WE CURE AIR

POTOK AIR DECONTAMINATION TECHNOLOGY IN HEALTHCARE

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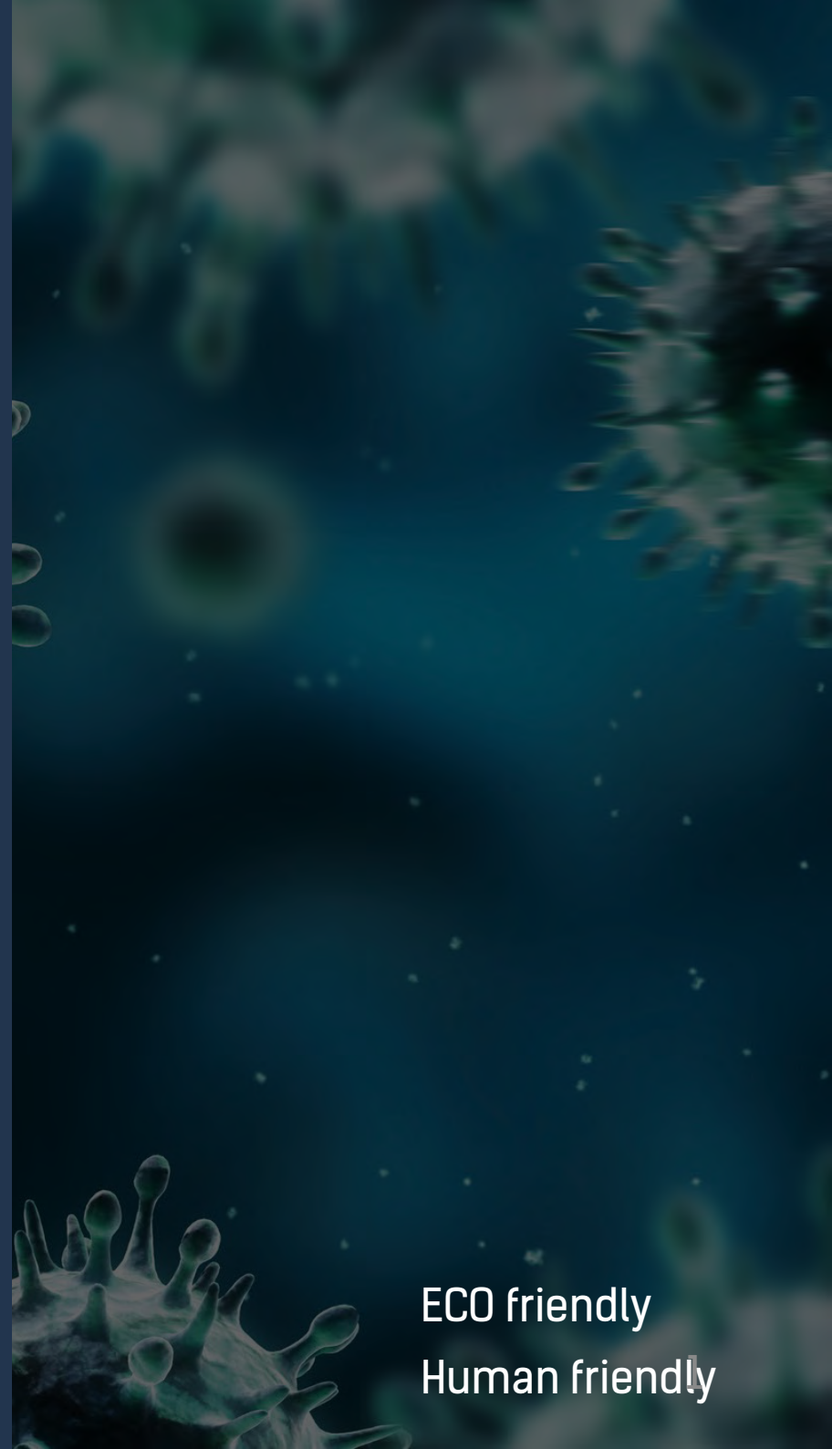


