VOS Halton Vita OR Space

Overview

Halton Vita OR Space is a complete operating room ventilation solution for *ultraclean* operating environments. The solution is based on the controlled dilution principle, which provides the required air cleanliness and recovery time for the whole operating space. The system is ideal for applications where comfortable conditions, energy efficiency and operational efficiency in the way of flexible positioning of staff and instrument tables are important.

The solution complies with the cleanliness requirements of the ISO standards for cleanrooms. Halton Vita OR Space is available in two versions:

- Halton Vita OR Space 5, for *ultraclean* operating environments
- Halton Vita OR Space 7, for *clean air* operating environments

The Halton Vita OR Space 5 and 7 solutions are fully functional systems consisting of supply and exhaust air units and dampers, an intelligent air cleanliness and ventilation management system, a recirculating air-handling unit and verification services.

Operating principle

In the controlled dilution principle HEPA-filtered air is introduced into the room in a carefully controlled manner, effectively displacing and diluting air impurities.

The circumferential supply airflow from the supply air unit is directed partly towards the operating area and partly towards the room periphery. The inward supply airflow displaces the

contamination generated in the operating area and prevents the intrusion of the outward supply airflow into the centre. The fine-tuning of the throw pattern is carried out by Halton.

Comfort

The airflow pattern is adjustable. This ensures optimal thermal conditions and a low noise level for the patient and medical team.

As the air is mixed effectively, the supply air temperature can be kept slightly colder or warmer than the room temperature. Thus no separate heating systems are required for the space. Halton Vita OR Space solution is the only solution where the room temperature can be raised by the staff during the operation without impacting the microbial cleanliness level.

The good aerodynamic design of the supply air unit enables exceptionally low sound pressure levels.

Flexibility

As the required cleanliness level is obtained for the whole operating space, free positioning is enabled for the medical team and instruments. This means not only a more effective use of the space, but also increased safety as the risk of contamination from within the space is minimised. Therefore staff can focus on the operation and move the surgical lamps and instrument trolleys as needed during the operation.

Energy efficiency

The demand-based and highly automated Halton VMS air cleanliness and ventilation management system adjusts the airflow according to actual usage and the microbial load, with a short recovery time of the room conditions and substantial energy savings as a result.

The airflow rate can be reduced with fewer people present. For example, when the number of people is reduced by 50%, the recirculation airflow rate can also be reduced by 50%. This provides substantial energy savings compared to if the airflow rate was kept at the required maximum level the whole time. Fast recovery time cuts costs further by increasing the utilisation rate of the operating room.

Usability and reliability

The Halton VMS air cleanliness and ventilation management system provides reliable operation and safe conditions with a user-friendly control system. End-user functionality is simplified and

optimised to guarantee safety at all times. The system has a touch panel which includes an easy adjustment of airflow, temperature and humidity settings.

Halton with its turnkey solutions and end-to-end services is a trusted partner throughout the lifecycle of the building. Services include Halton Design Studio for verifying your design, Halton Tune for installing and fine-tuning the system, and Halton Life Cycle for ensuring that the design criteria are met in the real operating environment.

Halton Services

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Halton Design Studio

For support in the design phase and for a cost-effective validation of your design, the following optional Halton Design Studio Services are available:

- Advanced project design and support in cooperation with your design team.
- Halton CFD simulations for optimising room conditions, especially when experiments are difficult to set up.
- Halton Mock-up for ensuring that the indoor climate conditions are in accordance with the system safety and other design features.
- Simulated operations for evaluating the impact of different variables to the cleanliness level, such as the number of people, the quality of the clothing system, the impact of door opening and the ventilation airflow rate.

Halton Tune

The following Halton Tune Services help you ensure that all the design criteria are met in the real operating environment:

- Installation and commissioning of the Halton Vita OR Space and Zone solutions, including HEPA filter integrity testing.
- Complete system performance validation, including
    - space air tightness measurements
    - airflow and diffusion validation
    - temperature, humidity and sound level measurements
    - adjustment of airflows and pressure rates
- Operating room validation, including

    - particle and microbial cleanliness classification
    - containment leak and entrainment tests
    - operating room and surgical light recovery time tests
    - face velocity measurement
- User training for medical and technical staff.

