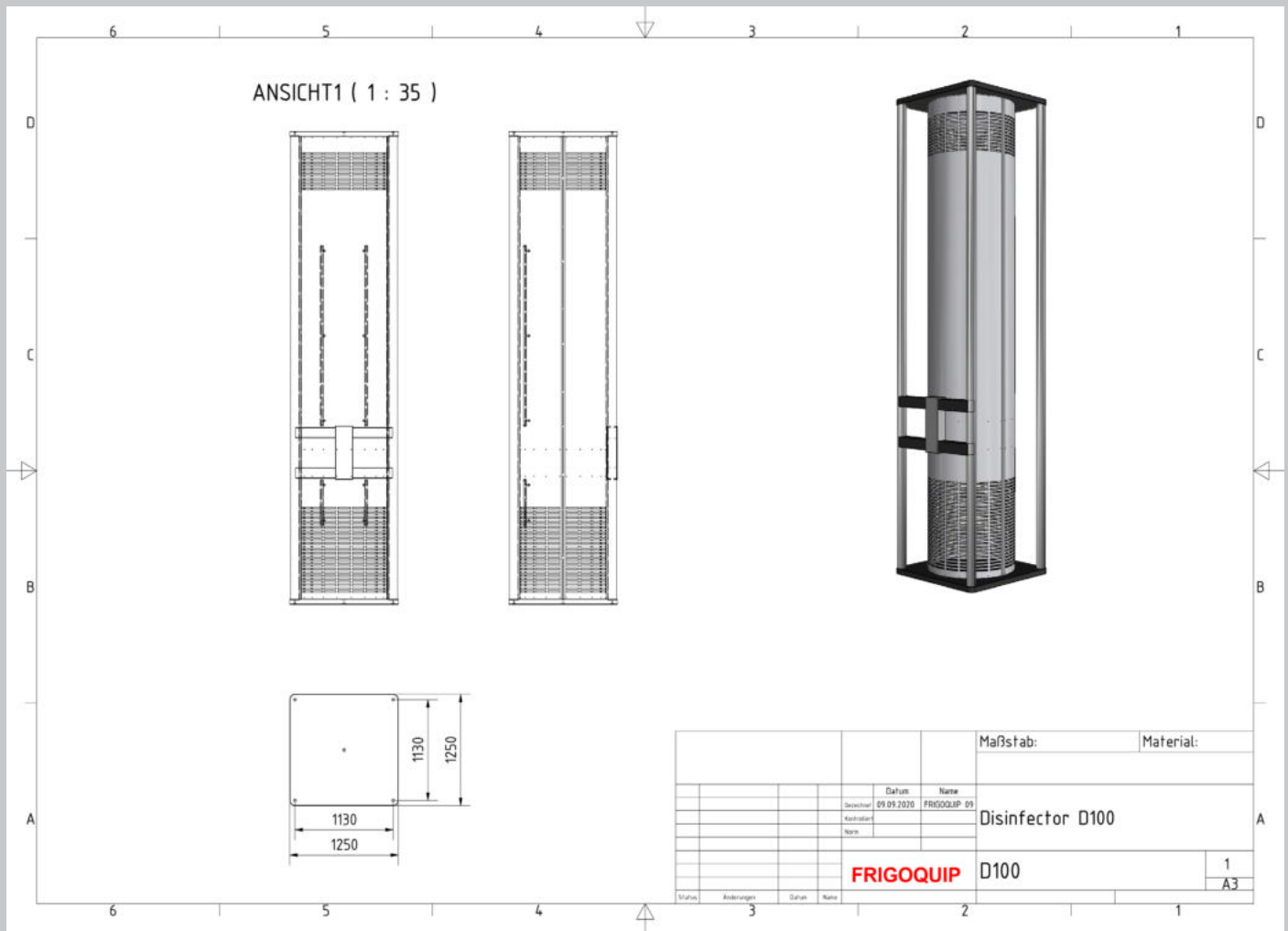
## DISINFECTOR type D-90

technical data - normal mode		technical data - Power Time	
rated voltage	3~380-480V/50Hz /60Hz	duration Power Time	60 minutes
air output soft	10.000 m³/h / 45 dB / 10 m	air output Power Time	15.000 m³/h
air output normal	12.000 m³/h / 50 dB / 10 m	noise at 10m distance	65 dB
Hydroxyl power	6 x 36 Watt		
Ionization	180 Watt	OZONE Performance Power Time	20 x 15 = 300g/h
UVC power	2280 Watt	<b>Power Time:</b> In normal operation, the DISINFECTOR runs regulated. At the push of the button Power Time it is possible to use the full power of the ozone generators and the blower for one hour. People should not be in the room during this time. The air and objects in the room are largely disinfected. The ozone is no longer perceptible after two hours because it has turned back into air from which it was also produced.	
room size	5.500 m³		
power consumption	10,0 A		
dimension	115 x 115 x 480 cm (LxWxH)		
weight	775 kg		



## DISINFECTOR type D-100





## DISINFECTOR type D-100

technical data - normal mode		technical data - Power Time	
rated voltage	3~380-480V/50Hz /60Hz	duration Power Time	60 minutes
air output soft	12.000 m³/h / 45 dB / 10 m	air output Power Time	18.000 m³/h
air output normal	14.000 m³/h / 50 dB / 10 m	noise at 10m distance	65 dB
Hydroxyl power	7 x 36 Watt		
Ionization	210 Watt	OZONE Performance Power Time	24 x 15 = 360 g/h
UVC power	2660 Watt	<b>Power Time:</b> In normal operation, the DISINFECTOR runs regulated. At the push of the button Power Time it is possible to use the full power of the ozone generators and the blower for one hour. People should not be in the room during this time. The air and objects in the room are largely disinfected. The ozone is no longer perceptible after two hours because it has turned back into air from which it was also produced.	
room size	7.000 m³		
power consumption	12,5 A		
dimension	125 x 125 x 530 cm (LxWxH)		
weight	1000 kg		

Our factory in Germany - 49324 Melle









## Our factory in Germany - 49324 Melle







# **FRIGOQUIP**

## **AIRPURIFIER**

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