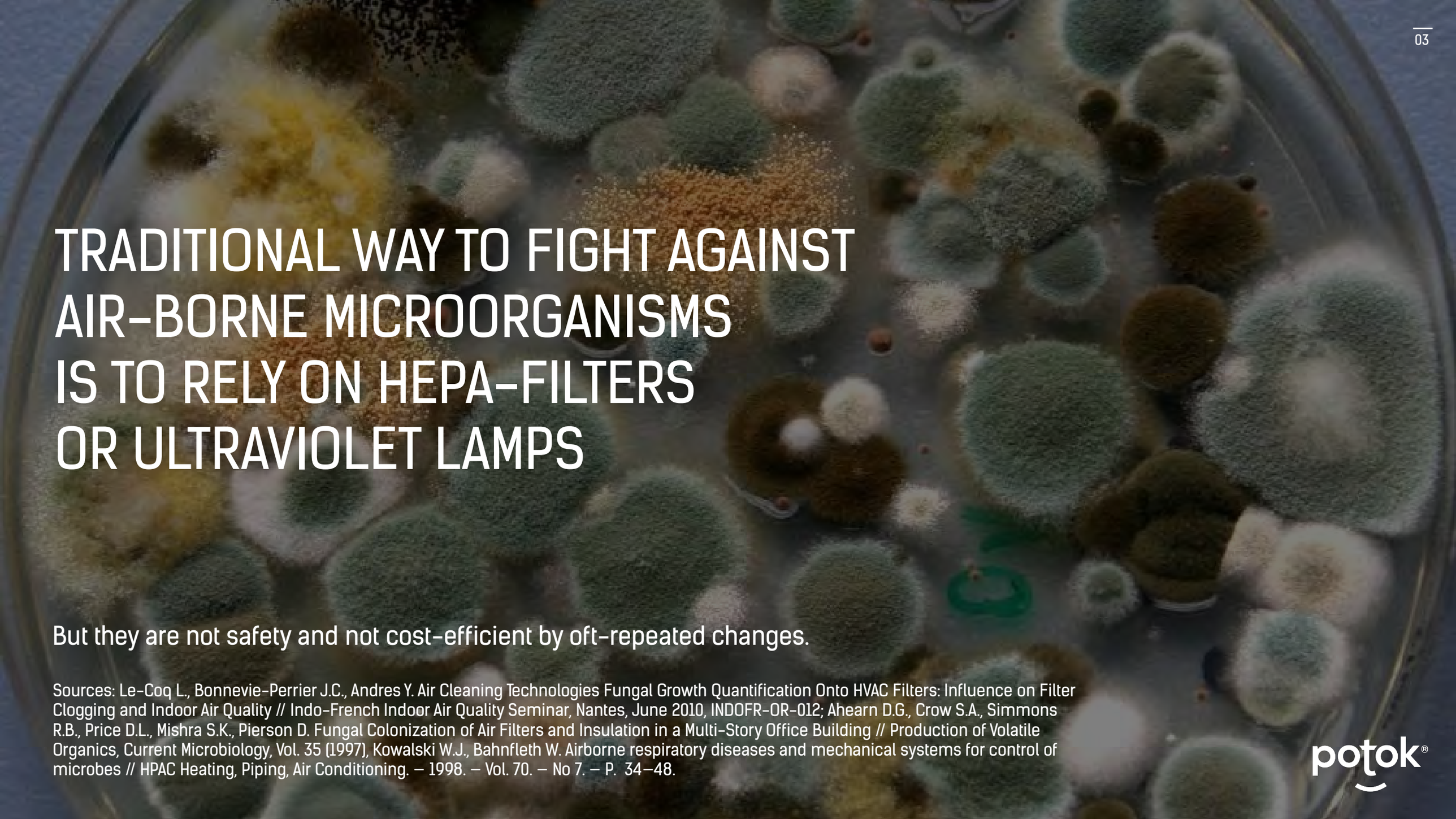
ECO friendly
Human friendly

In a 2019 study commissioned by the Kaufmännische Krankenkasse, the Forsa institute surveyed a representative sample of patients throughout Germany. When asked what people are most afraid of when they are hospitalized, 81% responded, infection with a hospital germ.

- 600,000 nosocomial infections occur throughout Germany every year*
- Most of hospital acquired infections are spreading through the air. "When other routes of nosocomial infections are well controlled, airborne infections may gain more practical importance in hospitals"**
- Researchers from the University Hospital in Jena analyzed in a paper that per case of infection, additional costs can exceed 11,000€***

+7 (495) 025-20-20, isales@potok.com

* Zacher, Benedikt, et al. "Application of a new methodology and R package reveals a high burden of healthcare-associated infections (HAI) in Germany compared to the average in the European Union/European Economic Area, 2011 to 2012." Eurosurveillance 24.46
** Institute for Medical Microbiology and Immunology, University of Bonn, Sigmund-Freud-Straβe 25, D-5300 Bonn 1, Germany
** Arefian, Habibollah, et al. "Extra length of stay and costs because of health care–associated infections at a German university hospital." American journal of infection control



TRADITIONAL WAY TO FIGHT AGAINST AIR-BORNE MICROORGANISMS IS TO RELY ON HEPA-FILTERS OR ULTRAVIOLET LAMPS

But they are not safety and not cost-efficient by oft-repeated changes.

Sources: Le-Coq L., Bonnevie-Perrier J.C., Andres Y. Air Cleaning Technologies Fungal Growth Quantification Onto HVAC Filters: Influence on Filter Clogging and Indoor Air Quality // Indo-French Indoor Air Quality Seminar, Nantes, June 2010, INDOFR-OR-012; Ahearn D.G., Crow S.A., Simmons R.B., Price D.L., Mishra S.K., Pierson D. Fungal Colonization of Air Filters and Insulation in a Multi-Story Office Building // Production of Volatile Organics, Current Microbiology, Vol. 35 (1997), Kowalski W.J., Bahnfleth W. Airborne respiratory diseases and mechanical systems for control of microbes // HPAC Heating, Piping, Air Conditioning. — 1998. — Vol. 70. — No 7. — P. 34—48.

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MAIN PROBLEMS OF HEPA–FILTRATION:

01

Trapped viable microorganisms matter (e.g. fungi, bacteria, mold); after a while they multiply and become a potential source of biological hazard.

02

Filtration efficiency can be sharply decreased given high air humidity level which can result in microorganisms volley emission.

03

Lack of filtration efficiency control system.

04

Filter fiber or its integrity damage during operating process.

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MAIN PROBLEMS OF ULTRAVIOLET LAMPS:

01

The effectiveness of microorganisms inactivation strongly depends on their type and external factors such as humidity, dustiness, surface cleanliness etc. Shadow zones are not exposed to radiation, and therefore are not disinfected.

02

UV lamps require significant operating and maintenance costs (frequent lamps replacement, large amount of electricity consumption, special disposal and sanitation facilities in case the lamp is broken).

03

The speed of the air passing through the irradiation zone affects on the microorganisms ability to receive a lethal dose. For moving microorganisms inactivation the dose of UV-light should be 4 times bigger than that used for microflora inactivation on surfaces.

04

Lamp lifetime is affected by power surges and the number of turns ons: each turn on reduces the total lamp lifetime by approximately 2 hours.

