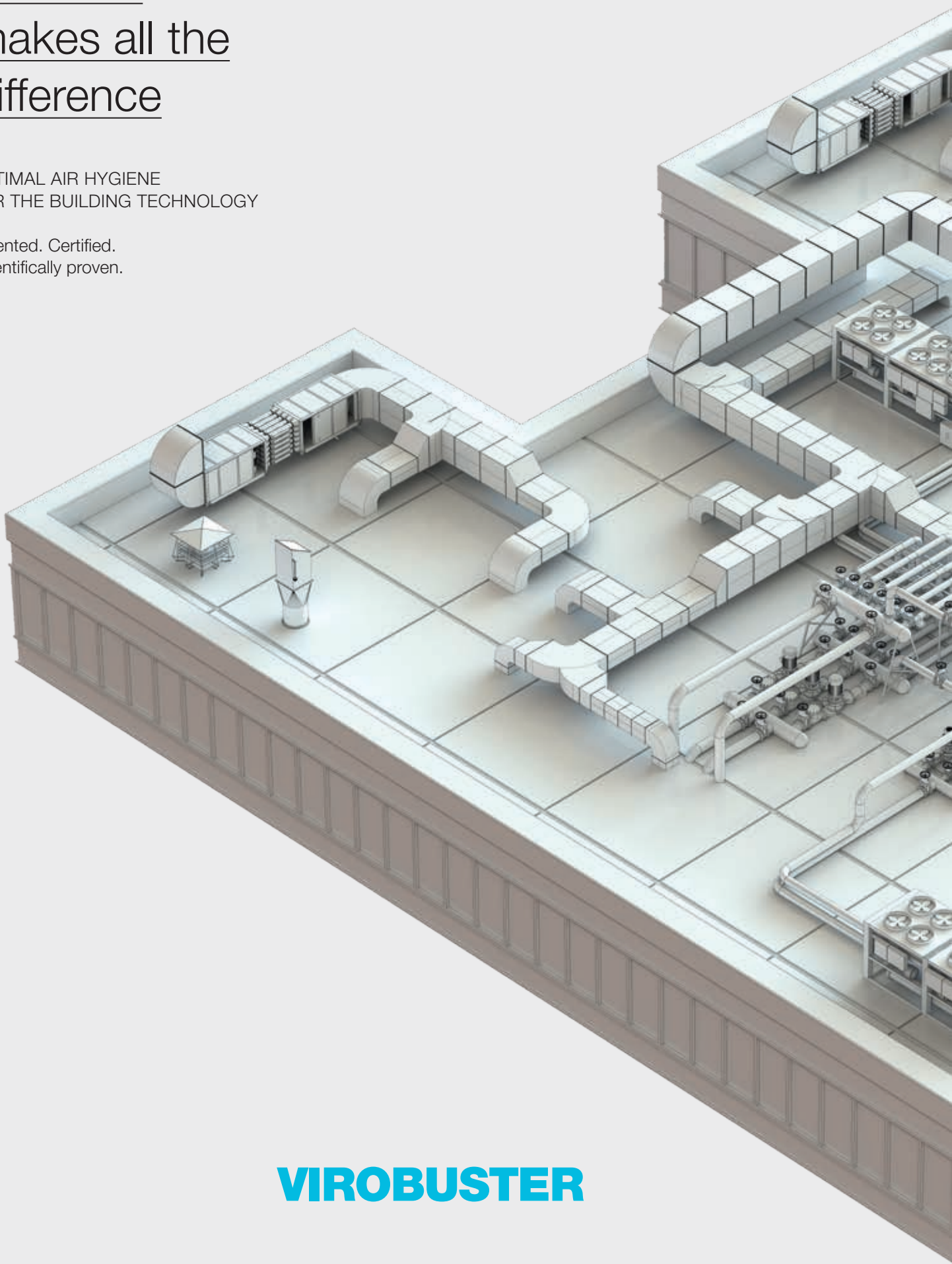
Clean air makes all the difference

OPTIMAL AIR HYGIENE
FOR THE BUILDING TECHNOLOGY

Patented. Certified.
Scientifically proven.



VIROBUSTER



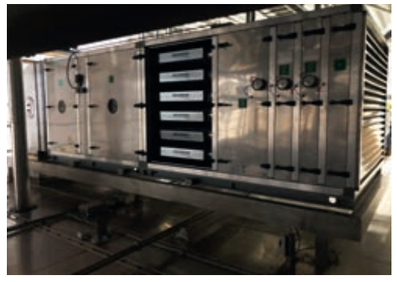








VIROBUSTER

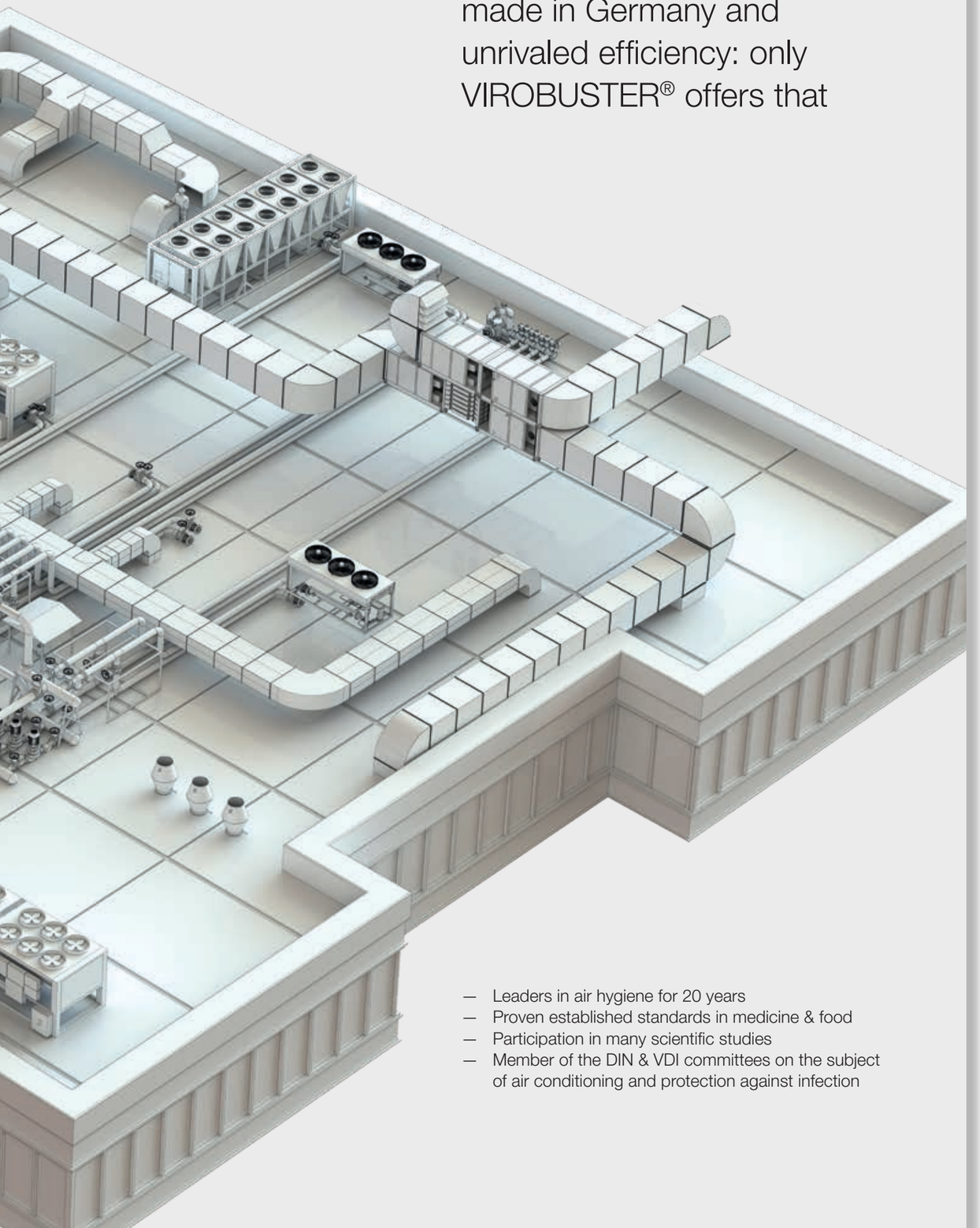





ROBUSTER



Sustainable air disinfection, made in Germany and unrivaled efficiency: only VIROBUSTER® offers that



