



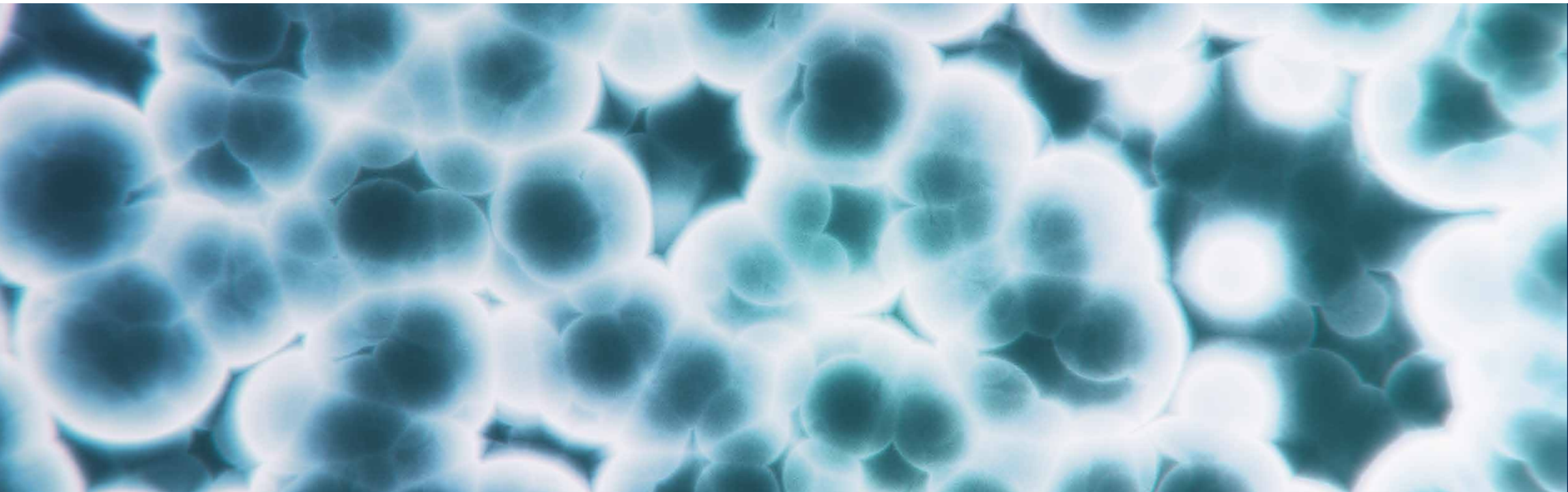
weisstechnik[®]
a schunk company

LIFE SCIENCE Products
for hospitals.

weisstechnik

vötschtechnik

Protecting life from head to toe.



More than 60 years experience

The Weiss Technik companies belong to the worldwide active Schunk Group and consist of the branch companies Weiss Klimatechnik, Weiss Umwelttechnik, Vötsch Industrietechnik and Weiss Pharmatechnik. The latter specialises in the development of technical products and processes for the pharmaceutical, chemical and cosmetic industries.

Life Sciences analyse the processes and structures of living organisms. The objectives are the protection and improvement of life through the development and production of new medicines, optimised medical products, and individualised therapies. With technical products and customised solutions, we support businesses, laboratories, and research institutes in achieving these objectives safely and sustainably.

Partner for production and research

We have comprehensive technical knowledge and in-depth competence in this field. With this experience, we enable our customers to implement scientific discoveries successfully, ensure safer and more reliable production, and improve product quality continuously. As a reliable partner of research and industry, we have been setting new standards for more than 60 years.

Environmental, heat, climate control and pharmaceutical technology

Our multifaceted and proven range of products and services includes special solutions for personnel and product protection, clean room and stability testing, hot air sterilisation, tensile tests of materials, and phytomedicine. Our solutions meet or exceed all relevant directives, guidelines, and industry standards. Furthermore, we offer our customers an individually customised service programme, from development to after-sales service.

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Our innovative LIFE SCIENCE products for your hospital at a glance.