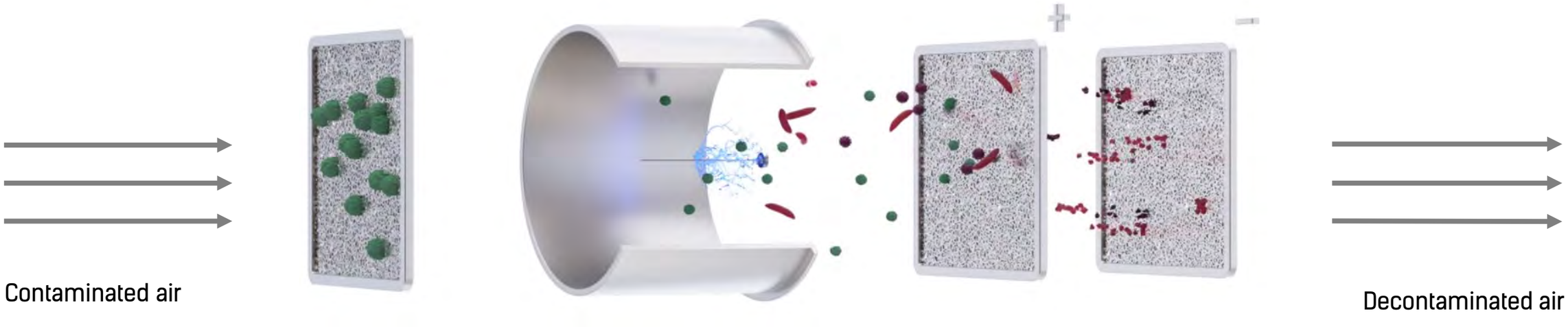
potok®

POTOK VS. OTHER TECHNOLOGIES

	POTOK	HEPA	UV-C	PHOTOCATALYSIS
PHYSICAL AIR-BORNE MICROORGANISMS DESTRUCTION	V	X	X	V
IDENTICAL EFFECT ON ALL AIR-BORNE MICROORGANISMS (NONSELECTIVITY)	V	V	X	X
SAFETY: WORK IN THE PRESENCE OF PEOPLE	V	V *	X/V	X/V **
THE EFFICIENCY DOES NOT DEPEND ON HUMIDITY	V	X	X	X
NO EXPANDABLES NEEDED	V	X	X ***	X ***
ENERGY SAVING	V	-	X	X
ENVIRONMENTALLY FRIENDLY	V	V	X	X

* In case of its regular renewal every 3-6 months of not fully decomposed molecules. Nitric oxide (II) is a poisonous gas with a suffocating effect.
** Photocatalysis disadvantage is the formation of peroxide compounds (for example, nitrogen oxides), which are often found among the "fragments"
*** UV lamps' world production is limited and in case of a sharp increased demand, there is an acute shortage of them

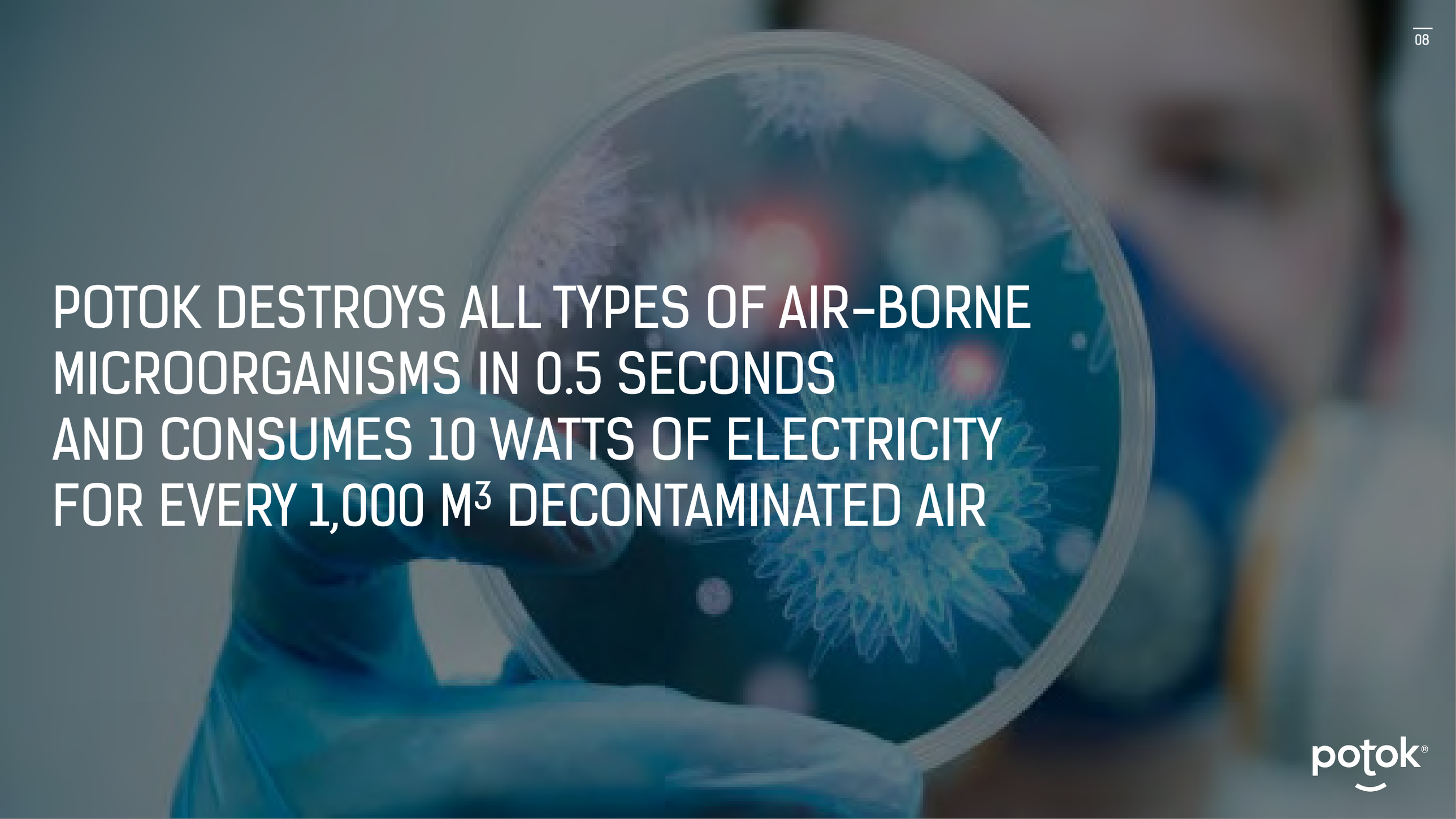
POTOK INTERNATIONALLY PATENTED TECHNOLOGY IS BASED ON A PHYSICAL METHOD OF DESTROYING AIRBORNE MICROORGANISMS



The Potok technology is used to decontaminate air by exposing microbial cells or viruses' secondary and tertiary structure of proteins to constant electric fields of a given orientation and tension. The value of the electric field is designed to destroy any microorganisms, regardless of the type (incl. viruses, mold and yeast).

