

CORONASYS INNOVATION SHEET 4

PORTABLE TRI- KLEEN 500UV

Background

Droplet infection and infection through aerosols are the main ways of transmission for SARS- CoV-2¹². Particularly in hospitals where infected persons are being treated the risk of infection in the patients' rooms and examination rooms may be especially high³⁴⁵. Many hospitals do not have enough isolation facilities with special air filtering systems (Airborne Infection Isolation Rooms, AIIR) that prevent contaminated air from spilling into other parts of the hospital. In the wake of the COVID- 19 pandemic *Tri-Dim* and *EBM- Pabst* have rapidly developed a portable solution.

Features

The portable TRI- KLEEN 500UV is a portable air filtration system that creates a vacuum in closed treatment or examination rooms to prevent the overflow of virus-contaminated air into neighboring rooms⁶. The system includes a MERV 9 pre-filter and a cylindrical HEPA filter⁷⁸. This high-performance filter guarantees the filtering of 99.97 percent of all particles with a size of up to 0.3 microns⁹. The effect of filtration is enhanced by the combination of the HEPA filter with a UV lamp, whose light kills germs, bacteria, and viruses¹⁰.

Potentials

No renovation work is necessary to install the system. The device is mobile and can be set up rapidly and moved according to current needs. It therefore can present a quick solution to provide additional protection for hospital staff and patients.

Points to consider

For now, the product is only available on the American market, but negotiations with other countries are underway and the manufacturers are preparing for the production of 230 Volt-models.

Conclusion

The product might be a valuable addition to other CDC- recommended infection control measures¹¹¹². Since it is mobile and quick to be installed it can increase the flexibility of healthcare providers in reacting to patient surges.

State of information: 25/08/2020

Market launch: April 2020 (USA)

Country: USA

Focus area: Prevention, Hospital Hygiene

Developers: *Tri-Dim, EBM-Pabst*

Beneficiaries:

- Hospital patients and staff

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- ¹ Robert Koch Institut (2020): SARS-CoV-2 Steckbrief zur Coronavirus-Krankheit-2019 (COVID-19) Stand: 21.8.2020. Online: https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Steckbrief.html#doc13776792bodyText1 [08/25/2020]
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- ³ Fachverband Allgemeine Lufttechnik im VDMA (2020). Raumluftechnische Anlagen in Zeiten von COVID-19 Empfehlungen für das Gesundheitswesen. Stand 29. April 2020. Online: <https://klt.vdma.org/docu-ments/105879/48327131/Raumluftechnische%20Anlagen%20in%20Zeiten%20von%20COVID-19%20-%20Empfehlungen%20f%C3%BCr%20das%20Gesundheitswesen/816ed9b7-9a72-9b3d-3193-d049f23f6d42?t=549667.6> [08/24/2020]
- ⁴ Lednicky, John A et al. "Viable SARS-CoV-2 in the air of a hospital room with COVID-19 patients." *medRxiv : the preprint server for health sciences* 2020.08.03.20167395. 4 Aug. 2020, doi:10.1101/2020.08.03.20167395. Preprint. Online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7418726/> [08/25/2020]
- ⁵ Kenarkoohi, Azra et al. "Hospital indoor air quality monitoring for the detection of SARS-CoV-2 (COVID-19) virus." *The Science of the total environment*, vol. 748 141324. 29 Jul. 2020, doi:10.1016/j.scitotenv.2020.141324 Online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7387923/pdf/main.pdf> [08/25/2020]
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- ⁷ TriDim. com (2020): Tri- Kleen. Online: <https://www.tridim.com/product/tri-kleen-500-500uv/> [08/25/2020]
- ⁸ Mann+ Hummel Group (2020): Tri-Kleen: Antiviral air purification for your facility. Online: <https://airfiltration.mann-hummel.com/our-segments/virus-contaminated-air/antiviral-air-purification/solutions/tri-kleen/> [08/25/2020]
- ⁹ mag.ebmpabst. com (2020): Better together: In Rekordzeit zum Luftfiltersystem Online: https://mag.ebmpapst.com/de/produkte/ventilatoren/luftfilter-system-mann-hummel-ebm-papst-effizienter-ventilator_22264/
- ¹⁰ TriDim. com (2020): Tri-KleenTM 500UV Portable Air Filtration Unit. Online: https://www.tridim.com/wp-content/uploads/2020/05/MH_Tri-Kleen-500_Brochure-Final-1.pdf [08/24/2020]
- ¹¹ Roberts, Christopher (2020): Six Steps Hospital Facilities Can Take to Reduce the Risk of Spreading Infectious Disease. (03/03/2020) Online: <https://blog.se.com/healthcare/2020/03/03/six-steps-hospital-facilities-can-take-to-reduce-the-risk-of-spreading-infectious-disease/> [08/24/2020]
- ¹² Centres for Disease Control And Prevention (2020): Preparedness Tools for Healthcare Professionals and Facilities Responding to Coronavirus (COVID-19). Updated July 29, 2020. Online: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/preparedness-checklists.html> [08/24/2020]

Background on Innovation Sheet Series

As part of a real-time evaluation of the SARS CoV 2 pandemic (with focus on epidemiological, medical, economical, societal, technical and cultural developments in Germany and Armenia) the CoronaSys research team, under the leadership of Prof. Dr. Martin Voss, is conducting a continuous monitoring of developments and medical, technical, and social innovations concerning Covid-19.

Multiple national and international media outlets, research platforms, and scientific and organizational guidelines, briefs, and updates are screened to feed into this outlet. The rationale behind this is to support the projects' network partners in Armenia and Germany with short summaries of key developments and promising innovations that are shaping the global, German, and Armenian outbreak response and recovery.

The aim of these short briefs is to give condensed and structured information on selected innovations emerging out of the conducted horizon scanning. This could be mainstream big-ticket items or fringe subjects that are easily overlooked in the global flood of information. Some innovations will be followed through their evolution in time while others may only appear once. While subjectively selected, the briefs are descriptive in nature and leave analysis and critical interpretation to the reader. Network partners in both countries are invited to provide feedback on their interest areas and suggest particularly relevant topics for the CoronaSys Workshop series.

The CoronaSys Innovation Sheet Series is published by the [Academy of the Disaster Research Unit](#), which is, as a non-profit limited liability company, a spin-off of the [Disaster Research Unit](#) at the Free University of Berlin. The series is part of the research project "[CoronaSys: Addressing the corona pandemic in Armenia through systemic risk management](#)", sponsored by the German Federal Ministry of Education and Research.

Previous CoronaSys Innovation Sheets

- 1 "New" Antiviral Face Masks
- 2 "Dyphox" Surface Coating
- 3 MOVES SLC Portable ICU

All previous CoronaSys Innovation Sheets are available online:

<http://coronasys.a-kfs.de/category/innovation-stream/>

If you have any questions, suggestions, or if you wish to be taken on (or off) the project mailing list for CoronaSys updates, innovation sheets, and workshop invitations, please send a message to Janina Schäfer (schaefer@a-kfs.de). For general project inquiries, you may contact the team lead Sara Merkes (merkes@a-kfs.de) or the project lead Martin Voss (voss@a-kfs.de).

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