ACR CHILLER RENT PROJECT INDUSTRY PROCESS COOLING WITH 1.4 MW

Stringent requirements for the new rental solution

A centrifugal chiller from the 1980s was replaced in a short space of time with a rental water-cooled screw chiller and a cooling capacity of 1.4 MW at a large Munich-based industrial company, where cooling is of crucial importance for its production, clearooms, data centre and comfort air conditioning.

The client was looking for a machine that would efficiently and – most importantly of all – reliably provide cooling both in partial-load and full-load operation. The ageing machine was no longer able to cope with peak loads in summer and could no longer ensure occupational safety due to frequent failures. The requirements specification stipulated that the cooling capacity had to be 350 kW greater than the existing system. Providing this additional capacity in the available space – which was already limited – in a short time frame proved to be a challenge, even for the experts at acr.

Water-cooled rental machine with 1.4 megawatts provides process cooling for a large industrial company in Munich

Planning and design process

acr chiller rent GmbH chose a chiller that is ideal for these requirements. The result was a water-cooled, flooded liquid chiller with two refrigerant circuits. This solution boasts two single-screw compressors with VVR technology (variable volume ratio) for optimising the unit's performance in any operating conditions. The new machine delivers a cooling capacity of 1.4 megawatts with a SEER (seasonal energy efficiency ratio) of 8.5. The microprocessor control modulates the speed of the inverter compressors in conjunction with the regulating sliders to optimise the cooling capacity and power consumption and to minimise current consumption and noise emissions.

The control unit offers the control and monitoring functions required for efficient and fault-free operation of the screw chiller. A predictive software logic selects the most energy-efficient combination of compressor load and opening distance of the electronic expansion valve to achieve stable operating conditions and make the chiller as efficient and reliable as possible.

Project management and implementation

The most stringent safety and fire prevention specifications had to be complied with while working. The machine control centre was in a confined space in the basement of the building complex, where access was difficult and the installation area for the machine was very limited.

The existing machine was fully dismantled, removed and properly disposed of by acr.

The rental machine was delivered in individual components that were carefully packed in air-tight packaging due to the limited space for positioning and installation.

Using heavy-load beams and lifting equipment, the new rental machine was assembled with millimetre precision thanks to laser measurements. Once installation was complete, a thorough leak test was performed on all connections and pipelines.

acr was also responsible for all of the planning, site management and conversions of the hydraulic cooling and cold water lines. This also included integrating the rental machine into the customer's extensive building control system.

The complete conversion took less than four weeks – from decommissioning of the old turbo reciprocator chiller, removal and disposal, positioning and assembly of the new machine, pipeline construction, ICA wiring and connection, pipeline insulation, commissioning and the final handover.

In the subsequent operating period over the summer, the acr rental machine was able to demonstrate its potential and reliability, resulting in a very happy customer.

Upon completion of the project, managing director of acr chiller rent, Benjamin Trost, reported:

"On the whole, the project was hugely challenging. We were given a short time frame and only limited space to position and assemble the machine. The entire project had to be carried out with the utmost care while operations were ongoing, as we had to ensure that the machine was highly reliable. All things considered, we're very pleased with how the project went."

acr chiller rent GmbH

acr chiller rent GmbH offers a complete package for this long-term rental, including planning, implementation, maintenance, leak testing and support in the event of a fault. This means that the customer doesn't have to worry about a thing, has fixed, calculable payment timelines and a reliable basis for financial planning. What's more, the monthly rental rates are tax-deductible as business expenses.
Since its establishment in 2004, Munich-based acr chiller rent has specialised in the leasing of cooling machines and accessories. The regional business partner for industrial cooling has transformed into a leading supplier for the renting and leasing of cooling machines in Germany, Austria and Switzerland.

From air-cooled and water-cooled liquid chillers through to turnkey cooling centres with a capacity of up to 1400 kW per module, we offer a perfectly tailored solution for any application. Each and every one of these is based on highly efficient cooling machines, which work reliably in all operating conditions and use environmentally friendly refrigerants.
We offer an individual consultation by our highly qualified consultant team before every installation to determine the specific requirements. This way, our customers always receive a perfect solution for renting or hire purchase. When it comes to maintenance of the rented equipment – or in the unusual event of a fault – the 24/7 phone number ensures that our service team can be reached at all times. acr's expertise in all matters relating to rental cooling and mobile heat prevents any unpleasant surprises.