AUTOMATIC EFFICIENCY CONTROL

The control device continuously registers actual current – voltage characteristics and matches them with the preset range of permissible values, thus providing an efficient decontamination of the air. In case of any deviations it will send a failure warning



POTOK DESTROYS ALL TYPES OF AIR-BORNE MICROORGANISMS IN 0.5 SECONDS AND CONSUMES 10 WATTS OF ELECTRICITY FOR EVERY 1,000 M^3 DECONTAMINATED AIR

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POTOK TECHNOLOGY SCIENTIFIC RECOGNITION

HARVARD SCHOOL OF PUBLIC HEALTH (USA)
- Bacillus subtilis spores
- Serratia marcescens
- Aspergillus niger
- Pseudomonas aeruginosa
- Staphylococcus aureus

CONFORMITY LABORATORIES (KOREA)
- E.coli ATCC 25922

EAST BAVARIAN TECHNICAL UNIVERSITY OF APPLIED SCIENCES AMBERG-WEIDEN (GERMANY)

Studies have shown that the Potok air decontamination system reduces bacterial contamination of the air in an operating room to 5 CFU/m³. This means that Potok can meet the specifications for ventilation systems in operating rooms in accordance with the Swedish Standardization Institute (SIS-TS 39: 2012 2016).

NATIONAL INSTITUTE OF PUBLIC HEALTH (HUNGARY)

Based on the results of the tests the POTOK air decontamination equipment effectively reduces the concentration of small aerosol particles and the total number of bacteria and molds in the indoor air during normal use.

RESEARCH INSTITUTE OF INFLUENZA (RUSSIA)
- bacteria (Escherichia coli, Enterococcus spp., Proteus mirabilis, Pseudomonas aeruginosa, Staphylococcus spp., Streptococcus spp., etc.), including their antibiotic-resistant strains;
- mold fungi and yeasts, including Aspergillus niger, Mucor ramosissimus, Saccharomyces cerevisiae, etc.;
- viruses, including Influenzavirus, Grippus avium, **Coronaviridae**, etc.

STATE INSTITUTE OF TUBERCULOSIS (RUSSIA)
- Mycobacterium bovis bcg
- Staphylococcus epidermidis
- Klebsiella species
- Pseudomonas species
- Bacillus species

INSTITUTE OF VIROLOGY NAMED AFTER IVANOVSKIY (RUSSIA)
- Influenza virus

INSTITUTE OF EPIDEMIOLOGY AND MICROBIOLOGY NAMED AFTER GAMALEY (RUSSIA)
- Legionella pneumophila
- Staphylococcus aureus wood 46

POTOK TECHNOLOGY ADVANTAGES

ADVANTAGES

01 Complete inactivation of all airborne microorganisms, incl. viruses in the treated air

02 Stable results irrespective to the type and viability of microorganisms

03 Automated operating performance monitoring

04 Stable efficiency at wide range of temperature and humidity levels

05 Totally environmentally and human friendly

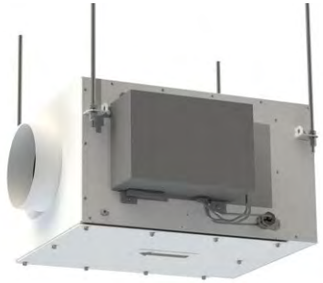
06 Easy to operate, no need of sophisticated
Maintenance

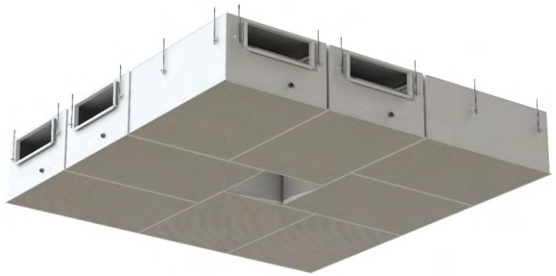
07 No expendables needed

08 Low energy consumption (10 – 40 W)

09 10-year service life

POTOK EQUIPMENT RANGE





STANDALONE UNITS
don't need to be connected with the current HVAC systems. This professional air decontaminating equipment creates local clean zones

INDUCT MOUNT UNITS
create clean rooms or local zones. Induct mount units are integrated into the gap of the ventilation channel in the nearest possible place for installation (behind the suspended ceiling, in technical rooms etc.)

LAMINAR FLOW UNITS
are designed to discharge the unidirectional airflow at a speed from 0.24 to 0.3 m/s into the working area of clean rooms (for example, to surgical table zone)

Air flow rate (capacity), m^3/h	120 – 900	180 – 6500	180 – 8640
Power consumption (max), W	10 – 200	10 per 1000 m^3	10 per 1000 m^3
Net weight. kg	10 – 110	15 – 280	52 – 700

POTOK EQUIPMENT IS USED ALL OVER THE WORLD

SIQ

SLOVENSKA AKREDITACIJA
CP-001

Certificate of Conformity

Number: C211-0002/21   Project file: C20202309

Product: Air-decontamination appliance

Type reference: Model: «Potok 150-M-01» - SAP130
Model: «Potok 150-M-01» - FAS200
Model: «Potok 150-M-01» - SAP120

Trademark: potok

Applicant: Potok Inter Ltd.,
18 Khavskaya Str., Bld 2, RU-115162 Moscow, Russian Federation

Manufacturer: Potok Inter Ltd.,
18 Khavskaya Str., Bld 2, RU-115162 Moscow, Russian Federation

Place of manufacture: Potok Inter Ltd.,
18 Khavskaya Str., Bld 2, RU-115162 Moscow, Russian Federation

This certificate is granted subject to the SIQ's rules on product certification. SIQ certifies the conformity of the products with the requirements of the listed standards.

Ratings: SAP130: 220-240 V~; 50/60 Hz; 10 W; Class I; IPX0
FAS200: 220-240 V~; 50/60 Hz; 20 W; Class I; IP21
SAP120: 220-240 V~; 50/60 Hz; 10 W; Class I; IPX0

Standard: EN 60335 1:2012 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019
EN 60335-2-65:2003 + A1:2008 + A11:2012

Test report: T211-0064/21 (2021-02-03)

Remarks: This certificate shall apply to the products identical to the tested sample and shall remain valid for the period of 3 years until 2024-02-03 or until the validity date of the listed standards, whichever occurs earlier.
This SIQ certificate previous issued certificate C211-0034/19 due to the intruduction of new model, alternative componet and extension to the latest standards.