Halton Life Cycle

The following Halton Life Cycle Services help maintain safe and comfortable working conditions for space users, and prevent unexpected, costly and time-consuming renovations:

- Regular validation of safety, hygiene and comfort conditions to ensure continuous compliance with operating room standards.
- Halton Survey for gathering valuable user feedback about the perceived indoor environmental conditions.
- Maintenance services for preventive management of the ventilation system.

For further information of our services, please contact sales.

Halton Vita OR Space 5

Features

Standard features

- Ultraclean air
    - Complies with the ISO 14644 standard for cleanrooms (particle count in *at rest* conditions ISO 5)
    - The microbial cleanliness *in operation* conditions < 10 CFU/m3
    - Fast recovery time, in *at rest*conditions < 15 min
    - Supply unit includes H14 filters

- Possibility for reduced airflow for *clean air* conditions (< 100 CFU/m3)

- Controlled dilution airflow distribution providing
    - Ultraclean air to the whole operating space
    - Flexibility in layout design and staff mobility

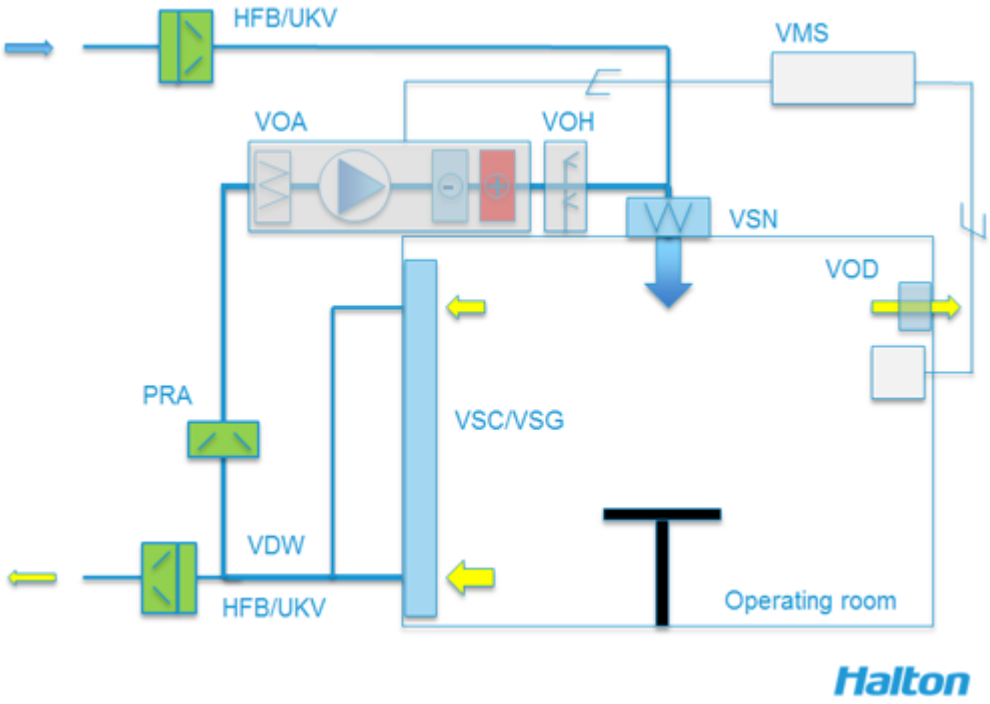
- Superior comfort
    - Comfortable, draught-free environment
    - Users can raise or lower the temperature during the operation without compromising the cleanliness level
    - Silent operational environment

- High-quality components with flexible sizing
- Heating, cooling and air filtration with a separate recirculation air-handling unit (Halton VOA)
- Airflow control based on microbial load
- Digital management system (Halton VMS) with an easy-to-use touch panel user interface for an intelligent control of air cleanliness, airflow, pressure and temperature

Optional features

- Humidity control, Halton VOH (add-on to the recirculation air-handling unit, Halton VOA)
- Halton Services for the planning, implementation and maintenance phases of the building project

