



OPERATION THEATER HEALTH CARE SYSTEM



Creating milestone of success to Move a bright future...

www.brightstaraircon.com

Bright Star Health Care System

Do you need a comfortable temperature and soft adjustable background lighting in your operating theatre? Our designs include walls with integrated heating and glass panels with LED lighting for a pleasant working atmosphere. Whether automatic or manual sliding doors, built-in lights, walls, ceilings, ventilation and air conditioning systems, radiation protection, fire safety or sound insulation – BSA is a strong partner and a one-stop shop for all-in-one solutions – not only for your operating theater but also for all other hospital areas.



Partition Systems

Flexible, Modular and Reliable

A flexible, modular partition system is a basic process in a modern operating theater. We can offer you the maximum number of different options in terms of high-end wall systems for your project. You may need integrated monitor systems, glazing panels, LED-backlit glass partitions, gas supply, electricity, network services or a customized solution designed entirely to your individual specifications – whatever your requirements. Bright Star Aircon will provide you with everything you need in a hospital room for processes to run smoothly. The walls can also be supplied in radiation protection and sound insulation quality, and with a number of different surface finishes. We also prioritise the use of clean room silicone for the sealing of wall and ceiling joints.



Logic-OT/Life-OT

The Logic-OT and Life-OT partition systems have been designed specifically for operating theatres. The partitions can be made of various materials, such as stainless steel, PPGI or HPL. One highlight of this system is the option of integrating the Life-OT coloured glass panel which can be fitted with LED backlighting. All surfaces, joints and points of connection to other parts are designed to facilitate cleaning and disinfection so as to allow top standards of hygiene.



Life-OT

The entire surface of the safety glass is bonded with a highly compressed base and can be supplied with a RAL or NCS colour coating on the rear or with a print of your choice. The smooth glass surface makes it easy to clean and disinfect, and it is resistant to the cleaners and disinfections included in the VAH List.





Logic/Life-Thermowall

The Bright Star Aircon thermowall was specially developed for use in operating theatres and clean rooms. The advantage of this system is the flexibility with which heating can be integrated in the rooms. The system is preferable to a radiator with regard to hygiene because of the smooth non-rippled surfaces. For interim solutions, small spaces or conversions.

Bright Star Door Systems

Flexible, robust, combinable

Door systems designed specially for operating theatres and hospitals are required to meet high demands. That is why we design and develop high-quality, robust doors which meet the required hygiene standards and satisfy the fire safety, smoke control and sound insulation requirements set out in EU directives and DIN standards.

The doors can be fitted with a variety of different switches, sensors and displays and can be integrated in various partition systems.



Sliding Doors

Bright Star Aircon operating theatre sliding doors are designed specifically for use in hospitals and are specifically tailored to the requirements in various areas. The system may optionally consist of one or two door leaves, be running into the wall or sliding in front of the wall, and be built up to floor-to-ceiling height. Customised solutions can be devised at any time to meet specific project requirements.

Swing Doors

Bright Star Aircon swing doors are suitable for a wide and diverse range of applications. Originally developed for use in GMP clean rooms, they also provide an excellent service in areas with top hygiene requirements and are designed specifically for these fields of application. The inbuilt flexibility allows construction of a radiation protection design for operating theatres or X-ray rooms without any visual changes. The door unit can be designed as a total package with automatic drive, decontamination lock system control unit, magnetic clamp or other electric components.



BSA Ceiling and Lighting Systems

Versatile, Available and Visually Appealing



Bright Star Aircon will design, make and install your ceiling system according to your performance requirements, all standards and regulations relating to operating theatres are taken into account. You also have the choice of various types of ceiling panels and different modular dimensions. The systems offer flexibility in terms of the ceiling cavity and allow connection to low-turbulence displacement flow panels and integration of different lighting concepts. An operating theatre is also demanding in terms of the required light intensity and light fixture sealing.

Operating Theatre Ceiling Clip

The Clip metal ceiling system is made up of a galvanised substructure consisting of suspension channels and clip-in profiles. The individual sections can be supplied with or without welded edges and in clip-in design or clip-in/swing-down design. The system can be combined with many standard fittings which are commercially available, such as light fixtures, air vents and low-turbulence displacement flow panels.



Clip ceiling system with circumferential strip lights and connection to low-turbulence displacement flow panel.