Date: 2021-02-03   Authorized signature: Bojan Pečavar

Only integral publication of this certificate is allowed. This certificate may only be reproduced in its entirety and without any changes. On request SIQ will give information about the validity of the certificate.

SIQ Ljubljana, Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia
T +386 1 4778 100, F +386 1 4778 444, info@siq.si, www.siq.si

CE (Conformité Européenne) certification mark

2/17/2021   FDA Registration for SCIENTIFIC-MANUFACTURING FIRM POTOK INTER LLC

2/17/2021

FDA | U.S. Food and Drug Administration

Registration Confirmation

Facility: SCIENTIFIC-MANUFACTURING FIRM POTOK INTER LLC, Moscow.

You have successfully entered your facility registration and device listing information. You should print a copy of this page for your records. Listing numbers appear below for the products manufactured, developed, or processed at this facility.

As a manufacturer, specification developer, or single-use device reprocessor, you are required to pay an annual fee for medical device facility registration.

You will receive another e-mail providing you with your registration number in approximately 30 to 90 days. Until your registration number is assigned, reference your Owner/Operator number in any correspondence with the Center for Devices and Radiological Health.

Your registration will be valid through Dec 31, 2021. An e-mail will be sent to the Owner/Operator and the Official Correspondent 90 days before the facility is required to re-register for Fiscal Year 2021 with instructions on how and when to re-register.

Note: Registering your device facility and listing your devices does not, in any way, constitute FDA approval of your facility or your devices.

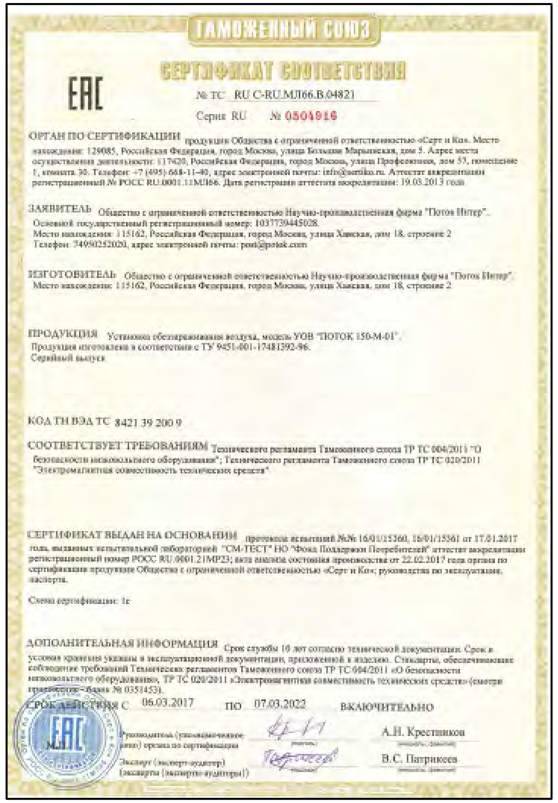
Should you have any questions, please send an e-mail to reglist@cdrh.fda.gov (mailto:reglist@cdrh.fda.gov).

The Owner/Operator Number for this Registration is: 10080647

Facility Information

Initial Importer:	N
Facility Name:	SCIENTIFIC-MANUFACTURING FIRM POTOK INTER LLC
Address:	Khavskaya Str. 18, Building 2 Moscow, 115162,
Foreign Trade Zone:	N
Other Business Trade Name(s):	1. Potok

