

TOWARDS ZERO INFECTIONS

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# Together Towards Zero Infections in Medical Facilities



## Conventional Ventilation has Failed to Protect Us

The pandemic exposed the limitations of conventional hospital ventilation to protect both patients and healthcare workers from the risk of airborne contaminants.<sup>1</sup> The indoor air quality is essential for minimizing risk of infections, but it is not all about the amount of air. The key is to effectively transport airborne particles to where they do no harm before contaminants are spread in the room.

Are you concerned about your own and your patients' safety when bacteria and viruses are randomly mixed and diluted, or how the turbulence from the ventilation system affects the air quality?

Are you aware that Laminar Airflow is no longer recommended by CDC, WHO and other leading authorities?<sup>2,3</sup>

Do you need expert advice and a robust technology that is scientifically proven to work in the most demanding rooms - the operating rooms - and how it can be used also in other areas?

**Then let Avidicare be your partner.**

## The Solution

Conventional ventilation has failed to protect us.<sup>4,5,6</sup> The limitations of existing technologies when it comes to the protection of both patients and staff from airborne infections is why we developed the Opragon family of ventilation solutions. We offer a robust and energy efficient tool to control how air is moving in a room. It removes bacteria and viruses at their source and sweeps them away to where they can do no harm. So that staff can focus on the patient.



Opragon hybrid room installation in the Netherlands.

Avidicare AB is a research-based medical technology company focused on the prevention of airborne transmission of infections. We have extended knowledge of indoor air quality and infection prevention. The Opragon system is based on scientific validation by world renowned universities and praised by professional end-users at top ranked medical institutions, where the most complex procedures are performed, all over Europe. **We offer a customized solution for your unique healthcare projects, and we are working together with you from the start of planning to installation and all the way throughout the lifetime of the system.**

## Opragon and Temperature-controlled AirFlow (TcAF)

Our Opragon family of ventilation systems are designed to address the threat of airborne contaminants and are based on an innovative and patented technology called Temperature-controlled Airflow (TcAF). It combines a robust

unidirectional airflow over the most critical areas of a room, while using mixing ventilation for the less sensitive ones. Its robustness and very high energy efficiency come from the unique use of temperature to control the airflow. By providing air at a few degrees below room temperature, gravity ensures that contaminations are swept down and away. Combining these two ventilation principles in the same room produces an extremely effective and comfortable ventilation at any working temperature you desire.

With more than 15 years of clinical experience and 300 installations, we are experts in safe environmental conditions based on the use of our patented Temperature-controlled AirFlow. Our professional team and partners guide you in how to create safe and ultra-clean rooms, and we offer free design support. **Contact us today to learn more about how to improve the safety in your hospital!**

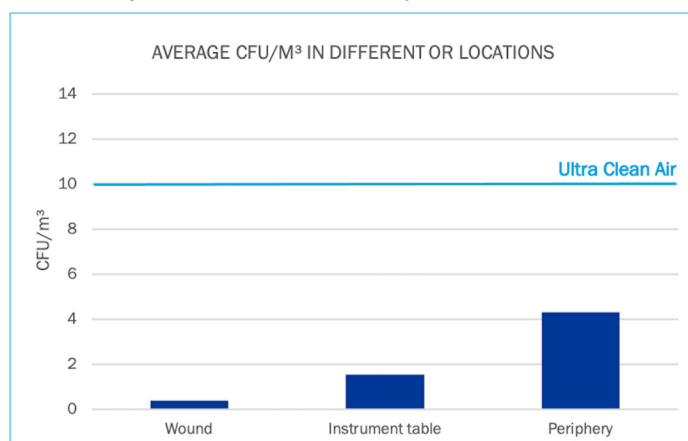
## A Flexible Solution for Modern Healthcare

Each Opragon system is custom designed and can be scaled to any size room or high-risk area including operating suites, hybrid operating rooms, instrument prep rooms and sterile processing departments. It is ideal for renovations and modular solutions where space is limited.