OPERATING THEATRES

- TAV clean air ceilings
- CPM air purity monitoring
- Air conditioning equipment
- Sterile cabinets



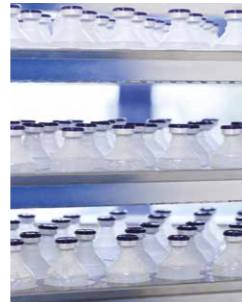
STERILISATION

- VHSF/ VHS hot air sterilisers
- S.I.P. stations



CLEAN ROOMS

- Complete clean room solutions
- Safety workplaces
- Compounding laboratories
- Clean room blister solutions
- Air conditioning equipment for clean rooms



MOBILE INSERTS

- Mobile operating theatre systems RR 1a/b
- Mobile clean room systems RR ISO 7/8
- Mobile air conditioning equipment, Module-R®



COMPUTER CENTRES

- deltaclima®
- CoolW@ll®



SERVICE

- Consultation and maintenance
- Spare parts management
- Energy optimisation
- Education and training
- Qualification and re-qualification





Stopping surgical fumes and germs at source.

Hospital germs can cause infections. In addition, surgical fumes are suspected of causing cancer. Modern air purity monitoring and air conditioning systems from the weissttechnik® mediclean® division help to protect the health of patients and surgical personnel.

Operating theatre clean air canopies for particle-free air

Low turbulence displacement air flows from the latest generation of operating theatre clean air canopies create a reliably particle-free protective area and isolate the wound area, the instrument tables, and theatre personnel from the surroundings. Due to the negative pressure created in the operating theatre, no air can enter from the outside.

The innovative CPM air purity monitoring system

CPM stands for Continuous Particle Monitoring. During surgery, staff move around the room and open doors or operate equipment. In addition, during laser surgery, large quantities of smoke particles are released. This can cause enormous fluctuations in the number of particles and germs in the air. A sensor measures the number of particles in the protected surgery area and automatically adjusts the air flow in the air conditioning ceiling.

If the number of particles exceeds a defined value, the theatre air intake system responds automatically. Optionally, the measuring system gives a visual and acoustic signal to the surgery team. The air quality can be documented to enable comprehensive quality control.

Modern air conditioning equipment from Weiss mediclean®

As a specialist with decades of experience weissttechnik® offers a wide variety of air conditioning solutions, which our experts have specially developed for the hospital and healthcare sectors. In addition to innovative operating theatre air intake systems, Weiss mediclean® offers a wide range of modern, space-saving, and ready-to-connect air conditioning equipment.

Whether for new buildings, renovations, or modernisation: The range of services from Weiss mediclean® extends from on-site consultation and generation of offers through to the installation and commissioning of air conditioning components, including service and maintenance. We will be glad to advise you.



Your benefits

- CPM (Continuous Particle Monitoring)
- Operating theatre clean air canopies
- mediclean® systems and air circulation equipment
- Wall cabinets and ceiling-mounted air conditioning equipment
- Sterile cabinets

Our services

- Advice on all questions of air conditioning
- Planning of new buildings and renovations
- Refurbishing and modernisation
- Training
- After Sales Services

Operating theatre clean air canopies for the Geneva Clinique des Grangettes.

The famous Geneva Clinique des Grangettes opened a new, large surgical department. The clean air supply and innovative operating theatre air conditioning technology was supplied by the Weiss mediclean® division.

This was a mammoth project which was jointly managed by Weiss Klimatechnik together with the Swiss hospital constructor MedPlan Engineering. A completely new surgical department with an area of more than 1,500 square metres and five operating theatres, each with an area of 50 square metres had to be constructed. "The new surgical department was to be designed for maximum efficiency," explains Michael

Hemmerle, Project Manager for MedPlan. "This meant that all areas had to be multifunctional, and performance of the same operations had to be possible in all of the theatres."

The common induction area with three workplaces is used as required and does not stand empty simply because there is no operation planned in a particular theatre. All operating

theatres are equipped with the same peripheral equipment such as theatre canopies, surgical lights, and supply stands. The central location of the operating theatres guarantees that access for theatre staff is separated from that for patients and therefore ensures faster, work without overlaps. The anaesthetist has to cover a short distance from the induction area to the operating theatres. A small camera, which continually shows the status of surgery to the head of department, is installed in each operating theatre. The next patient can therefore be brought to the surgery department in good time, which reduces unpleasant waiting times for patients.

TAV operating theatre canopies ensure clean air

The fresh air is prepared in a separate area of the hospital and then supplied to the surgery department. Weiss mediclean® TAV canopies were installed to ensure a permanently high quality supply of clean air. "The hospital decided on this equipment because these products are well known for their great reliability and high performance," says Michael Hemmerle.