FDA medical device facility registration



ТАМОЖЕННЫЙ СОЮЗ

СЕРТИФИКАТ СООТВЕТСТВИЯ

EAC

№ ТС RU C-RU.МЛ66.В.04821

Серия RU № 0504916

ОРГАН ПО СЕРТИФИКАЦИИ

ЗАЯВИТЕЛЬ

ИЗГОТОВИТЕЛЬ

ПРОДУКЦИЯ

КОД ТН ВЭД ТС 8421 39 200 9

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

СРОК ДЕЙСТВИЯ С 06.03.2017 ПО 07.03.2022 ВКЛЮЧИТЕЛЬНО

А.Н. Крестников

В.С. Патрикеев

Eurasian conformity certification mark

POTOK IN HEALTHCARE

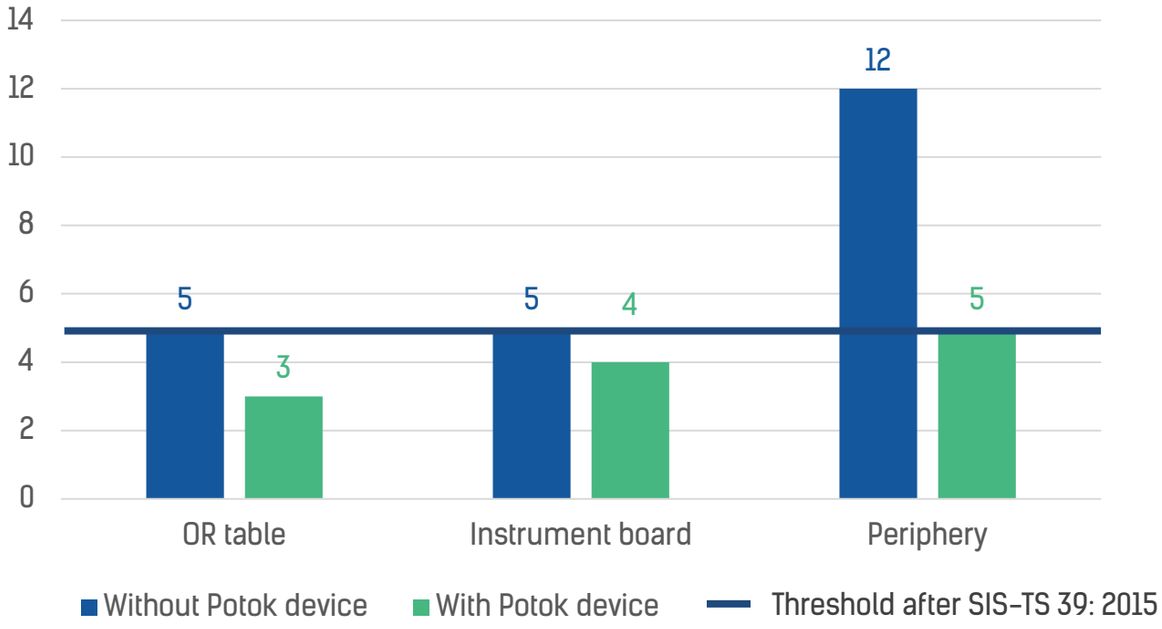
RESULTS OF USING POTOK TECHNOLOGY

PROBLEMATIC: Hospital acquired infection

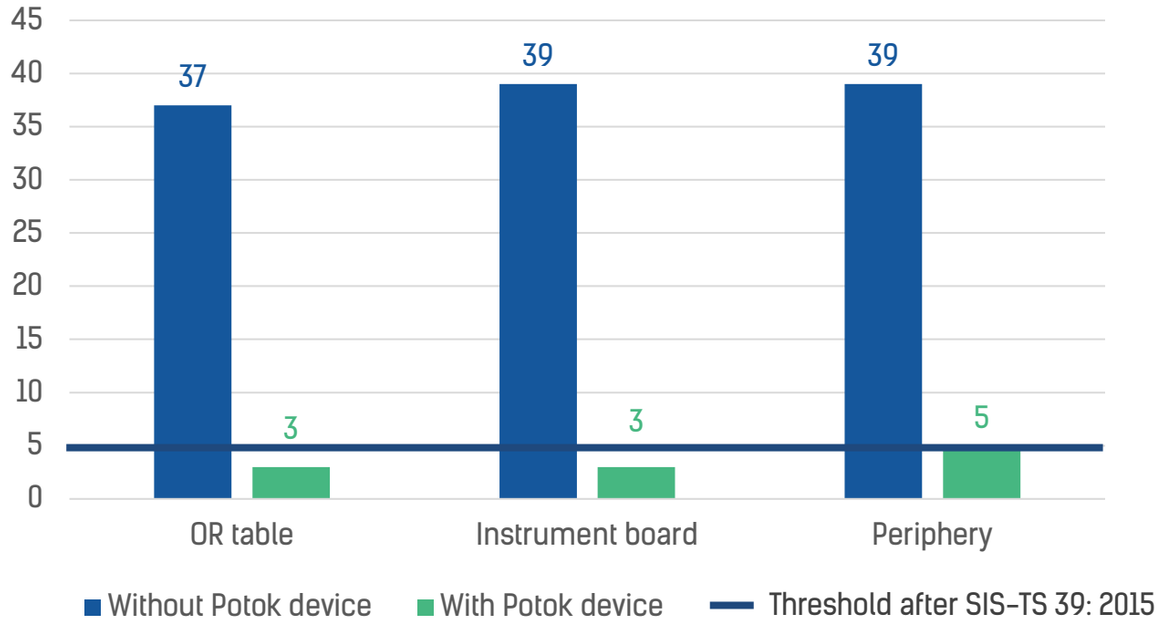
01 Operating theaters
02 Departments of neurosurgery
03 Intensive care units
04 Rehabilitation unit
05 Burn unit
06 Generic departments
07 Obstetric department
08 Hematology departments
09 Oncology departments
10 Infectious disease ward
11 Microbiological laboratories
12 Central sterile service department

RESULTS OF USING POTOK TECHNOLOGY

OR AT THE OSTBAYERISCHE TECHNISCHE HOCHSCHULE (GERMANY) AND RUSSIAN HOSPITAL #24 (RUSSIA)



Comparison of the bacterial contamination (CFU/m^3)
of the room air in the OR in Germany

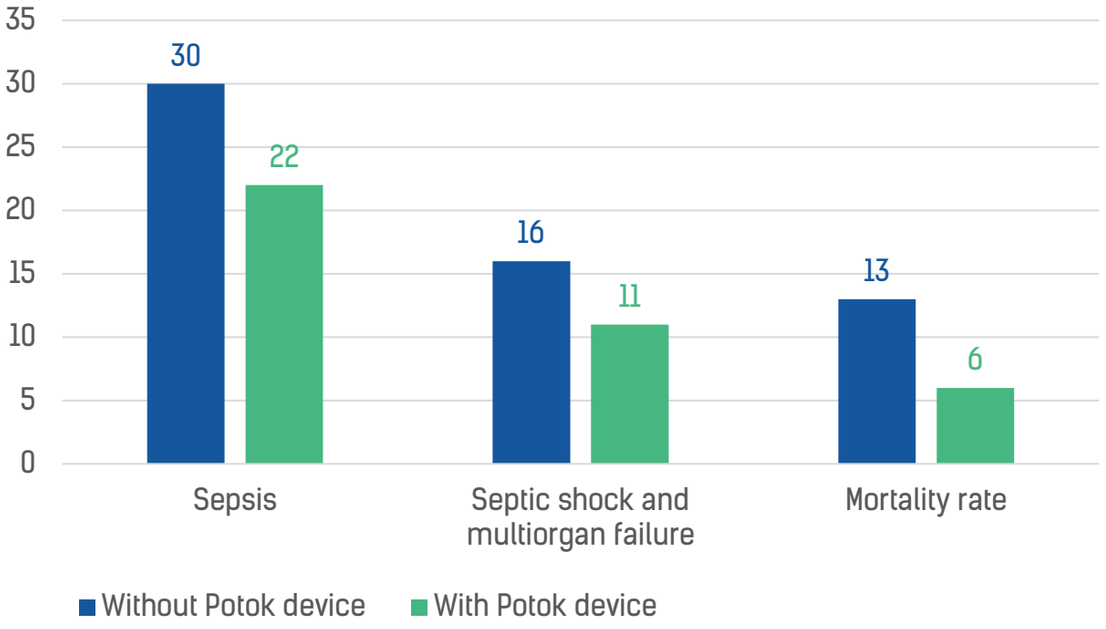


Comparison of the bacterial contamination (CFU/m^3)
of the room air in the OR in Russia

Source: Ostbayerische Technische Hochschule Amberg-Weiden: Experiments for the evaluation of effectiveness for the Potok system. – 2017.