System components



Standard components

- Halton VSN supply air unit with H14 filters consisting of 4-8 Halton VSN supply air modules in a square or rectangular ring
- Halton VSC exhaust units or Halton VSG exhaust grilles
- Halton VOD overflow damper
- Halton HFB or UKV airflow control dampers
- Halton PRA airflow adjustment damper
- Halton VOA recirculation air-handling unit, vertical or horizontal model
- Halton VMS air cleanliness and ventilation management system

Optional components include

- Halton VOH steam humidifier (requires Halton VOA)
- Halton VDW internal ductwork within the operating room

Halton Vita OR Space 7

Features

Standard features

- Clean air
    - Complies with the ISO 14644 standard for cleanrooms (ISO 7)
    - Microbial cleanliness in *in operation* conditions < 100 CFU/m3
    - Fast recovery time,in *at rest* conditions < 20 min
    - Supply unit includes H14 filters

- Controlled dilution airflow distribution providing
    - clean air to the whole operating space
    - flexibility in layout design and staff mobility

- Superior comfort
    - Comfortable, draught-free environment
    - Users can raise or lower the temperature during the operation without compromising cleanliness levels
    - Silent operational environment

- High-quality components with flexible sizing
- Heating, cooling and air filtration with a separate recirculation air-handling unit (Halton VOA)
- Airflow control based on microbial load
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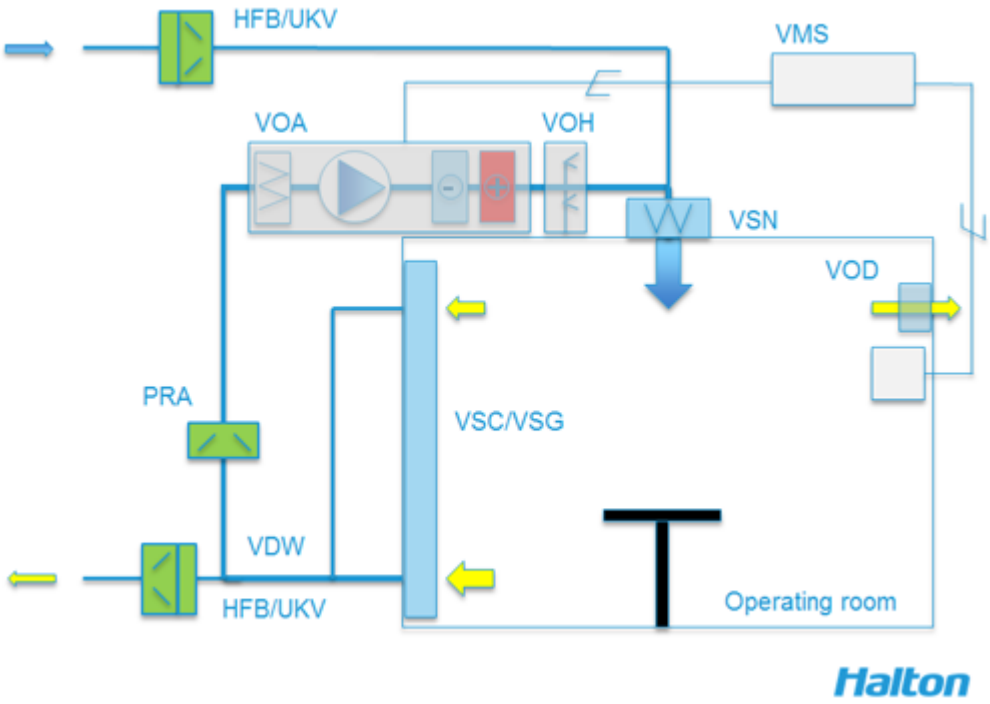

Standard components

- Halton VSN supply air unit consisting of 2 parallel Halton VSN supply air modules
- Halton VSC exhaust units or Halton VSG exhaust grilles
- Halton VOD overflow damper
- Halton HFB or UKV airflow control dampers
- Halton PRA airflow adjustment damper
- Halton VOA recirculation air-handling unit, vertical or horizontal model
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