The theatre canopies operate with low turbulence displacement air flow. They have a nine square metre air outlet, which is equipped with H14 filters. The large air outlet area guarantees that during the operation the patient, the surgical staff, and the instruments are located under an umbrella of clean air into which no contaminating germs can enter. In addition, surgical staff are protected from the fumes which are released, for example, during laser surgery and which are a health hazard. The TAV canopies therefore protect the health of both patients and surgical staff.

The new surgery department was inaugurated in the autumn of 2014.



Over a construction period of 1.5 years, together with the Swiss hospital constructor MedPlan, Weiss Klimatechnik implemented five new operating theatres with TAV operating theatre canopies and a total operating theatre area of 1,500 square metres.

Ultimate clean room protection for patients, staff, and medicinal products.

Clean rooms in compounding centres, laboratory pharmacies, and hospital pharmacies are subject to stringent regulations. With the **weisstechnik®** brand, we offer you individual components and complete solutions for your hospital.



Turnkey clean rooms

Planning and constructing a clean room requires extensive know-how. We are your competent partner for clean rooms which meet your requirements. On request, we can provide a complete package – from the initial considerations up to ready-to-use clean rooms. Pharmacies equipped with modern equipment and that precisely meet all regulations can guarantee individually produced medications for patients in perfect quality.

Safety workbenches for optimum protection of people and products

For protection when handling hazardous substances such as CMR drugs, we offer work protection equipment which provides maximum safety. Our cytostatic workbenches ensure freedom from germs throughout the drug production process for tumour therapy. With the WIBOjekt® work station, **weisstechnik®** systems ensure safe working conditions in Pathology. All of our protective workbenches are tested with regard to the protection of people and products, and extra features are available.

Personnel and materials air locks

Clean room air locks are used for the controlled entry and exit of personnel, materials, or products. We provide the right air locks for your clean room.

Clean room blister solutions

Automated processes, such as the automated, patient-specific blister packaging of drugs, ensure a rapid, safe, and controllable supply of medications. We also provide complete solutions for blister packaging in the clean room: planning, implementation, and qualification.

Clean room monitoring systems

Monitoring systems continuously monitor, for example, room pressure, temperature, humidity, and the number of particles in the air. All parameters must be recorded and archived so that they cannot be tampered with. With our monitoring systems, you are on the safe side.

GMP qualification

GMP-compliant quality management protects your products and is a statutory requirement imposed by the health authorities. The Weiss Technik companies offer a wide range of training to further educate your personnel and help you to comply with the legal regulations.



Your benefits

- Advice and planning
- Qualification services
- Commissioning and maintenance services
- GMP training

Turnkey solutions

- Complete new clean rooms
- Modifications/upgrades of existing systems
- Compounding laboratories
- Concepts with workbenches and isolators

GMP-compliant clean room products

- Cytostatic workbenches
- Safety workplaces and pathology tables
- Personnel and material air locks
- Wall, ceiling and floor systems
- Laminar flow systems
- Monitoring systems

A GMP clean room for Herz- und Diabeteszentrum in Bad Oeynhausen.

The heart and diabetes centre Herz- und Diabeteszentrum Bad Oeynhausen in North-Rhine Westphalia (HDZ NRW) is one of the world's leading cardiology centres. As the general contractor, Weiss Klimatechnik has equipped the hospital pharmacy with a new clean room for the production of drugs for in-house use as well as for external customers.



"During our negotiations, Weiss Klimatechnik impressed us with the best overall package and the best scientific and technically practical concept," explains Marc Lohmeier, Technical Manager of HDZ NRW. In Germany, clean rooms for pharmacies are subject to the Ordinance on the Operation of Pharmacies. As well as compliance with legal requirements, the extremely stringent hygienic standards of HDZ had to be observed for the 250-square-metre construction project for the new in-house pharmacy. The construction schedule had to be structured in a way that did not impact other departments. The centre has worked with the mediclean® division of Weiss Klimatechnik for many years, for example, during the installation of special operating theatre clean air canopies.

