



ACR CHILLER RENT PROJECT IN AN UNIVERSITY MEDICAL FACILITIES

Mobile cooling supply at the university medical centre (location 1 of 23)

Conversion in winter saves costs – 30 decentralised rental chillers in ongoing hospital operation

With a total of 4.5 MW of temporary cooling capacity from acr chiller rent, the cooling supply was maintained without interruption during the energy-cost-saving winter months.

Over a period of two years, extensive renovation and supplementary work was carried out on the cold water networks at one of the largest university medical facilities in Germany. At the same time, the hospital and its teaching activities had to continue to run smoothly. Over 2.1 km of flexible hose lines and more than 100 rental components in the form

of chillers, buffer storage tanks, pump modules and expansion vessels were delivered on fifteen 40-tonne trucks by acr chiller rent GmbH, the rental cooling specialist commissioned to carry out the project. The work involving the general refurbishment of the refrigeration systems and the buildings connected to the

cold water and ring mains also included the cold transfer stations of the hospital, which are supplied with cold water via the mains from the refrigeration system.

The unavoidable supply bottlenecks were bridged by rental refrigeration machines from acr chiller rent. At certain times during the work, it was essential to shut down either the entire network or parts of it. In the two winter periods in which the conversion work took place, the required cooling capacity of up to 4.5 MW had to be maintained in order to cover the cooling demand for the normal operational processes of the hospital even at that time of year.

Since the cooling demand in summer would have been significantly higher at 15 MW cooling capacity, the conversion phases were deliberately scheduled for the two winter periods.



ACR rental chillers from 50-250 kW

circulation cooling of the chillers, through to microscopes and medical devices.

For the 4.5 MW cooling capacity required in winter, acr chiller rent provided eight rental chillers with 50 kW each, another twelve with 130 kW and ten with 250 kW cooling capacity. Depending on the specific type, these use quiet scroll or screw compressors and were used for reliable mechanical chilled water or liquid cooling. Control and regulation are carried out via an integrated Siemens Micro Tec III controller module. With two units connected in parallel per system, a higher-level control system ensures a fault switchover in the event of a failure. In addition to the chillers, all peripheral components and other equipment for the temporary cooling supply were also supplied, while the machines, mains pumps and buffer storage tanks had to be made available with complete redundancy to make them 100 percent fail-safe.

The university medical centre, with its naturally high demands on unrestricted availability of the technical facilities, had to carry out the replacement of refrigeration components quickly and without interruption as part of the gradual overhaul. This demanding task was met by a large number of mobile refrigeration units from acr chiller rent, which were set up at a total of 23 different locations on the site. Frost protection, in particular, was an issue that presented the planning engineers with additional challenges in terms of the environmental aspects to be taken into account and the risk of frost. In the existing hydraulic systems, water-glycol mixtures had to be dispensed with as the cooling medium and the systems had to be operated with water. Additional measures were taken by acr chiller rent to ensure the operational safety of the temporary cooling supply components set up outdoors. The rental components delivered were designed to operate at outside temperatures as low as minus 18°C. Special insulation and an electrical, thermostatically con-

trolled and self-regulating heating tape also protected the rental components against frost. As mentioned, installation and commissioning had to be carried out while the hospital was in operation. The cooling demand, with different cooling loads in each case, covered everything from the ventilation systems and the hospital's computer centre, the imaging departments of the MRT and CT clinical diagnostics and cooling of nuclear medical equipment, air compressors and re-



ACR pump modules ready for delivery



ACR all-terrain forklift for assembly, disassembly and other work during the entire rental period

The individual rental components included 33 frequency-controlled single pumps, which were combined to make

15 redundant double pumps with volume flows of up to 45 m³/h, 17 expansion vessels with a volume of 1,000

litres each to compensate for pressure fluctuations, 26 buffer tanks with nozzle pipes and a storage volume of 500 to 2,000 litres, and a connection to the BMS to transmit all relevant data and report any faults that occurred. A total of 2,100 metres of DN 50 to DN 150 hose were laid on the site, 1,300 metres of DN 100 size alone. Mobile driving plates served as a base for transportation over lawns and unpaved ground. All the rental refrigeration equipment components were delivered by fifteen 40-tonne trucks. In addition, an all-terrain forklift was kept on hand for the entire rental period of more than two years. The renovation work took place during the winter months.



ACR Managing Director Benjamin Trost on the efficient rental refrigeration solution:

“The decision by the project planners to schedule the conversion of the cooling supply for the university medical facility during the winter periods meant that unrestricted hospital operations could continue at a significantly lower cost than would have been possible in summer, when cooling requirements are typically much higher and energy consumption goes up accordingly.”



acr chiller rent GmbH

Ever since the company was founded in 2004, acr chiller rent has specialised in the rental of chillers and accessories. What was at first a regional business partner for industrial refrigeration soon became a leading provider of rental and leasing of refrigeration machines throughout Germany and in Austria and Switzerland. The air-conditioning expertise and experience of the company has grown with customer requirements. There is a suitable solution for every requirement. The comprehensive expertise of our team of technicians, who undergo continuous training, is complemented by the modern

acr rental machines with up to 3.0 MW of nominal cooling capacity per unit. Chillers are available in all categories and performance levels: with heat pumps, dry cooler, air-cooled and water-cooled chillers (liquid coolers), heat exchangers, hydraulic modules, low temperature units and special applications, together with an extensive range of accessories, temporary cooling capacity can be delivered wherever it is needed. From initial consultation to commissioning of the system, acr provides seamless support to customers throughout the entire rental period. The rental products of acr chiller rent GmbH include not only refrigeration and air-conditioning solutions, but also heat generation products and temporary power supply equipment.