— Leaders in air hygiene for 20 years
— Proven established standards in medicine & food
— Participation in many scientific studies
— Member of the DIN & VDI committees on the subject of air conditioning and protection against infection

Content

State of the art is not enough

Optimized HVAC systems are systemically relevant

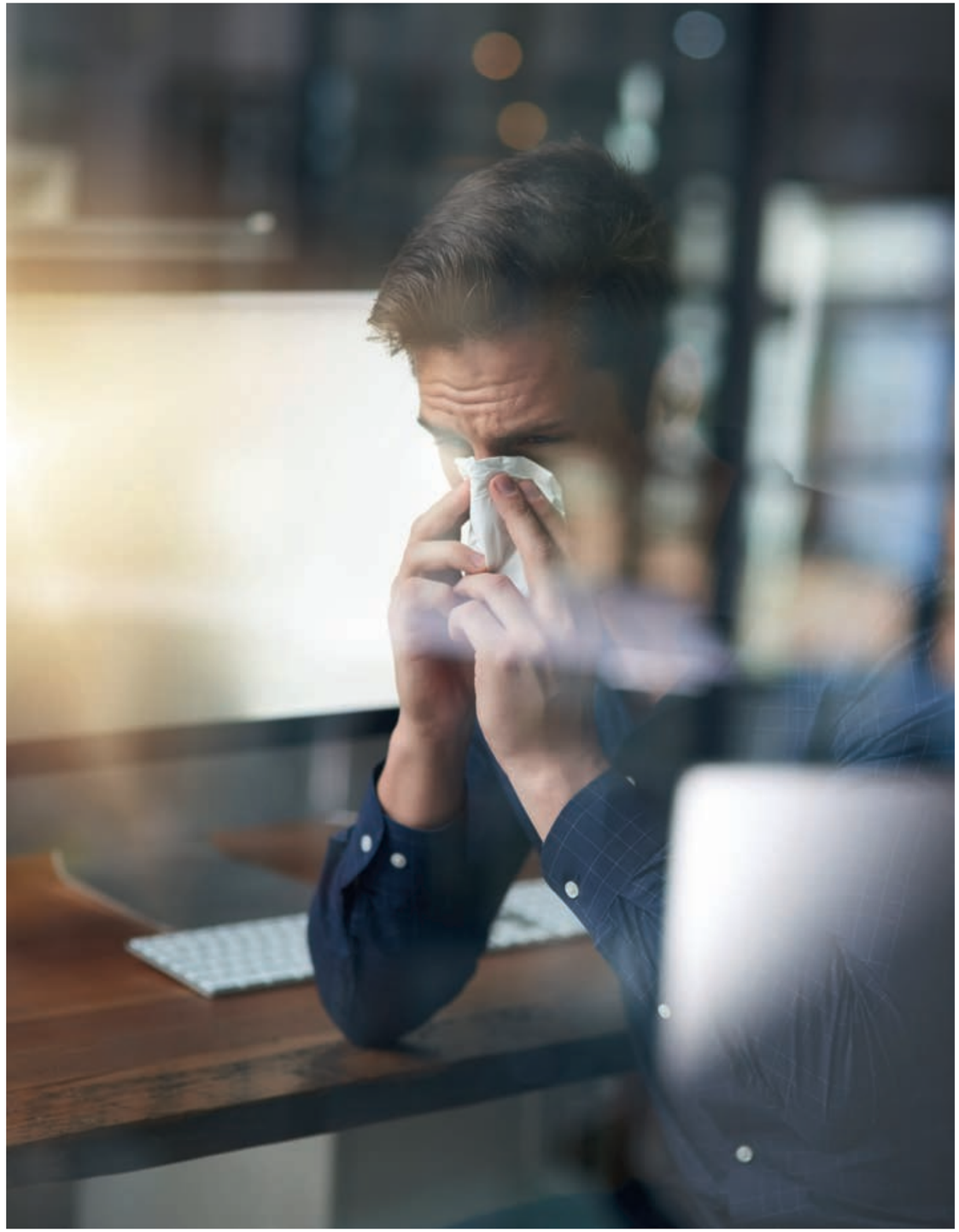
Three years of pandemic have shown: Viruses have arrived in society and are considered one of the most important challenges of the future. Whether office, authority, health care or leisure facility - air hygiene and -quality are decisive for health protection and well-being. But by no means standard. Because three years of pandemic have also shown: Current ventilation standards focus on aspects such as energy and comfort - but do not protect against airborne pathogens. Rather, the airflows through air conditioning

systems (HVAC) can contribute to the uncontrolled spread of these. The consequences are reduced productivity, increased sick leave, lack of well-being and sick building syndrome (SBS). The introduction of new hygiene requirements for HVAC systems is intended to improve the situation but collides with existing regulations regarding energy and comfort.

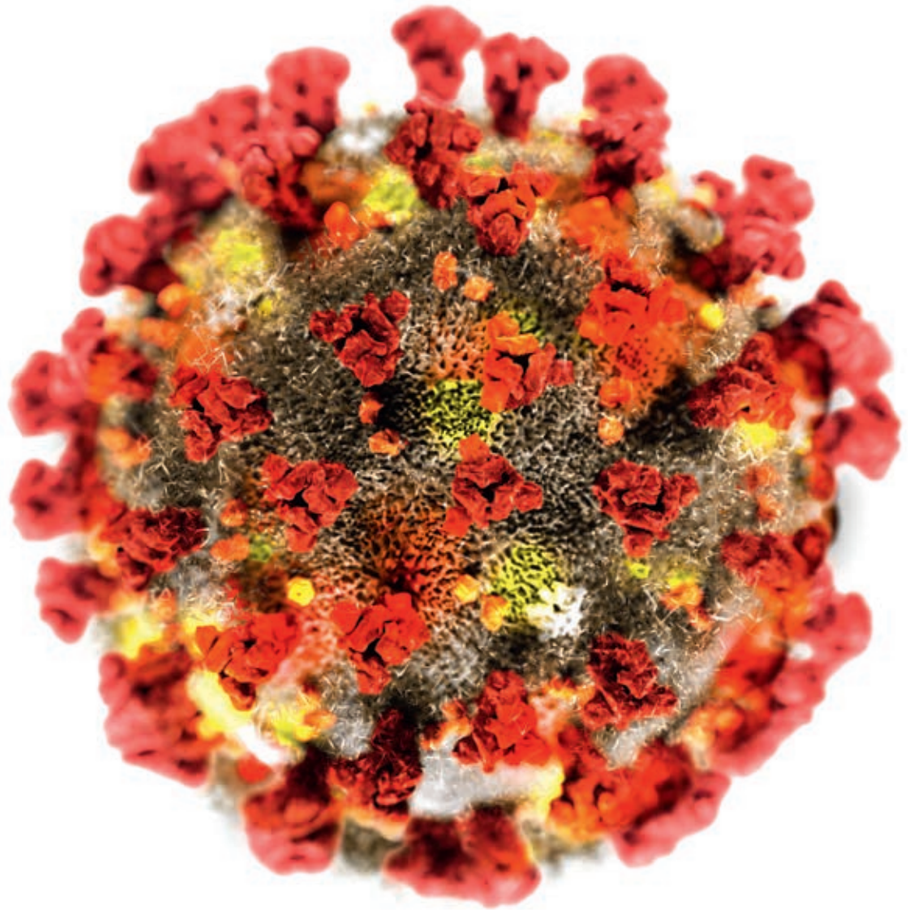
→ So what does it take to increase the efficiency of ventilation systems easily, sustainably, economically and effectively while saving energy at the same time?

„ There is still a need for maximum protection against infection indoors such as public buildings and authorities, for example for children, students, employees and vulnerable groups in general. At the same time, the topic of energy efficiency is also on the agenda. “

Prof. Detlef Lohse
Max-Planck-Institute



New concepts are required



The hurdles to meet ongoing pandemic requirements and future developments in a long-term and cost-optimized manner, seem great. The good news: There are technical solutions that have been scientifically researched and proven in practice over the years in sensitive areas such as healthcare and the food industry. Solutions that can be used in a hybrid way at the same time, i.e., when needed and thus with maximum energy efficiency.

→ We are talking about UVC-based air disinfection.

This is where VIROBUSTER® comes into play with its unparalleled efficient UVC technology for air hygiene, the patented UVPE air disinfection. While classic HEPA and other filters only capture and collect living microorganisms, VIROBUSTER® makes them really harmless: up to 99.99 % of all bacteria and viruses in the air are inactivated in a single pass.