Benefits at a glance

- Meets hygiene requirements
- Possibilities for individual design
- Cutting-edge LED technology

Backlight Panels

Bright Star Aircon Reinraumtechnik features unique LED lighting solutions with a wealth of design options. Digital photographic prints can be chosen at will, enabling virtually any conceivable ambience and creating a sense of harmony in the room.



Fireproof Ceilings for areas with hygiene requirements

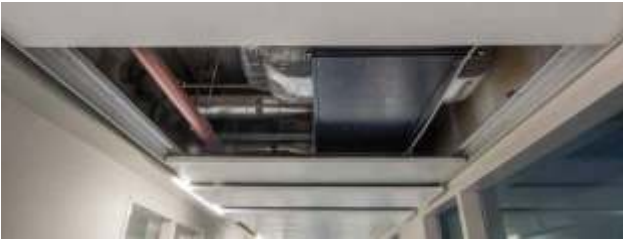
Fire resistance is an important consideration for every ceiling system - no matter how simple or complex. Our fire resistant ceiling tiles are engineered to meet the most stringent industry standards. Select fire resistant ceiling tiles from a broad range of looks and acoustic options to meet your design and functional requirements. The fire safety demands on suspended ceilings can vary depending on both the type of room and the building where they are to be installed. Two general requirements can, however, be identified as crucial for suspended ceilings in the early stages of fire, and they should be regarded as "compulsory" in all premises.



Fireproof Ceilings



The fireproof ceilings with F30 fire rating are tested for conformity with DIN 4102-2 and come with a general approval certificate issued by the building inspection authorities. The various designs can be supplied with "F30-A" or "F30-AB" classification. The fireproof ceilings are tried and tested systems. They are particularly user-friendly systems which are perfected down to the last detail. Customised solutions can be supplied to meet specific requirements in



LMD-F30-A/AB Type 8-user-friendly fireproof ceiling carefully engineered in every detail – and tested for hygienic suitability

Operating Theatre Lighting Systems

The recessed luminaires and downlights developed specially for operating theatres and clean rooms combine housing fixtures of the correct standard to meet hygiene requirements with state-of-the-art LED lighting technology. Choose from a variety of shapes, including square or round, or strips around the low-turbulence displacement flow panel. The operating theatre lights are extremely versatile in terms of extra options and add-on technical systems.

LED benefits at a glance

- Up to 50 % less energy consumption than conventional lighting
- Very long service life of over 50,000 hours and requiring virtually no maintenance
- Unobstructed availability of lighting in the operating theatre
- Less heat build-up and therefore less cooling required
- Environmentally-friendly manufacture and disposal
- Extremely low installation heights





Ventilation Systems

We fit all the areas of the operating theatre with the necessary ventilation system components, from low- turbulence displacement flow panels and adjustable ceiling vents for incoming and outgoing air, right through to software-controlled filter fan units and laminar airflow grates for the wall installation. As general contractors, we take charge of the entire process of planning and installing the ventilation and air conditioning system.

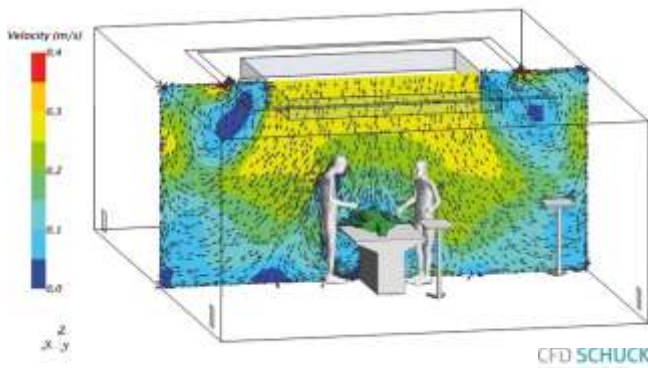
- Whatever your requirements:
- Different materials and sizes
- CFD simulation for flow optimisation
- Measurements of particles and microbes during inspection
- Customised solutions for all fields of application

Low-Turbulence Displacement Flow Systems

In cooperation with strong business partners, state-of-the-art low-turbulence displacement flow systems are designed and installed to your specifications. All the national norms and international standards relating to new ventilation and air conditioning systems are duly observed in any given project. Decades of experience in air conditioning technology provide a guarantee of a safe and reliable supply of clean air for your surgical areas – all over the world.



