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Case Study

weisstechnik implements high-performance clean air technology for the operating theatre to minimise germ contamination

WHY	HOW	WHAT
New construction of the operating theatre area of an orthopaedic clinic	Clean air technology for two operating theatres according to requirements	Vindur® laminar flow clean air canopies with low-turbulence displacement flow and continuous particle monitoring system

WHY – The Challenge.

With 101 beds, the Asklepios Orthopaedic Clinic in Hohwald is one of the leading facilities for orthopaedics and endoprosthetics in Germany and has its own spine centre. During the planning of two new operating theatres, modern and safe technical equipment was also to contribute to energy savings. The sustainability of the technology and the creation of safe and ergonomic conditions for patients and medical staff were particularly important to the clinic operator, Asklepios. For this reason, the operator opted for TAV clean air canopies with continuous particle monitoring and surgical smoke extraction from **weiss**technik.

HOW – The Idea.

In collaboration with the Asklepios planners, the specialists from **weiss**technik designed and implemented the clean air technology for the new operating theatres according to requirements. Vindur laminar flow clean air canopies with low-turbulence displacement flow (TAV) are the core elements. These meet all the requirements made by DIN 1946-4 Clean Room Class Ia and guarantee the permanently reliable supply of clean air.
A screen of clean air is generated under the large air outlet, which safely shields the patient, operating staff and instruments from the environment. The penetration of germs into the operating zone is reliably prevented, the germ load in this sensitive area reduced to a minimum.
To further increase safety for patients, the TAV canopy is also equipped with a Continuous Particle Monitoring (CPM) system. This measures and archives the particle count in the operating protective field near an instrument table in real time and visualises the load on a display. If the load rises to more than 100 particles/cft (ISO class 5), the amount of air supplied is automatically increased until the value is back in the green range.

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WHAT – The Solution.

One problem with existing TAV canopies are air deflectors made of glass that direct the clean air downwards to ensure a sufficiently large protection area. These can f. ex. clash with the support arms of operating theatre lights or mobile C-arms.Falling glass splinters are dangerous for patients and operating staff and can hinder operating theatre operations. To avoid this, the TAV canopies are equipped with special air slot outlets. These create an air curtain that directs the low-turbulence displacement flow downwards highly effectively, creating the desired protected area.

Selected Product: Vindur® Laminar Flow Clean Air Canopies

To minimise the health risk of surgical smoke for operating-staff and patients, the clean air canopies were also supplemented with a surgical smoke extraction system. The permanently installed system extracts the smoke directly where it is generated and guides it via the canopy supply unit in a hose into the exhaust air duct. The system extracts more than 80 % of the smoke particles and gases and is running almost noiseless, because the fan is placed in the machine room.

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