Qualified clean room

"We have built the new clean room complex with two separate air regions for sterile production or preparation of cytostatic drugs," explains Karl-Heinz Lotz, Head of the SBA* Cleanroom at Weiss Klimatechnik. "The room-in-room solution with an isolated and airtight wall system was tailored to the requirements of the processes and the personnel." Access to the clean room complex is via airlocks. Access control prevents unauthorised persons from entering the area. The air conditioning systems were adapted for the two functional areas of cytostatic drug production and sterile production. In the cytostatics area, technicians from weissttechnik® installed a climate cabinet unit which was custom-built for the project, with separate upstream treatment of the outside air, which provides an air intake and extraction system for the rooms. weissttechnik is convinced of the energy efficiency of its products and has therefore committed to a contractual guarantee for the maximum energy consumption.

Qualification and service

Implementation of the general contract included completely gutting the construction area and installing the new clean room. From placement of the order, planning and implementation, up to GMP qualification with levels DQ, OQ, and PQ, Weiss Klimatechnik completed the project within eight months. The system is contractually maintained under the weissttechnik Service Management.

New construction of a complete clean room with a total area of 250 square metres within a construction time of eight months. (GMP-compliant construction and qualification).

Cool air conditioning for computer centres.

Innovative air conditioning equipment from **weisstechnik®** protects your computer centre from harmful temperature fluctuations. In the field of medicine, this is especially important, as access to important examination findings and patient data is essential at all times.



Server rooms, telecommunications rooms, and computer centres are often accommodated in very confined spaces. However, this increases the thermal load, which can quickly damage sensitive equipment. These conditions place the highest demands on the air conditioning technology. Compact, efficient, and reliable solutions are needed, which provide both the necessary performance and save energy and costs.

Reliable and individually configurable: Weiss deltaclima®

Deltaclima® units from **weisstechnik** are available in a wide range of versions and can be individually configured. They can be simply and cheaply installed and, if necessary, can be easily adapted to changes in the configuration of the room. The high quality standard of our Weiss deltaclima® units ensures maximum reliability and low maintenance operation. These are factors which give you great investment security.

Efficient and space-saving: Weiss CoolW@ll®

The **weisstechnik®** CoolW@ll enables extremely high cooling power with low energy consumption. It functions like a climate cabinet: with fans to convey the air and a heat exchanger for cooling. Whereas conventional air conditioning units use only the heat exchanger area within the unit, the CoolW@ll system uses almost the entire height and width of the computer room to cool the air. The entire technical area is used as a cooling unit.

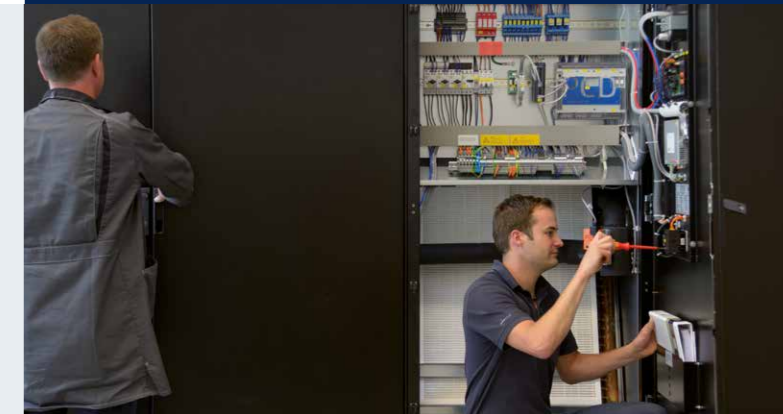
Cooling of the computer room can be precisely planned via the design of the heat exchanger and the number of fans. With the special expansion of the individual elements, the internal pressure losses are greatly reduced, so that the energy consumption of the fans is considerably less in comparison with climate cabinets. The greater the required cooling power, the greater the savings.

CoolW@ll is available in various versions. We will be glad to advise you which is the best unit for your needs.



By the way:

our latest product, the innovative cooling unit deltaclima® mini DC, won second place for the German Computer Centre Prize in 2015.



CoolW@ll® – Your benefits

- Highly energy-efficient, cold-water-cooled air conditioning system for computer centres
- High cooling power with small footprint
- Large area heat exchangers for optimum use of free cooling units
- Greater flexibility for room architecture even without double floors
- Walk-in system with free access and barrier-free interior