— World strongest UVC modules (Kowalski, 2009)

— 600 times stronger than conventional UVC systems (Kleesiek et al., 2009)

— In contrast to ionization/plasma, UV is not subject to the biocide regulation and is therefore harmless to humans, animals and the environment.

— Protection On-Demand through hybrid building solutions.

— Modular, turnkey solutions for retrofitting and new construction: conversion to energy-efficient displacement ventilation instead of classic mixed ventilation: up to 30 % energy savings possible.

— Maximum protection against infection (air has outdoor air quality)

— Scientifically proven (e.g. Max Planck Institute, Technical University of Twente, University of Amsterdam, Fraunhofer Institute, Biotec and many more)

— First with the use of UV-C systems the core requirements for infection protection and sustainability in buildings are combined and thus fulfilled (Prof. Detlef Lohse, Max Planck Institute).

„ The results of the single pass test show that with UV radiation the kill rate is > 99.9 %.“

Dr. Andreas Bermpohl
Biotec GmbH

Why?

Why is clean air so important?

Bad air makes you sick

Clean air makes the difference

Wherever people work, learn, recover or relax, the quality of the air is crucial for their ability to concentrate and perform, for staying healthy and to relax. Scientific research on improving indoor air quality make it clear: People experience the microbiological contamination of IAQ/HVAC as a proven influence on their perceived air quality (PAQ). In addition to features such as ergonomics and natural light, the PAQ is considered to be one of the main causes of Sick Building Syndrome[1] (SBS).

While the use of mechanical filtration can significantly contribute to air quality degradation[2], UV-C-air disinfection improves indoor air quality to the point that it is almost as clean as outdoor air.[3]

„ Existing standards for indoor air quality mainly take into account CO_2 and particulate matter values. It is questionable to what extent these are sufficient to control virus concentration indoors.“

Prof. Philomena Bluyssen
Technische Universität Delft, Netherlands

[1] Fisk et al., Wargocki et al., Milton, et al. [2] Boerstra et al., 2005 [3] Gaillard, Lohse, Bonn, 2023

What scientists are asking for

Prevention instead of curation

Germ-free air from VIROBUSTER® not only stands for maximum protection against infection and wellbeing. Germ-free air always stands for financial planning and advantages. Once again, because the systems can be switched on and off as required.

→ Hard Facts:

Lower costs with simultaneous advantages:

— less sick leave
— increased productivity
— higher comfort / well-being
— clean technical systems
— energy-saving environmental conditions

→ Soft Facts:

Less follow-up costs due to:

— minimized stress
— reduced mVOCs and thereby improved ability to concentrate
— increased hygiene image for customers

Conclusion: The clear recommendation from the scientific team of Prof. Detlef Lohse (Max Planck Institute) and Prof. Daniel Bonn (University of Amsterdam): "All buildings must be equipped with certified UVC systems, as they can be activated when required and only generate costs when switched on. This proposal is comparable to the symbiosis of sustainability and fire protection in buildings - the core requirements for infection protection and sustainability are met."

How?

How does VIROBUSTER® ensure the best air hygiene ever?

Air hygiene at its best

UV-C perfected – that’s a fact

HOW DOES VIROBUSTER® CLEAN THE AIR?

All VIROBUSTER® devices rely on the patented UVPE technology. The room air is treated with concentrated UVC light within a closed system – which is additionally amplified by reflectors. This is significantly more efficient than conventional UVC solutions. This intensity ensures that the DNA/RNA of microorganisms such as bacteria and viruses is damaged to such an extent that they can no longer multiply. In just one pass, up to 99.99 % of the microorganisms are inactivated in this way.

IS THERE A PROOF THAT THE TECHNOLOGY WORKS?

UVC light has been used for disinfection since the beginning of the 20th century - e.g., in drinking water treatment. VIROBUSTER®'s UVPE technology further refines this process - in a closed unit that uses reflectors to achieve uniform, very intensive irradiation of the entire air volume. The effectiveness has been proven in various studies and certification processes. In repeated tests in 2006, 2011, 2013, 2020 and 2021, the Hygieneinstitut Biotec GmbH concluded that 99.99 % of the living microorganisms contained in the air are already inactivated in the first run. The Fraunhofer Institute for Building Physics IBP has also clearly demonstrated room efficiency in 2021 - the effectiveness of the technology has been proven many times in practice, especially in the food industry. Another important piece of evidence is the several thousand VIROBUSTER® devices that have been used successfully since 2002, especially in demanding environments such as hospitals and the food industry.

WHAT IS THE DIFFERENCE BETWEEN AIR DISINFECTION AND AIR PURIFICATION?

Conventional air purification is based on filters filtering out and collecting fine particles from the air. Air disinfection inactivates fungal spores, bacteria and other microorganisms without capturing them.

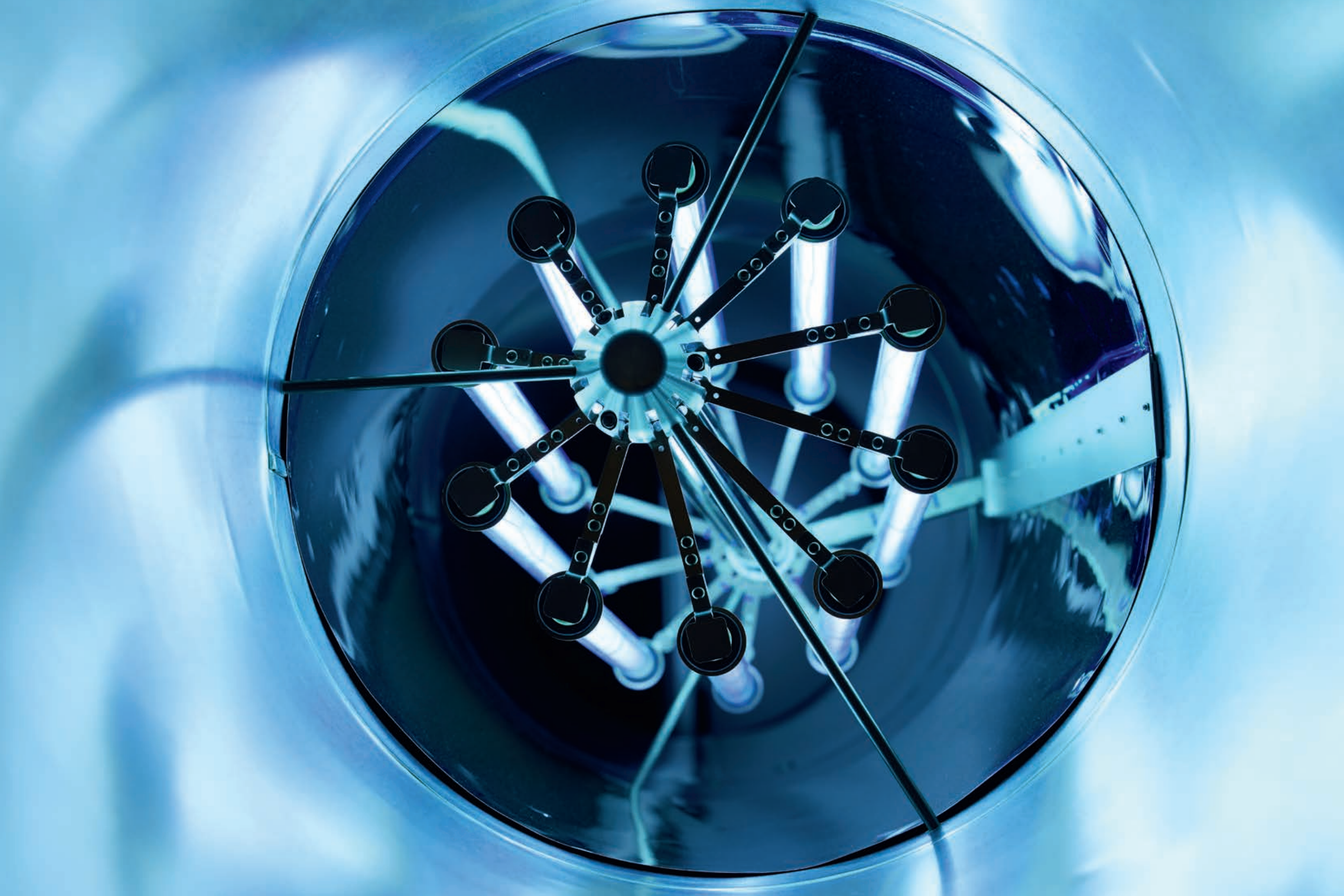
WHY IS THE STATUS QUO NOT ENOUGH?