CFD Simulation



Fluid dynamics are used, if necessary, to simulate flow in an operating theatre. The calculations take air movements into account, such as inward and outward flows of air, cross flows, or possible sources of heat (machines, people, wall heating). It is possible in this way to identify areas which have insufficient ventilation or which are subject to dangerous vortices and transverse flows before starting the construction. The simulation guarantees a better design and finish of operating theatres. It also allows improvements to be made to the heating and ventilation systems or to other installations before embarking on the work.

Exhaust Air Chute with inspection opening

The exhaust air chute consists of a built-in cabinet flush with the wall and an inspection hatch. It can be fitted with one or two fibresept lint trap filters as optional extras. These trap filters are fitted flush with two side pivots for tool-free installation and removal. The inspection hatch has integrated hinges for ease of opening and closing. The exhaust air chute is specially designed for operating theatres in conformity with VDI 2167 and DIN 1946.

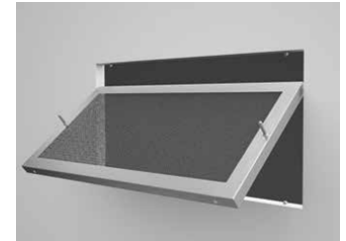




Operating Theatre Ventilation Grille

The operating theatre ventilation grilles can be integrated both in exhaust air units and in cross flow units between two rooms and flush-fitted on both sides of swing doors and sliding doors. The stainless steel structure is built specifically for operating theatres in accordance with VDI 2167 and DIN 1946, and in line with hygiene standards under DIN 6812, and can be removed without tools. Powder coating is available as an optional finish

Ventilation grille radiasorb with powder-coated finish; an optional lint filter can be fitted at the back.



Ventilation grille fibresept

Operating Theatre Clean Rooms



A cleanroom, enclosure, and or environment in which you move the air by way of supply and return locations to control the airborne particle levels and in some cases temperature and humidity. It is a controlled environment where products are manufactured. It is a room in which the concentration of airborne particles is controlled to specified limits. Eliminating sub-micron airborne contamination is really a process of control. These contaminants are generated by people, process, facilities and equipment. They must be continually removed from the air. The level to which these particles need to be removed depends upon the standards required.

What is Contamination?

Contamination is a process or act that causes materials or surfaces to be soiled with contaminating substances. There are two broad categories of surface contaminants: film type and particulates. These contaminants can produce a "killer defect" in a miniature circuit. Film contaminants of only 10 nm (nanometers) can drastically reduce coating adhesion on a wafer or chip. It is widely accepted that particles of 0.5 microns or larger are the target. However, some industries are now targeting smaller particles.



Types of Contamination

- Particulate : Dust, skin, hair, makeup...
- Chemical : Oil, grease, metal ions, perfume...
- Biological : Bacteria, fungi, rodents???
- Radiation : Ultraviolet light...

Key Elements of Contamination Control

We will look at several areas of concern to get a better idea of the overall picture of contamination control. These are the things that need to be considered when providing an effective contamination control program.

HEPA (High Efficiency Particulate Air Filter) - These filters are extremely important for maintaining contamination control. They filter particles as small as 0.3 microns with a 99.97% minimum particle-collective efficiency.

CLEANROOM ARCHITECTURE - Cleanrooms are designed to achieve and maintain an airflow in which essentially the entire body of air within a confined area moves with uniform velocity along parallel flow lines. This air flow is called laminar flow. The more restriction of air flow the more turbulence. Turbulence can cause particle movement.

FILTRATION - In addition to the HEPA filters commonly used in cleanrooms, there are a number of other filtration mechanisms used to remove particles from gases and liquids. These filters are essential for providing effective contamination control.

CLEANING - Cleaning is an essential element of contamination control. Decisions need to be made about the details of cleanroom maintenance and cleaning. Applications and procedures need to be written and agreed upon by cleanroom management and contractors (if used). There are many problems associated with cleaning. Managers need to answer the following questions before proceeding with any cleanroom cleaning program.

CLEANROOM GARMENTS - The requirements for cleanroom garments will vary from location to location. It is important to know the local garment requirements of the cleanroom management. Gloves, face masks and head covers are standard in nearly every cleanroom environment. Smocks are being used more and more. Jump suits are required in very clean environments.

HUMANS IN CLEANROOMS - There are both physical and psychological concerns when humans are present in cleanrooms. Physical behavior like fast motion and horseplay can increase contamination. Psychological concerns like room temperature, humidity, claustrophobia, odors and workplace attitude are important. Below are several ways people produce contamination



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