deltaclima® – Your benefits

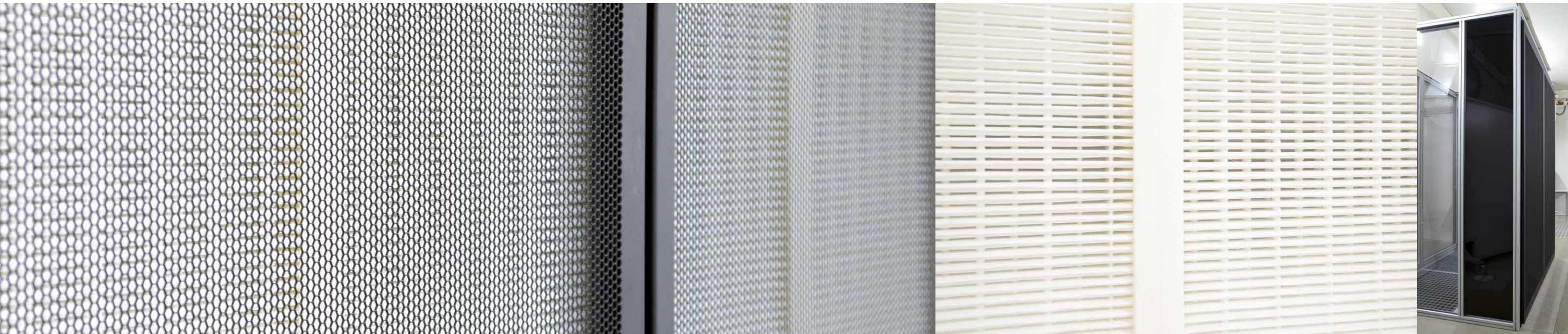
- Efficient, energy-saving, and space-saving
- Highly reliable
- Available in a wide range of versions
- Economical and low maintenance

Our services

- Planning, consultation, and installation
- Service and maintenance
 - Services

A Weiss CoolW@ll® for the Isar-Amper Hospital in Munich.

For networked hospitals such as the kbo-Isar-Amper Hospital in Munich, it is essential that the computer systems operate perfectly. This is ensured by the weissttechnik® CoolW@ll.



MRI images, X-ray findings, blood counts, and many other medial data and findings for patients are saved in the network and must be available to physicians at any time. To optimally protect the hospital computer centre against overheating, the kbo-Isar-Amper Hospital decided to use the weissttechnik CoolW@ll.

A computer centre is the heart of the hospital PC network. Modern computer equipment generates a large amount of heat, which can cause overheating. In the worst case, the entire system can fail. "To protect the computer centre, we had to install a special air conditioning unit that provides high cooling power and is suitable for the extremely confined space," explains Mathias Köster, Head of the ICT division at Weiss Klimatechnik. "We would not have been able to achieve the necessary cooling power with conventional units, and there was no room for standard units that can create higher efficiency."

The planning specialists decided to use the weissttechnik CoolW@ll. This modern air conditioning unit was specially designed for computer centres. It can be flexibly adapted to individual room conditions and has an extremely low energy consumption. Three CoolW@lls®, consisting of heat exchanger modules, fan units, control units, and wall cladding were used for the computer centre

The weissttechnik CoolW@ll® at the kbo-Isar-Amper Hospital in Munich was inaugurated in the middle of February 2015. The Geib engineering firm in Munich was responsible for the overall design. This is the third project which Weiss Klimatechnik has implemented for the kbo-Isar-Amper Hospital.

of the Munich hospital, which provides the entire computing power for the total of five kbo hospitals in the network. The units generate a total cooling power of 160 kW (n+1 redundancy). The individual modules and components were tailored to the specific room conditions of the project.

The CoolW@ll of the kbo-Isar-Amper Hospital has yet another special feature: "This CoolW@ll can use two separate cooling circuits," explains Mathias Köster. "To save power, the first cooling circuit consists of cold well water. If this is not available, the second normal cooling water circuit with mechanical refrigeration switches on automatically. With this feature, the hospital saves money and can be sure that the cooling does not fail."

Sterilisation with hot air.

Reliable equipment is essential for the production of drugs, active ingredients, and products. Dry heat sterilisation provides the optimum conditions for quick, safe, and cheap sterilisation.

The **weisstechnik** subsidiary Vötsch Industrietechnik offers hot air sterilisers in various sizes, according to your needs.

The hot air sterilisation principle

Since only air is used for dry heat sterilisation, sterilisation can be carried out at high temperatures. Depending on the temperature level, the sterilisation process is many times faster than that of other methods. The process is, therefore, especially time saving and economical. Due to the high temperatures, no chemicals are needed for sterilisation.