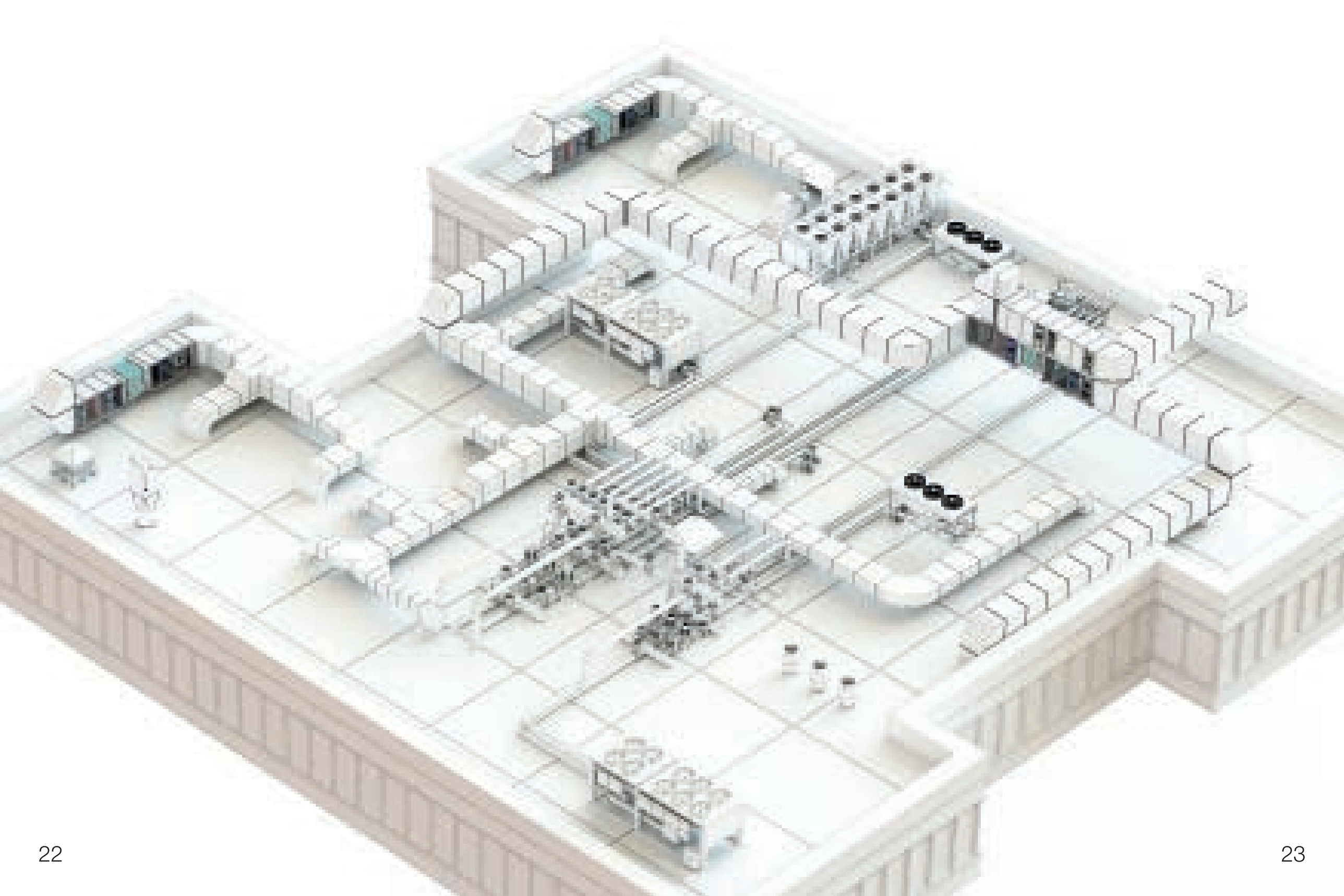
With conventional air purifiers with HEPA or other filters, microorganisms are captured alive - the filters can then only be changed with full protective clothing. UVC, on the other hand, does not collect these microorganisms, but deactivates them. But the common UVC solutions are too weak to inactivate mold and spores in one pass. Our UVPE technology, on the other hand, cleans significantly larger amounts of air in the first pass - this means that rooms are completely disinfected faster. However, HEPA technology has other disadvantages: the systems can only be retrofitted at great (cost) expense. And since they must run constantly, they consume energy unnecessarily. The necessary professional maintenance increases the service costs as well. In contrast, VIROBUSTER® systems can be conveniently switched on as required, which avoids frequent and expensive filter changes.

„ In less than eight years, VIROBUSTER® has efficiently and effectively supported a global industry in need of help. With a solid line of products, all designed for air sterilization, VIROBUSTER® has become a leader in its industry. This is air sterilization of the latest generation.”

Prof. P. Englis
Born Global Firms

	HEPA	UV-C	VIROBUSTER UVPE
Viruses	—	✓	✓
Bacteria	✓	✓	✓
Fungi	✓	—	✓





What use?

What are the
possible uses?

Everyone is talking
about effectiveness
and efficiency

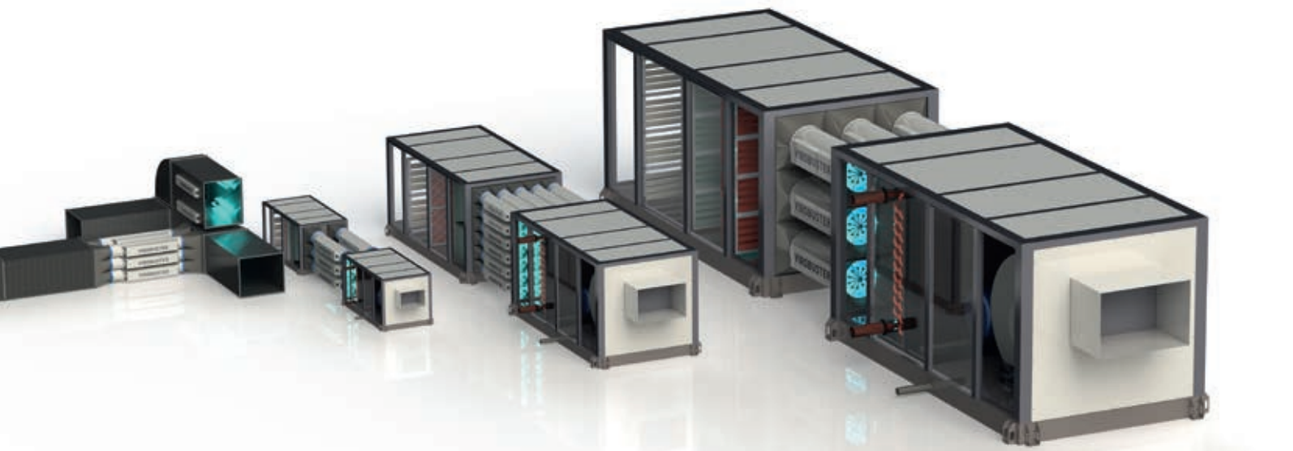
We guarantee them

This has been scientifically proven: The patented VIROBUSTER® technology outperforms conventional UVC solutions by a factor of more than 600 and reduces the risk of infection like no other system. Viruses, bacteria or other microorganisms are proven to be inactivated, which has a significant impact on air quality. The new Steritube XL for ventilation systems, for example, disinfects air volumes of 9,000 m^3/h and is therefore the most powerful UV-C device in the world.

⟶ What does that mean specifically?

The use of efficient, certified UV-C systems in HVAC systems provides the basis for new approaches in ventilation applications. Here we set the standard:

- Easy retrofit in existing as well as installation in new systems.
- A post validation of existing ventilation systems is not necessary.
- Thanks to the modular design, no complex pre-engineering needed.
- Easy conversion to energy-efficient displacement ventilation instead of mixed ventilation.
  - With the same ventilation efficiency, the system requires significantly less air volume (-10 % up to -25 %)
  - Depending on the ventilation system, less energy is required for heating and cooling (-9 % up to -15 %)
- Flexible use, switch on and off as needed.