Opragon can be also configured for smaller rooms and office-based practices, with a self-contained unit ready to be installed in the ceiling within a few days.

Opragon is perfect for cleanrooms such as labs and pharmacies as well as isolation rooms, waiting rooms, ICUs, EDs and other critical areas where you need to minimize the risk of airborne contaminants. **We offer you free design support, contact us today!**

### ACTUAL BACTERIA LEVELS IN OPERATING ROOM DURING SURGERY (700+ MEASUREMENTS)



A comparative evaluation of the Opragon system with conventional ventilation schemes found TcAF to be more effective in maintaining ultra-clean conditions of <10 CFU/m<sup>3</sup> throughout the entire room. These findings are confirmed by more than 700 bacterial measurements over ten years under live operating conditions.

1. Tang JW, Bahnfleth WP, Blyussen PM, et al. Dismantling myths on the airborne transmission of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). J Hosp Infect. 2021;110:89-96. doi:10.1016/j.jhin.2020.12.022

2. Global guidelines on the prevention of surgical site infection. World Health Organization. 2016. Geneva, Switzerland. <http://www.who.int> Accessed July 9, 2020.

3. Berríos-Torres SI, Umscheid CA, Bratzler DW, et al. Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017. JAMA Surg. 2017;152(8):784-791. doi:10.1001/jamasurg.2017.09044.

4. Wang Q, Xu C, Goswami K, Tan TL, Parvizi J. Association of Laminar Airflow During Primary Total Joint Arthroplasty With Periprosthetic Joint Infection. JAMA Netw Open. 2020;3(10):e2021194. doi:10.1001/jamanetworkopen.2020.21194

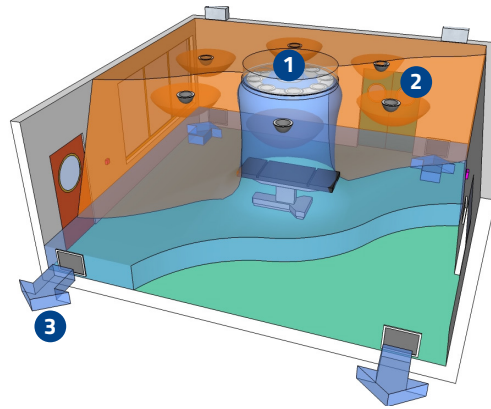
## EXAMPLE OF AN OPRAGON INSTALLATION

**1. Central Opragon unit:** Cooled HEPA-filtered air provides an ultra-clean environment.

**2. Peripheral airshowers:** Their number varies depending on the size of the room. They control the room temperature and accelerate the sedimentation. The intake air is HEPA-filtered.

**3. Exhaust air:** The exhaust air is evacuated symmetrically at floor level.

Opragon systems are designed for installation in the false ceiling in ORs used for infection sensitive surgery. There are different versions available for operating theaters and hybrid operating rooms as well as instrument preparation rooms, CSSDs and isolation rooms.



## Surgical Department - Ultra-clean in the Whole Room for Ultimate Flexibility

The unique Opragon system is proven to ensure ultra-clean conditions in the whole operating and prep room. This is made possible by effectively breaking the convection currents from the staff around the patient and actively transporting away the bacteria carrying particles before they can whirl around the room and contaminate the surgical field, the sterile instruments, or implants.

## Improves Air Quality - Less Airborne Bacteria mean Fewer Infections

Over the last sixty years, correlation between the quantity of airborne bacteria and SSI has been reinforced in a growing body of clinical evidence.<sup>7</sup> The Opragon OR ventilation system has a proven ability to reduce airborne bacteria levels and research shows better outcomes.

## The Technology is Scientifically Validated

Since the first installation in 2007, TcAF and Opragon have undergone scientific studies in several different contexts. Evidence supporting the medical need for ultra-clean air in operating rooms, the correlation between lower bacteria levels and lower SSI rates as well as evidence related to the performance of Opragon are all founded on independent research from top universities. These scientific references are available on our website.