For the production of certain medications, such as injection solutions, it is essential that critical pyrogens, for example, dead bacteria, are destroyed. These pyrogens are eliminated above a temperature of 250 °C.

Vötsch Industrietechnik hot air sterilisers are available in GMP-compliant and FDA-compliant versions.

Our **vötschtechnik**® VHS-and VHSF series meet the requirements of the corresponding clean room classes.

Individual solutions cater for your requirements

In addition to our standard units, you can benefit from our customised solutions, which our experts design according to your individual requirements. We will be glad to advise you.



Your benefits

- Simple operation
- Problem-free maintenance and cleaning
- No danger to operating personnel due to hazardous chemicals
- Environmentally friendly
- Low operating costs

Flexible, durable, and ready for use worldwide.

Robust and reliable surgical and air conditioning technology is essential for mobile deployment. This is even more important if the equipment is to be used in military service or by aid organisations in crisis and disaster areas.



Doctors can carry out medical operations successfully and save lives only if there are optimum hygienic and climatic conditions in the mobile operating theatres. You are always on the safe side with **weisstechnik®** mobile clean room and operating theatre equipment.

Make two from one—the Weiss Module-R®

weisstechnik® has developed a mobile air conditioning unit, which is not only extremely robust, but also offers greater flexibility in use in tents and containers around the world: the Weiss Module-R®.

With conventional air conditioning units, both components are located in a large metal housing. To achieve greater mobility and flexibility, **weisstechnik** development engineers have separated the evaporator and the condenser. This provides a large range of installation and design variety. Customers can choose between three different control elements. Modern CAN BUS technology enables energy-saving networking of the systems and ensures great reliability.

Robust and safe mobile operating theatre systems

The mobile tent-based operating theatre system of the OP-RC 1 series was developed by **weisstechnik®** in cooperation with Schall. This system is considered to be one of the essential items of equipment for disaster control. Our technology enables surgery to be carried out under clean room conditions, just as in a conventional operating theatre, even under extreme climatic conditions.

The certified clean room systems consist of an integrated



air distribution system and a laminar flow plenum as well as two outer tents which are used as airlocks and technical rooms.

Mobile operating theatre deployment around the world

The mobile operating theatres and the Weiss Module-R® are tailored for use in disaster areas. They can be used within a temperature range from -40 °C to +60 °C and can withstand humidity, snow, sand, storms, and extreme climatic conditions.

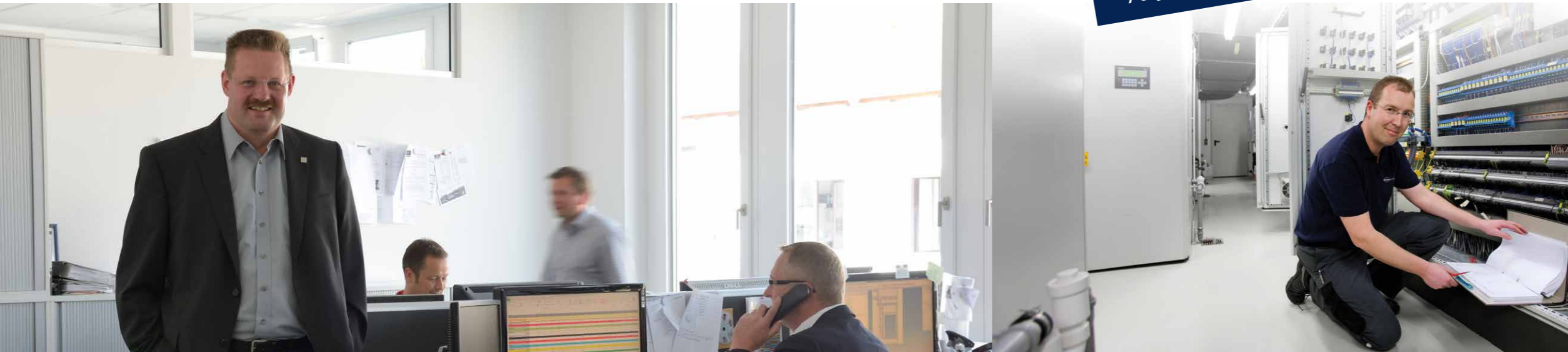
Your benefits

- Mobile deployment in all climate zones worldwide
- Modular structure and individual configuration
- Robust, efficient, and reliable
- Advice, planning, and commissioning
- Service and maintenance

Acting effectively, worldwide.