SAFETY AND SUSTAINABILITY	The use of emission-free (ozone-free) UV-C lamps and their installation in enclosed ventilation ducts ensure maximum safety for people and the environment with a long-term reduction in microorganisms in HVAC systems. In addition, the UVPE technology requires far fewer lamps than conventional systems, and energy and maintenance costs are lower.
MAXIMUM INTENSITY COMPARED TO STANDARD UV-C	The patented UVPE process achieves complete inactivation of microorganisms through specially arranged lamps and their multiple reflections. The result exceeds the previously used UVC technologies by 3 LOG levels.
ONE FOR ALL – THE MODULAR UNITARY SYSTEM	An unitary system is a standard module with its own (technical) configuration and design, which is both technically and biologically certified and validated by a recognized test institute. All unitary systems can therefore be retrofitted and exchanged without any post-validation and/or certification.
ENHANCED EFFECT POSSIBLE WITH ADDITIONAL FILTERS	In order to also treat larger inorganic particles, the combination with a filter is ideal.
COMFORTABLE, FLEXIBLE USAGE	Thanks to the plug-and-play concept, the modules can be easily installed as a built-in solution in different passages of HVAC systems or individual ventilation sections and used as required.

„ The patented UVPE principle perfected by VIROBUSTER® exceeds the maximum intensity of the standard UV-C technologies by 3 log levels. This corresponds to about 1000 times the power. “

Fahmi Yigit
CEO
Scientific head of air hygiene/ air disinfection expert

Strong concepts for every application

Clean air is essential. And with VIROBUSTER® it's a question of possibilities. Depending on the framework conditions and existing structures, with our patented UV-C solutions we offer simple ways to implement a ventilation and air disinfection concept conveniently, economically and flexibly and to increase infection protection in the long term.

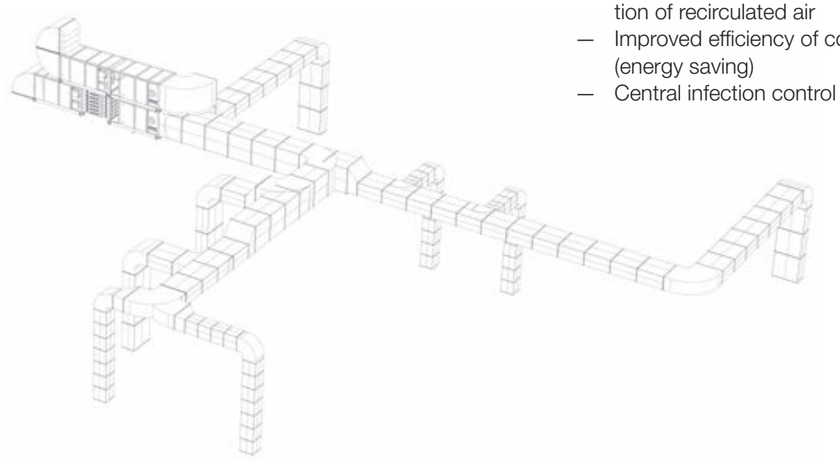
——→ Retrofit or new installation: Thanks to the modular design, different power ranges and air volumes can be implemented depending on the initial situation and requirements.

——→ For buildings without an existing ventilation system we have developed high-performance box solutions that can be set up in classrooms, for example

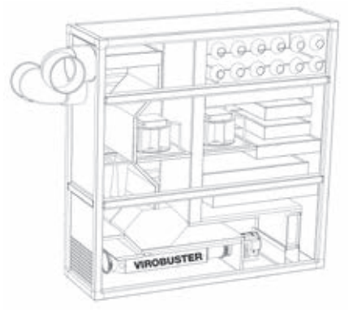
CENTRAL HVAC SYSTEMS

The VIROBUSTER® modules are integrated in the central ventilation system. Preferably in an empty section provided for this purpose. The empty housing can be equipped beforehand or afterwards using the standardized VIROBUSTER® systems. The subsequent installation of the certified UV-C modules in existing systems means that the entire system does not need to be validated again.

- no certification or validation effort
- no plant-specific UV engineering required
- only HVAC engineering required, based on the required m^3/h capacities and installation conditions
- Energy savings through higher & germ-free proportion of recirculated air
- Improved efficiency of cooling and heating coils (energy saving)
- Central infection control for all premises



DECENTRALIZED SYSTEM



Box solutions are recommended for buildings without an existing ventilation system, for example for school ventilation. The system combines fresh air supply and air disinfection in just one device. Depending on the CO_2 content in the classroom, the outside air is drawn in in a controlled manner and heated in the heat exchanger by the exhaust air. The heated fresh air is combined with the circulating air disinfected by the VIROBUSTER® technology and thermally processed by the optional air conditioning unit. The air is directed into the classroom via special outlet nozzles. The resulting downflow effect creates the optimal air distribution profile.

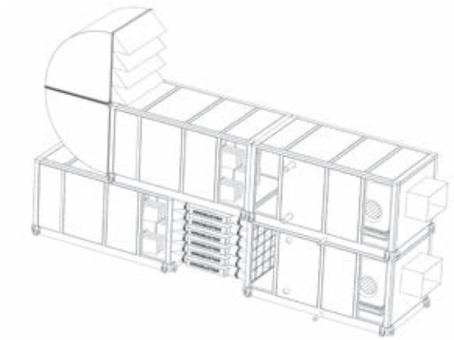
- Energy efficient through heat exchanger
- CO_2-controlled fresh air intake
- Unique antivirus protection
- Increased comfort through (optional) air conditioning unit

HVAC SYSTEMS INTEGRATION

As cited in the UVGI Handbook, 2009, the VIROBUSTER® Steritube is the world's first unitary module that can be used as an in-duct system. VIROBUSTER® modules such as the Steritube are integrated into the existing HVAC system and preferably installed in an empty HVAC-section provided for this purpose.

The use of unitary modules in HVAC applications opens up a completely new range of solutions and market opportunities.

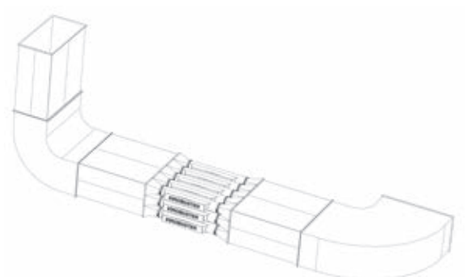
- Retrofit & new installation
- Supply of the entire building with germ-free air
- Achieving maximum UV-C performance and biological efficiency
- Outperforms classic in-duct-systems by a factor of LOG 3 (Kleesiek et al., 2009)
- Pragmatic advantages over classic UVGI solutions



INTEGRATION IN AIR DUCT

The integration of the modules in existing or newly planned ventilation ducts is first choice when there is no space in the central ventilation system for retrofitting - but also when only parts of a building have to be supplied with germ-free air. To do this, a section of the ventilation duct is simply removed and replaced with VIROBUSTER® modules. The modules are identical units, which can be multiplied according to the required disinfection performance in the overall system, which offers many product-specific and economic advantages:

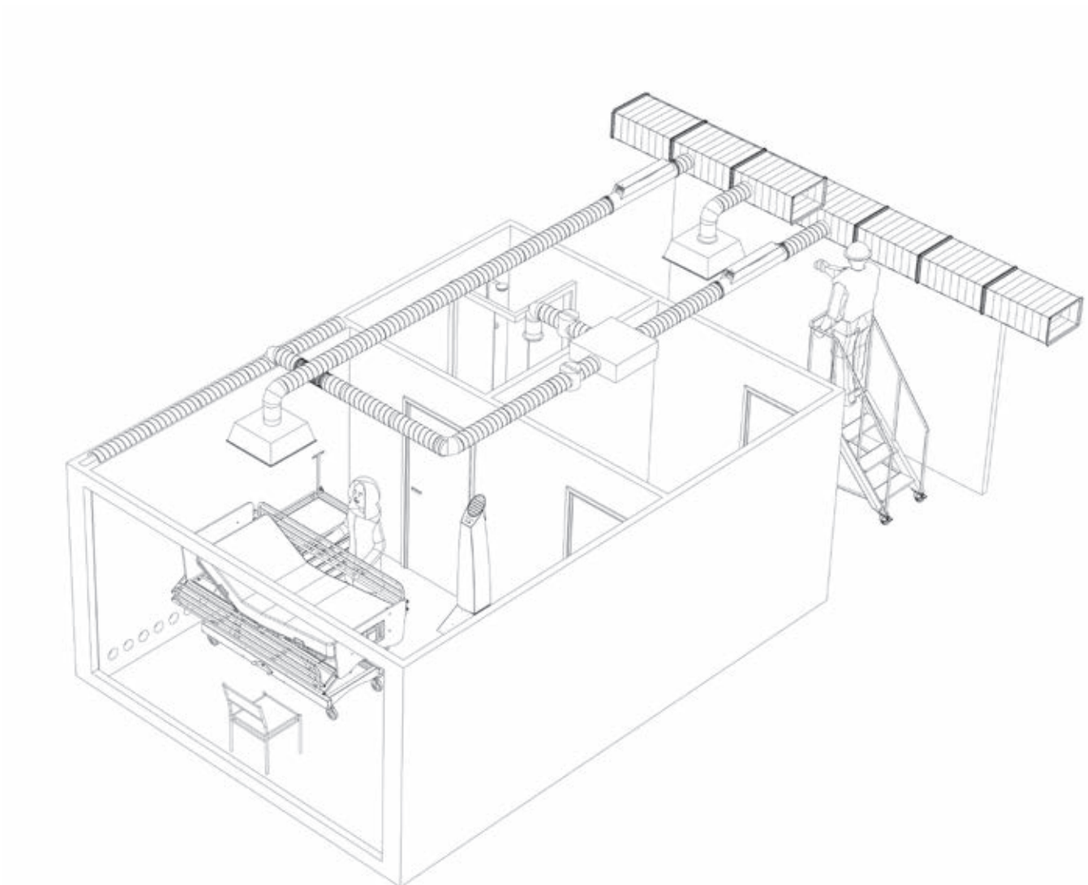
- easy to implement
- no post-certification or validation effort
- no plant-specific UV-engineering required
- only HVAC engineering required based on requested air volume capacities (m^3/h) and mounting conditions