## Services and Opragon Online: The Smarter OR

As a seamless extension of the existing Opragon ventilation system, Avidicare together with local partners offer hands-on service to ensure optimal function of your Opragon ventilation system. With the high-security Opragon Online Digital Services, data from your installation is collected and analyzed to ensure a safe environment and efficient operations.

Opragon Online Digital Services are based on secure cloud-based technologies which enable remote monitoring 24/7. Dashboards delivered to managers' desktops enhance their understanding of conditions across rooms, departments, sites, and regions. With Opragon Online managers can also obtain data on door openings and other critical environmental as well as behavioral parameters. Alarms can be set and sent as e-mail or SMS, while dashboards and reports support quality, risk management, performance improvements and compliance, while local screens allow for a smooth workflow. **Contact us today to learn more about the smarter OR.**

## Safety for Patient and Staff

With the unidirectional airflow towards the exhausts at floor level, the risk of staff and patients being exposed to contaminated air is minimized. **You can trust that the contaminated air is removed from the room safely by gravity.**

## Most Comfortable System for Surgical Staff

The Opragon has a proven surgical staff satisfaction due to the minimal draught created when the air is released – not pushed – into the rooms.<sup>8</sup> This leads to low noise levels and minimizes the chill effect and draught from ventilation. Standard comfortable surgical clothing can also be allowed.

## Sustainable and Competitive Life-time-cost

The Opragon is easy to maintain after installation which reduces total life-time cost. The Opragon also needs less energy than classical system in the ultra-clean class. However, the primary financial benefit of the Opragon is fewer surgical site infections. **Let us work with you for your life-time-cost analysis.**



Example of Opragon In a Box installation

5. Gastmeier P, Breier AC, Brandt C. Influence of laminar airflow on prosthetic joint infections: a systematic review. J Hosp Infect. 2012;81(2):73–78. 66.

6. Bischoff P, Kubilay NZ, Allegranzi B, Egger M, Gastmeier P. Effect of laminar airflow ventilation on surgical site infections: a systematic review and meta-analysis. Lancet Infect Dis. 2017;17(5):553–561.

7. Lidwell OM. Air, antibiotics and sepsis in replacement joints. J Hosp Infect. 1988 May;11 Suppl C:18–40. doi: 10.1016/0195-6701(88)90020-5. PMID: 2899118.

8. Alsved M, et al. Temperature-controlled airflow ventilation in operating rooms compared with laminar airflow and turbulent mixed airflow. J Hosp Infect. 2018;98(2):181–190.



Opragon installation at ArtClinic, Sweden.

## Together Towards Zero Infections

Avidicare is committed to the vision "Towards Zero Infections". We work together with healthcare professionals and partners to eliminate airborne infections, especially Surgical Site Infections, in medical facilities.

Today, there are more than 300 Opragon installations protecting patients and staff at leading academic hospitals and specialist clinics in Europe and in the United States. This has allowed for extensive scientific validation of the benefits of the Opragon System including establishing large and robust ultra-clean surgical work areas with low energy use, high installation flexibility and excellent working conditions.

The system is customizable for any surgical workflow and clean hospital area including operating theaters, labs, CSSDs, ICUs, isolation rooms and pharmacies. A set of personal and digital services allow for lifelong reliability.

Avidicare holds six patents and is ISO-certified for quality and environment. The headquarters is based at Medicon Village in Lund, Sweden.



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The Sint Maartenskliniek (SMK) has chosen Opragon for all operating rooms in the new building because the system maintains optimal air quality in the whole operating room during the entire surgical process. (...) This, along with the freedom of placement of equipment and instruments that never existed before, creates a calm environment where we as professionals can focus optimally on our work."

— Dr Koen Defoort, Orthopedic surgeon, and Dr Edgar Kaasschieter, Anesthesiologist at SMK



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