We think and act with service in mind. Our customers see us as partners. With our specialised service departments, we provide you with lasting solutions for a long and successful collaboration.

We are always there for you.
You can reach us by telephone
or by e-mail, 24 hours a day,
7 days a week.



Weiss Klimatechnik Service Centre:

24/7 Service Helpline
+49 (0) 64 08 / 84 74
service-vertrieb@wkt.com

Weiss Umwelttechnik Service Centre:

24/7 Service Helpline
+49 180 566 65 56 (free of charge)
service@wut.com

Weiss Pharmatechnik Service Centre:

24/7 Service Helpline
+49 (0) 4484 / 189 110
service@weiss-pharma.com

Advice

Take advantage of our many years of experience. Our knowledgeable experts are ready to support you in word and deed, by telephone or on the spot, in every step of your project, from the first idea to after-sales service.

Servicing and maintenance

We adapt our service offers exactly to our customers' requirements. Our full maintenance service provides maximum security with fixed, calculable costs. We offer various service levels with guaranteed response times of no more than 24 hours after the occurrence of a fault.

Spare parts management

Thanks to our extensive stock-keeping, many spare and wearing parts are available reliably and at short notice. To further increase operating reliability, it can be a good idea to keep an additional stock of selected spare parts on site. We would be pleased to advise you further.

Qualification and re-qualifications

We provide our customers with all qualifications and re-qualifications necessary for the reliable operation of an installation. These include DQ, FAT, OQ, SAT, IQ, and GMP.

Clean room technology

For manufacture under clean room conditions, we can issue the legally prescribed, periodic certifications of fault-free operation of the installation. Our specialists take on all the required tasks – from weak-point analysis, through filter tests, to monitoring.

Energy optimisation

With the optimisation of an installation, we increase its performance and raise the energy efficiency. The energy inspection for air conditioning systems is a legal obligation according to the Energy Saving Ordinance (EnEV) 2009. Our energy check meets the legal requirements of EnEV.

Training

We carry out regular service training sessions, free of charge. Furthermore, our experts train our customers' personnel. The content and duration of the training sessions are adapted to particular wishes and requirements. We would be happy to discuss the possibilities with you and make a non-binding offer.

weisstechnik®

Test it. Heat it. Cool it.

Our solutions are deployed around the world in research, development, production and quality assurance of numerous products. Our experts from 21 companies are at your service in 14 countries, ready to provide support to ensure high operational reliability of your systems.

Weiss Umwelttechnik is one of the most innovative and significant manufacturers of environmental simulation systems. With these testing systems, we can simulate all climatic conditions around the globe and beyond, under accelerated conditions. Whether temperature, climate, corrosion, dust or combined shock testing: We have the proper solution. We supply systems in all sizes, from standard versions up to customised, process-integrated facilities - for high reproducibility and precise test results.

Vötsch Industrietechnik, a subsidiary of Weiss Umwelttechnik, offers a wide product portfolio in the field of heating technology. With an experienced team of engineers and designers, we develop, plan and produce high-quality and reliable heating technology systems for virtually any field of application. Products include heating/drying ovens, clean room drying ovens, hot-air sterilisers, microwave systems and industrial ovens. The portfolio reaches from technologically sophisticated standard versions to customised solutions for individual production operations.

A further Weiss Technik company, Weiss Klimatechnik, also offers reliable climate solutions wherever people and machinery are challenged: in industrial production processes, hospitals, mobile operating tents or in the area of IT and telecommunications technology. As one of the leading providers of professional clean room and climate solutions, we deliver effective and energy-saving solutions. Our experts will guide you from the planning to the implementation of your projects.

Weiss Pharmatechnik, a subsidiary of Weiss Klimatechnik, is a competent provider of sophisticated clean room and containment solutions. The product range includes barrier systems, laminar flow facilities, security workbenches, isolators and double door systems. The company emerged from Weiss GWE and BDK Luft- und Reinraumtechnik and has decade-long experience in clean room technology.

Weiss Klimatechnik GmbH
Greizer Strasse 41-49
35447 Reiskirchen/Germany
Tel.: +49 6408-6500
mediclean@wkt.com
www.weiss-technik.info

Weiss Pharmatechnik GmbH
contact@weiss-pharma.com



Because environment and climate control is more than just a part of our name.



Vötsch Industrietechnik GmbH
Heat technology
info-wt@v-it.com