HYBRID ISOLATION ROOM

VIROBUSTER® modules can be switched on or off as required, in contrast to HEPA-based concepts that must be operated continuously. The unique possibility - to convert a standard patient room into a fully-fledged isolation room with the push of a button - our hybrid isolation room concept. Another advantage: the UV-C units do not cause any operating costs when switched off.

In addition to maximum protection against infection, the existing mixed ventilation can be converted to displacement ventilation to increase sustainability.

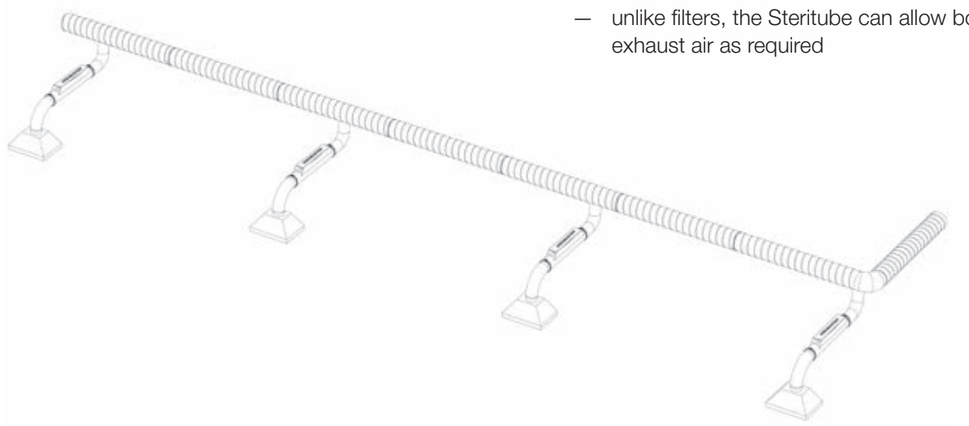


The contaminated air is displaced by the germ-free supply air from the ceiling outlet in the direction of the floor, where it is extracted via the exhaust air grille in the air-conducting double-wall structure and sterilized before it enters the central exhaust air duct.

END OF PIPE

If the rooms are small or there is only a small amount of air needed, the modules (Steritubes) can be integrated just before the outlet grille (air outlet) using the so-called "end-of-pipe" principle. This implementation often takes place in the ceiling and is preferably used in retrofit installations or in older ventilation ducts to protect sensitive areas and people from contamination and impurities in the air.

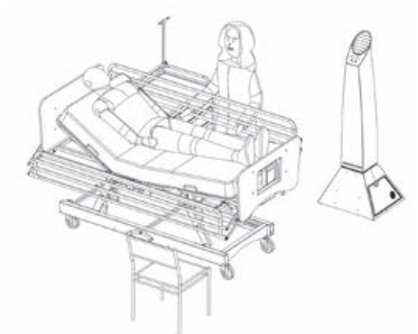
- easy & flexible: Diameter of existing air duct & diameter of the Steritubes is often the same
- cost-effective, since almost no pressure drop occurs
- energy efficient, since the Steritube is only switched on when needed
- unlike filters, the Steritube can allow both supply and exhaust air as required



MOBILE USE

The use of a standing or wall-mounted device such as the VIROBUSTER®-Steribase 450 Plus is recommended in rooms without connection to an HVAC system or in which the existing system can neither be modified nor expanded

- Plug & Play solution (230 V)
- Can be used quickly and flexible
- Inexpensive implementation, since no conversion measures are necessary
- Small footprint & flexible positioning options



Only the best products
for the best air

Stand-alone or built-in solution, decentralized solution or HVAC integration, retrofitting or new installation - our products have been setting standards in air disinfection for a good two decades and are now reducing the risk of infection from airborne microorganisms indoors in more than 25 countries by up to 99.99 percent.

STERISYSTEM 1200

Einzigartiger Infektionsschutz & Unique protection against infection & CO_2-controlled fresh air in a decentralized ventilation system

STERITUBE XL 9000

The most powerful UV sterilization system in the world sterilizes air volumes of up to 9,000 m^3/h (for HVAC systems)

STERITUBE & BASICTUBE

The most powerful UV sterilization system in the world sterilizes air volumes of up to 800 m^3/h (for HVAC systems)

STERIBASE 450 PLUS

Mobile and flexible, the standing device inactivates 99.99 % of all viruses and bacteria with UV-C light in a very short time

UV-CYCLON 9000

A patented world first that combines particle separation and proven UVC air disinfection from VIROBUSTER® in a compact HVAC system

TECHNISCHE DATEN

	STERISYSTEM 1200	STERITUBE	STERITUBE XL	STERIBASE 450 PLUS (MOBIL)	STERIBASE 450 PLUS (WALL)
Maximum power consumption (optional cooling capacity)	395 W (3,2 KW)	190 W	2 KW	240 W	240 W
Technology (Effective Radiation Dose)	Circulating air UV-C (> 120 J/m²) Supply air ISO ePM1>55 % (F7)	UV-C (> 120 J/m²)	UV-C (> 279 J/m²)	UV-C (> 120 J/m²)	UV-C (> 120 J/m²)
Airflow/HADR (Hygienic Air Delivery Rate)	Total 1.200 m³/h > 400 m³/h Fresh air (CO_2-controlled)	300 m³/h Mold 500 m³/h Bacteria 800 m³/h Viruses	3.000 m³/h Mold 6.000 m³/h Bacteria 9.000 m³/h Viruses	150 bis >500 m³/h 670 m³/h HADR 800 m³/h max. max. fan performance	150 bis >500 m³/h 670 m³/h HADR 800 m³/h max. fan performance
Sound pressure level dB(A)*	800 m³/h: 29,4 1.200 m³/h: < 35	—	—	Normal operation 40	Normal operation 40
Dimensions (L/H x W x D) mm	2.000 x 2.000 x 600	1.000 x 180 x 230	1.500 x 516 x 576,5	1.640 x 540 x 540	1.640 x 540 x 540
Weight (kg)	150 (175)	10	55	39	43 – 46,3 (Mounting dependent)
Design type	decentralized ventilation system	Built-in module for HVAC system or as a decentralized recirculation system	Built-in module for large HVAC system	mobile recirculation unit	decentralized recirculation unit for wall or corner wall mounting
Optional	ooling and/or heating	individual adapters for existing ventilation ducts	individual adapters for existing ventilation ducts	Device installation on site	Installation of the wall bracket on site

* Depending on the adjusted air volume.

Where in use?

Where is the world’s best UV-C technology used?

Industries and references

The right solution for every concept

With VIROBUSTER® you can turn all your rooms into safe areas in a very flexible manner and as needed. This applies to classrooms or offices, nursing or hospital rooms, surgery rooms and production facilities as well as cinemas, theatres or indoor swimming pools.

→ Our technology is market leading and proven since 2002 in healthcare, laboratories and the food industry.