RESULTS OF USING POTOK TECHNOLOGY

BURDENKO HOSPITAL (MOSCOW)



200 patients
in intensive care units

DECREASED THE RISK OF DEVELOPMENTENT:

x1.4 times
sepsis

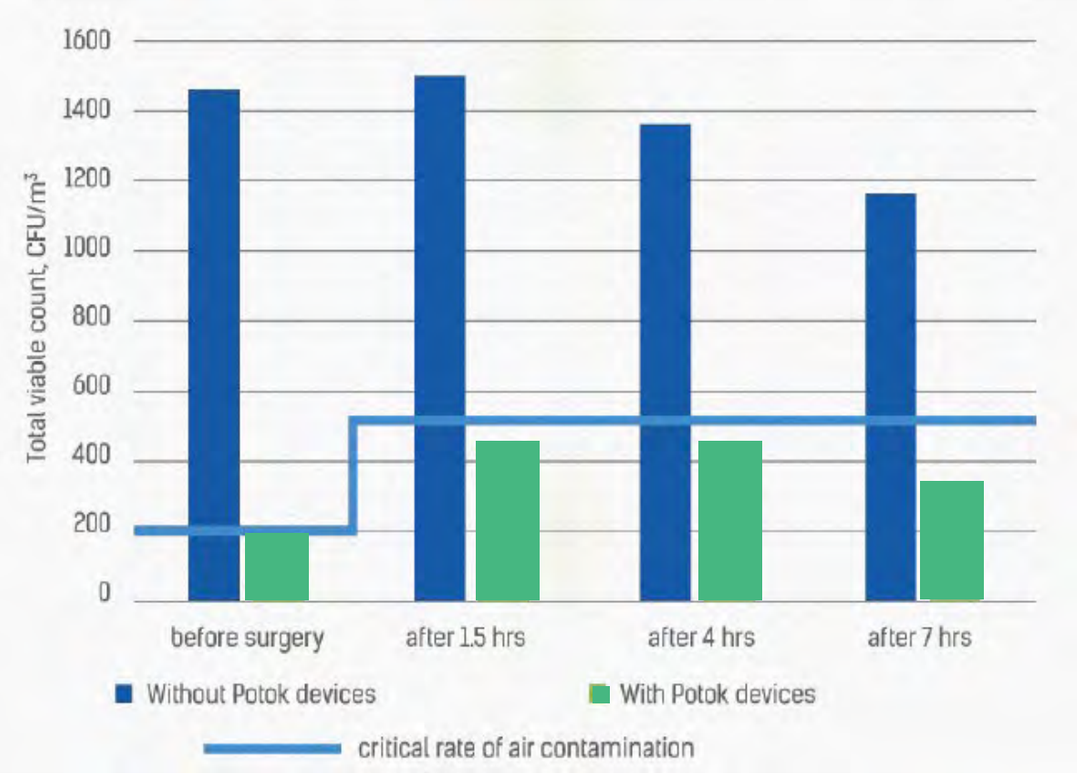
x1.5 times
septic shock due to infectious complications and multiorgan failure

x2.2 times
mortality rate

Source: Akimkin V.G. et al. Prevention of septic complications among ICU patients (after surgery recovery) // Epidemiology and infectious diseases. – 2008. – №2. – P. 11-16.

RESULTS OF USING POTOK TECHNOLOGY

BOTKIN HOSPITAL (MOSCOW) AND CITY CLINICAL HOSPITAL NO.1 (MOSCOW)



1300 surgeries
(implantation of endoprosthesis of large joints)

LEVEL OF POSTOPERATIVE SEPTIC COMPLICATIONS (WOUND INFECTION):