Benefits using the example of
⟶ healthcare

NOORDWEST ZIEKENHUISGROEP

Noordwest Ziekenhuisgroep

Application
An isolation or quarantine room is designed to isolate those patients who are infected with organisms that are spread through tiny airborne droplets. Alternatively, these clean rooms are used to protect particularly vulnerable patients from external hazards, for example during chemotherapy or after a bone marrow transplant.

Description
These isolation and quarantine areas are designed according to defined requirements. Unfortunately, these rooms are quite expensive and are only used a few days a year. However, the technical installation behind the existing concepts is based on air treatment with HEPA filtration, so the system must be in permanent operation - even without patients. A less sustainable solution, also with a view to the life cycle costs. For these reasons, hospitals often only have a few central isolation and quarantine rooms available, and patients must be transferred to these special rooms if necessary.

Our concept
The fact that isolation rooms are only occupied for a few days, but the ventilation system is also supposed to run on unoccupied days, is an attack on sustainability policy - and at the same time the price for more biological security. The alternative:

⟶ A system based on the VIROBUSTER® Steritube offers better (virus) protection than the aforementioned filter based solutions - and thanks to its flexible operability, it is cheaper than normal HVAC systems when used for less than 4,000 operating hours per year.
⟶ Our hybrid isolation room concept meets the requirements for maximum sustainability and safety in equal measure.
⟶ Easy switch from patient room to isolation room – and back – at the push of a button.
⟶ In contrast to conventional solutions, only a fraction of the investment, operator and maintenance costs are incurred - with the same level of security.

Benefits using the example of
⟶ healthcare

SURGERY ROOM DORTMUND

KLINIKUM DO

Application
Operating rooms, intensive care rooms and even ambulant treatment rooms are not only dependent on an HVAC system to protect against infection. The use of anaesthetics makes it necessary to provide larger quantities of (cleaned) air. This is where conventional (HEPA) systems reach their limits: higher volumes of cleaned air using a complex (HEPA) system means higher investment and operating costs.

Description
OP & IC systems are mainly based on mechanical filtration, which has significant disadvantages:
— Very comprehensive filter systems
— Energy-wasting booster fan
— Biohazardous and time-consuming work when replacing the filter
— Continuous operation due to the risk of the filters becoming clogged
— Risky & complex recirculation section

Among other things, it is these disadvantages that make the spaces described extremely expensive in terms of implementation, operation and maintenance costs.

Our concept
Both HEPA filters and UVC are serious options for treating contaminated air. The use of UVC forms the basis for new ways, because it has many advantages over HEPA technology:

⟶ Easy installation in existing and new systems
⟶ Flexible operation – system can be switched on and off as needed
⟶ Energy & cost efficient
⟶ UV is biologically the first choice when dealing with viruses
⟶ Safe to use and maintain

Benefits using the example of
⟶ office buildings

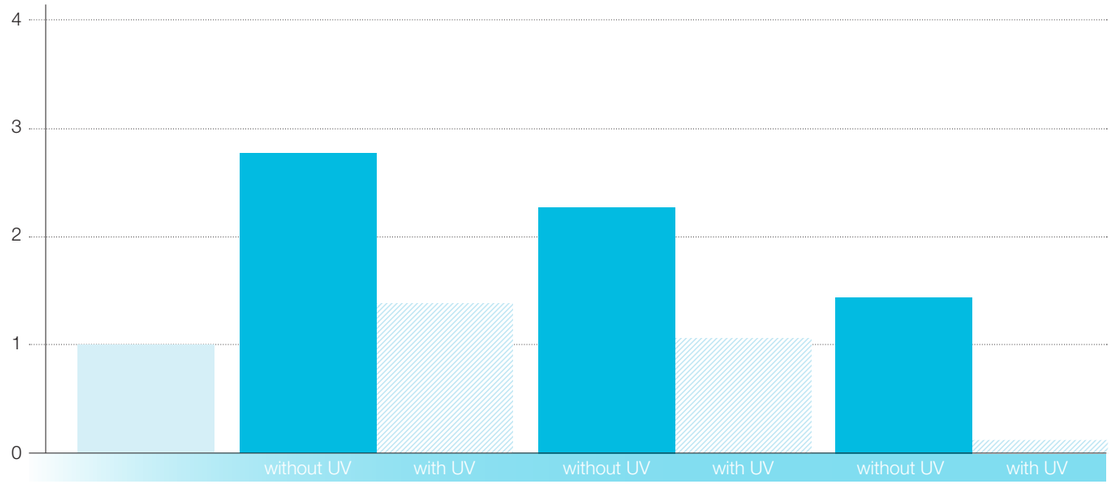
BRANDBUILDERS

Application
Air was generally not allowed to be recirculated during the pandemic. The result: all heat wheels had to be shut down. A measure that is neither ecologically nor economically justifiable. In order to prevent this inefficiency in the future and at the same time structurally ensure more infection protection even in the case of seasonal epidemics, new ways are needed to reconcile the core requirements of infection protection and sustainability.

Description
In this example, the virologically questionable recirculation system was equipped with eight Steritubes. The advantage of UVC over mechanical filtering is that UVC systems are only activated as required and only generate costs when they are switched on. Another fact: UVC is not subject to the Biocide Regulation - in contrast to the ionization and plasma technology that has been much advertised since Corona.

Our concept
Similar to the fire protection principle: Steritubes are integrated into the circulating air part of the HVAC system (in the duct or in the HVAC) as a precaution and are only switched on when required. Combined with adjusting the ventilation air distribution profile improves indoor air quality so much that it is almost as clean as uncontaminated outdoor air. At the same time, up to 30 % energy is saved because short-circuit airflows are prevented. This is ensured by converting the common principle of ceiling ventilation (supply air from above and exhaust from above) to the principle of displacement ventilation (supply from above and exhaust from below).

COUNT OF GERMS IN THE AIR
NORMALIZED TO THE EXTERNAL VALUE
(Ref: Gaillard, Lohse, Bonn 2023)



Benefits using the example of
⟶ school building

ASSOCIATION MUNICIPALITY OF ASBACH

Verbandsgemeinde **Asbach**

Application
In view of the pandemic situation that has prevailed in Germany since 2020 and the associated challenges in dealing with public facilities such as schools and daycare centers, the Asbach association of municipalities (Rhineland-Palatinate) established a holistic corona hygiene concept as early as autumn 2020, which provides maximum protection for children, schoolchildren, teachers, educators and parents. A driving fact was keeping up the face-to-face classes by keeping everyone healthy at the same time.

Description
A total of 160 mobile stand-alone devices of the Steribase Plus type were set up in schools and day-care centers. Since then, complete school and daycare closures have not been necessary in the community. Corona infections in these areas were only detected in individual cases. At the same time, since implementation, the responsible bodies have recorded a significant decrease in both general illnesses among employees and typical, seasonally driven complaints and allergies.

Our concept
The stand-alone devices not only ensure a significant reduction in the risk of infection. The limit values reported via the CO_2 monitors are so rarely exceeded due to better air distribution in the room that window ventilation during breaks is sufficient. Lessons remain uninterrupted and classrooms do not cool down as much in the cold season. In addition, the noise emissions do not have a disruptive effect on ongoing operations, neither teachers nor educators have to speak louder and the children do not show any restlessness.

Benefits using the example of
⟶ cinema and theatre

CINE 5

cine5

Application
The pandemic forced cinema owners to meet complex lockdown requirements, which resulted in closures. In order to prevent such an existentially threatening situation today and in the future, the owner of the Cine 5 cinema in Asbach (Rhineland-Palatinate, Germany) decided to upgrade the existing ventilation system.

Description
In the Cine 5 cinema, 33 powerful VIROBUSTER® Steritubes were retrofitted in the air ducts of the 6 separate HVAC systems of five cinema halls and the foyer.

Our concept
More standard is not possible: Due to uniform, TÜV and biodosimetrically tested modules, no complex calculations were necessary in advance. The only question left was how many m^3/h of air to clean and in which duct section the Steritubes can be installed.

- ⟶ Simple implementation
- ⟶ no UVC-Engineering
- ⟶ no technical or biological approval required
- ⟶ no business interruption due to the retrofitting work

Benefits using the example of
⟶ indoor pool

INDOOR POOL NÜRTINGEN

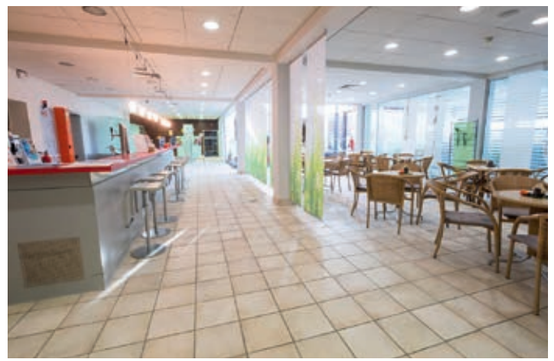
Stadtwerke Nürtingen GmbH

Application
As part of the Corona measures, indoor swimming pools were closed or operated with less capacity. This hit public utilities and private operators of swimming pools hard. Once again, because operations are booming, especially in winter, and the ban on air recirculation has had a particularly hard impact given the rise in energy prices.

Description
In the indoor swimming pool in Nürtingen, thirteen XL-Tubes from VIROBUSTER® with an output of 6,000 m^3/h each supply the indoor swimming pool, changing area and sauna area with germ-free air via the existing HVAC system. It is thus possible to minimize the risk of airborne infections to a large extent.

Our concept
By equipping the existing ventilation system with the new Steritubes XL, the customer (Stadtwerke Nürtingen) uses several options that only the VIROBUSTER® concept offers:

- ⟶ Flexible, needs-based switching on and off
- ⟶ Increased air recirculation mode saves (heating) energy and costs
- ⟶ The humidity does not mean any risk of damage, unlike when using filters
- ⟶ Maintenance & inspection are very easy



Benefits using the example of
⟶ transport & logistic

VARIOUS CLIENTS

Application
Different goods often come from different continents and are often stored or transported together – conditioned or not – in one hall. The greatest risk here is the so-called cross contamination of products, goods, animals or people.

Description
Several fruit, vegetable, coffee and cheese warehouses as well as trailers for transporting live animals have been equipped with the VIROBUSTER® Steritubes.

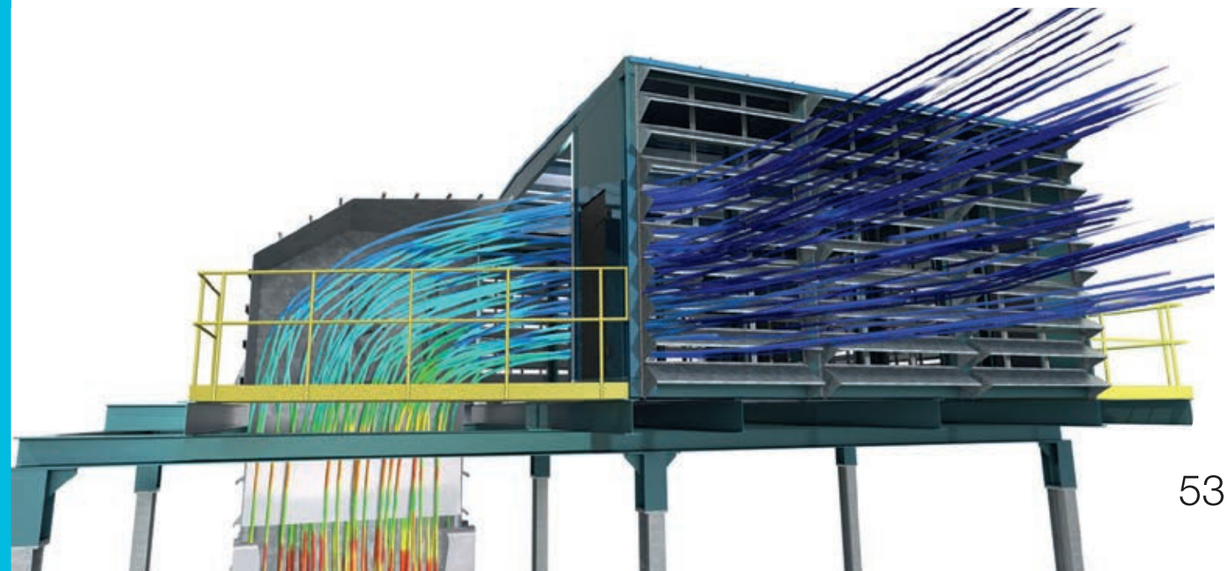
Our concept
Retrofitting has several advantages for the warehouses:

- ⟶ Goods can be stored longer
- ⟶ Fewer germs collect on the surfaces
- ⟶ Super contamination due to temperature fluctuations and changes in humidity between the warehouse and the supermarket is prevented

The concept is clearly advantageous for the transport of live animals because the ventilation system can be activated or deactivated specifically as required. Weather conditions also have no restrictive influence on the principle of action.

Complete solutions instead of just products

You don't just want to buy equipment. You want a solution that offers you the greatest possible quality and safety. We offer you exactly the service you need.



ADVICE

We carry out a full inspection and create a professional report with analysis, measurements, (risk) interpretation and advice. Our scans are based on almost 20 years of experience in healthcare, in laboratories, in the food industry, in veterinary and of course in office and public buildings.

Air hierarchy: The air should be directed in such a way that the polluted air is kept away from the employees. We analyse the current situation within a room (vertical scan) as well as the mutual flows between rooms (horizontal scan).

Air capacity: Air capacity determines how quickly a pollutant or CO_2 is removed. We check whether the values correspond to the building decree and whether the actual practice corresponds to the paper data.

Air quality: Depending on the application and profession, there may be requirements for increased quality. Here we analyse the current status of the quality level and determine whether it meets the requirements or wishes.

Ventilation equipment: How is the ventilation equipment build and is it optimally configured or does it need an update to get even more quality or even save money?

INSTALLATION

Our trained partners assemble the system ready for use. We are also happy to supply you with the Steritubes separately if your own ventilation contractor integrates the solution. Turnkey or pure delivery - the choice is yours.

SERVICE

Only when your system is running it does provide safety. With maintenance and spare parts, we ensure that your air is reliably disinfected. We are also there for you if you have any questions.

„ With us, every single device is made in Germany. The high processing quality of our production according to the medical device standard is DIN-compliant and of course TÜV-certified. “

Thomas Rous
CSO
VIROBUSTER® International GmbH

VIROBUSTER®:
Reliability since 20 years

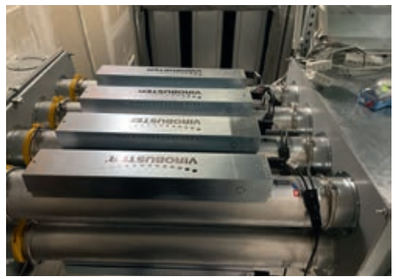
VIROBUSTER® has made a name for itself as an internationally active company with German roots: active on the market since 2002 with the unique UVPE technology, UV-C air disinfection has established itself as the problem solver in hygienically demanding environments such as hospitals and laboratories – but, above all, in the food industry. The products and solutions that reliably create flexible high-care environmental conditions can now be found in over 25 countries.

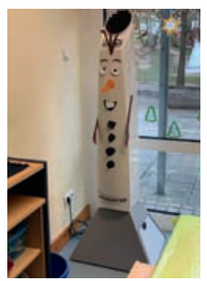
The basis of the company's success since its founding in 2002 is the invention of UVPE (Ultra Violet Pathogen Elimination) technology, an invention which is unique in the market. It is the world's first modular and efficient UV-C solution.

As the market leader, VIROBUSTER® holds numerous active property rights and patents and consistently drives technological development forward. As a result, new, innovative and customer-specific solutions are constantly being created internally. At the same time, the independent family-owned company regularly participates in the research activities of renowned universities and institutes and is represented on several (international) standardization committees.

At the company's headquarters in Windhagen, VIROBUSTER® operates its largest production site, which cooperates closely with other locations in Stuttgart and the Netherlands, guaranteeing consistently high manufacturing quality.

Evidence of effectiveness
Fraunhofer Institute for Building Physics IBP 2021
Hygieneinstitut biotec GmbH 2006, 2013, 2020, 2021, 2022
Kowalski 2009
HDZ NRW Ruhr-Universität Bochum 2009
Various proofs from customers
Chairman of DIN and Member of the VDI





REFERENCES

Universiteit Utrecht · Bayernland · Upfield · Aviko · coop · cine5 · Fortisa · colruyt · Unilever · Bakkerij Fuite · Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung · Landeshauptstadt Saarbrücken · Rijk Zwaan · Berdex · Klinikum Do · Brood van Soma · BB · Noordwest Ziekenhuisgroep · Remia · Verbandsgemeinde Asbach · MST · máxima medisch centrum · Stadtwerke Nürtingen GmbH

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The Air Purification Specialist.
Since 2002. Made in Germany.

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