3.5% – 4%
before installing POTOK devices

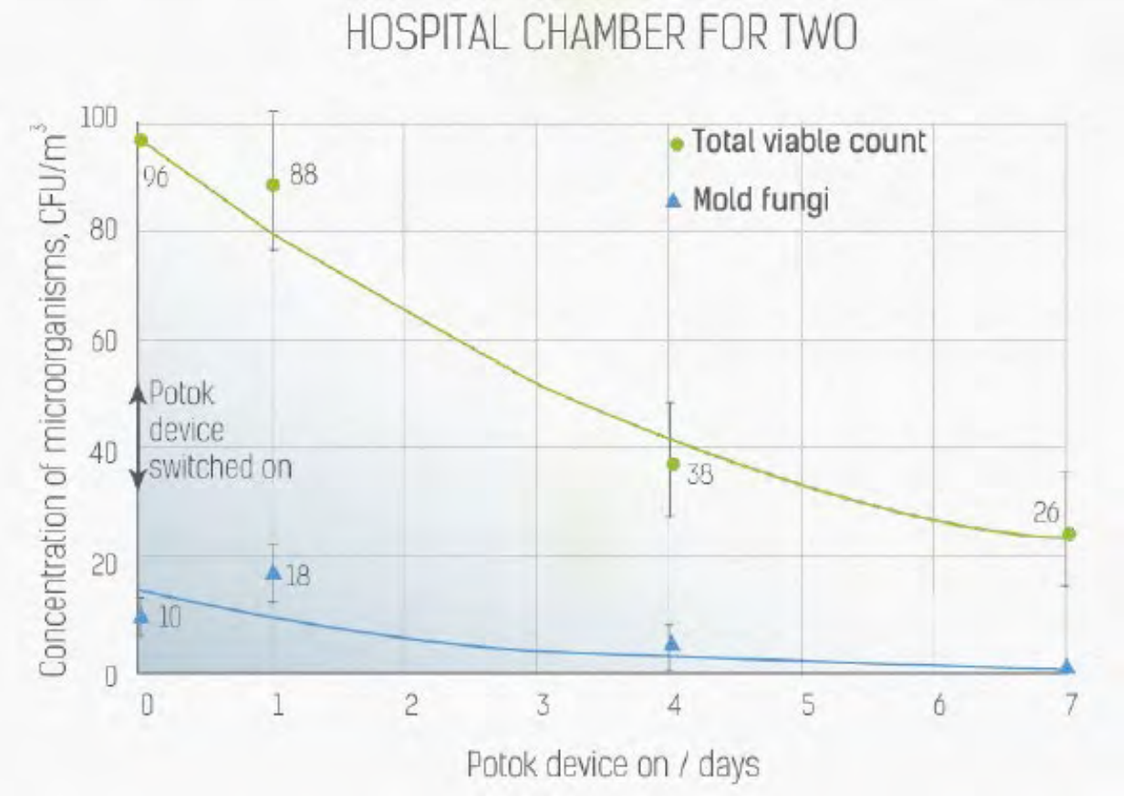
1%
world average

0.15%
using POTOK devices

Source: Kuzin V.V. et al. Knee joint endoprosthesis: mistakes and complications // Traumatology and orthopedics: today and in the future (International Congress Materials) – Moscow, 2003.

RESULTS OF USING POTOK TECHNOLOGY

CONCENTRATION OF MICROORGANISMS IN THE AIR BEFORE AND AFTER USING POTOK 150-M-01 DEVICE IN CHILDREN'S CANCER AND HEMATOLOGY HOSPITAL NAMED AFTER N.N.BLOKHIN



x3.7 times

decreased
total viable count
(from 96 to 26 CFU/m^3)

up to 0

decreased
concentration
Of mold fungi
(from 10 to 0 CFU/m^3)

Source: Mentkevich G.L., Popa A.V. Fighting HAI for children with acute leukemia: treatment results, ways to reduce infectious complications // Materials – Annual Congress with international participation "Control and prevention of infections associated with healthcare (HAI- 2016)." Moscow, November 10-11, 2016. – P.37.

POTOK IS THE ONLY AIR DECONTAMINATION TECHNOLOGY USED ON THE INTERNATIONAL SPACE STATION BOARD (BY NASA AND ROSCOSMOS)

potok®

POTOK IS SAVING LIVES IN THE NURSING HOMES IN HOLLAND AND SERBIA DURING THE COVID-19 PANDEMIC

Residents of apartments with Potok equipment did not get infected with a virus dangerous for their age (unlike residents of rooms not equipped with Potok)

potok®

WE CURE AIR

POTOK AIR DECONTAMINATION TECHNOLOGY IN HEALTHCARE

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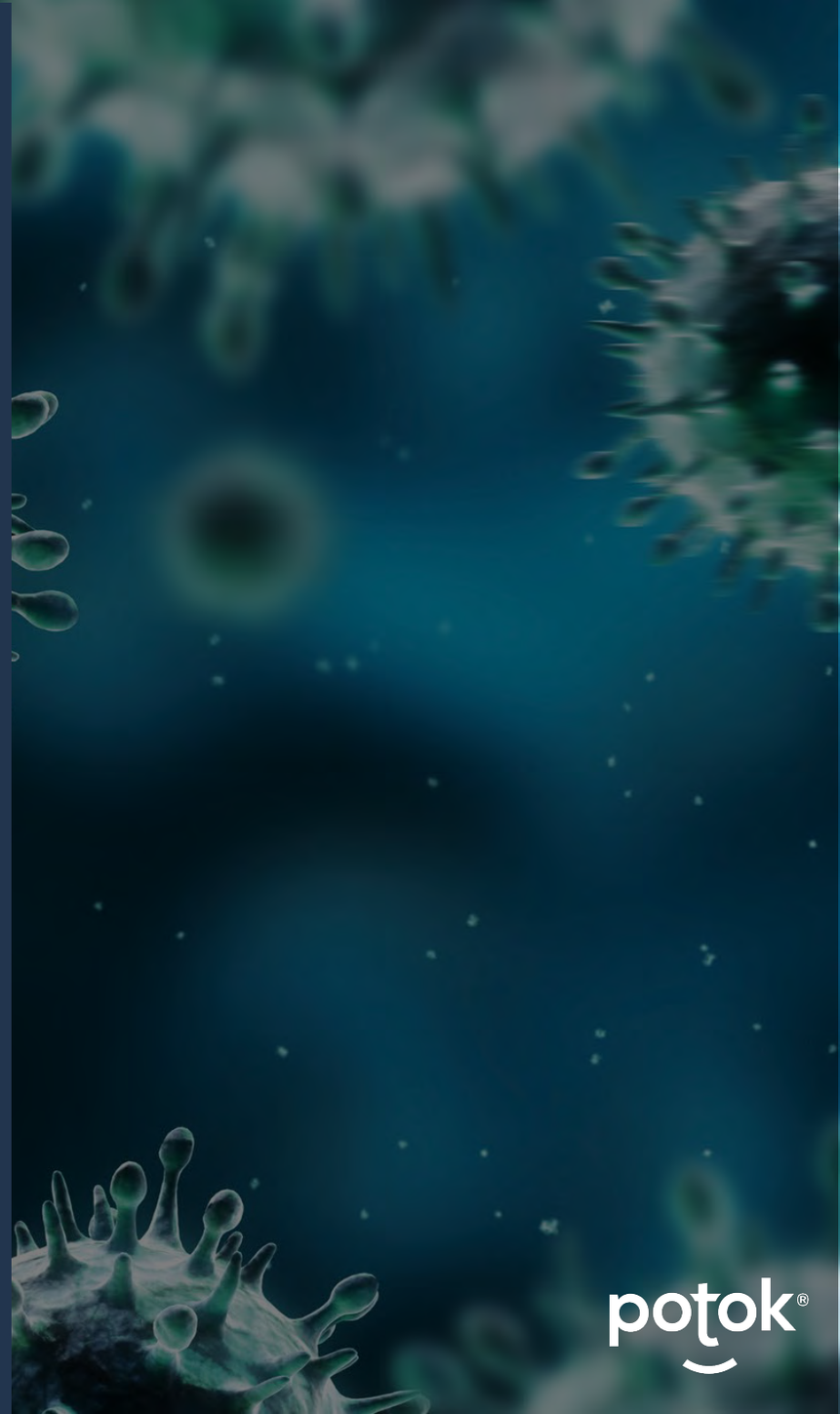

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