



ENGIE Refrigeration Surrounds Amadeus Data Processing with a Ring of Cold Air.

QUANTUM chillers guarantee trouble-free processes and safe operations whilst also being highly efficient.

If you book a flight in Europe, a computer reservation system called Amadeus, which has been developed since the end of the 1980s, is helping you do so. Amadeus has since become a leading global supplier of IT systems for the travel industry. The Amadeus Data Processing GmbH data centre is located in Erding near Munich and ENGIE Refrigeration supplies their climate control technology and cooling supply.

Four QUANTUM chillers with one goal: availability

Depending on the outdoor temperature, Amadeus Data Processing GmbH requires a cooling output of approx. 4 MW. A total of 15 chillers, including four QUANTUM chillers, are connected in a ring network consisting of three cooling centres and an energy station and perform various functions. The QUANTUM chillers are responsible for performing several pivotal tasks: Two water-cooled W165 QUANTUM chillers are located in the energy centre and are directly responsible for cooling the data centre. Both of the other X060 QUANTUM chillers operate the air conditioning systems for the data centre and the office building.

Why QUANTUM?

The task: Achieving greater performance whilst simultaneously improving the data centre's energy efficiency.

The solution: The QUANTUM with its exceptional performance at partial capacity, its oil-free design, making it particularly low-maintenance, and its incredible quiet operation and start-up processes which do not cause any surges in energy.

Process cooling for the data centre: 2 x QUANTUM W165 (Each with 1,650 kW cooling performance)

The QUANTUM chiller is particularly efficient when operating at partial load – a decisive factor for it being used at Amadeus. The main reason for this is that both chillers only run at partial load. If cooling requirements cannot be met in this way, other chillers from other connected cooling centres are switched on. It was also important for the client that the QUANTUM chillers had soft and graduated start-up processes without surges in energy, as they help ensure a stable power supply. This is especially significant for power out-



ges. Last but not least, the client was also thoroughly impressed with the extremely high-quality workmanship of the QUANTUM chillers. The chillers went into operation in 2012.

QUANTUM chillers on site

Each and every commissioning operation has its own set of unique challenges. For the Amadeus Data Centre the chillers had to be delivered through a shaft in the ceiling to the desired location. This was the only method which would ensure that the data centre's safety concept was complied with. Integrating the chillers into the data centre's automated control concept was another particularly challenging aspect. The ring network, which connects the cooling centres and the energy centre with each other, doesn't just switch the chillers on and off according to the cooling requirements; it also controls the volume flow and, in doing so, it enables the chillers to operate in an even more energy-efficient way to cool the data centre. The chillers are regularly cleaned with a brush system so that the cool air is constantly generated in an efficient manner. The automatic control system helps determine when cleaning needs to be done; it monitors the chiller systems and makes a record of when any possible dirt may be building up.



The chillers were delivered to the desired location through a shaft in the ceiling.



Efficient cooling through regular cleaning with a brush system.

Air-conditioning for data centres and offices: 2 x QUANTUM X060 (each with 600 kW cooling performance)

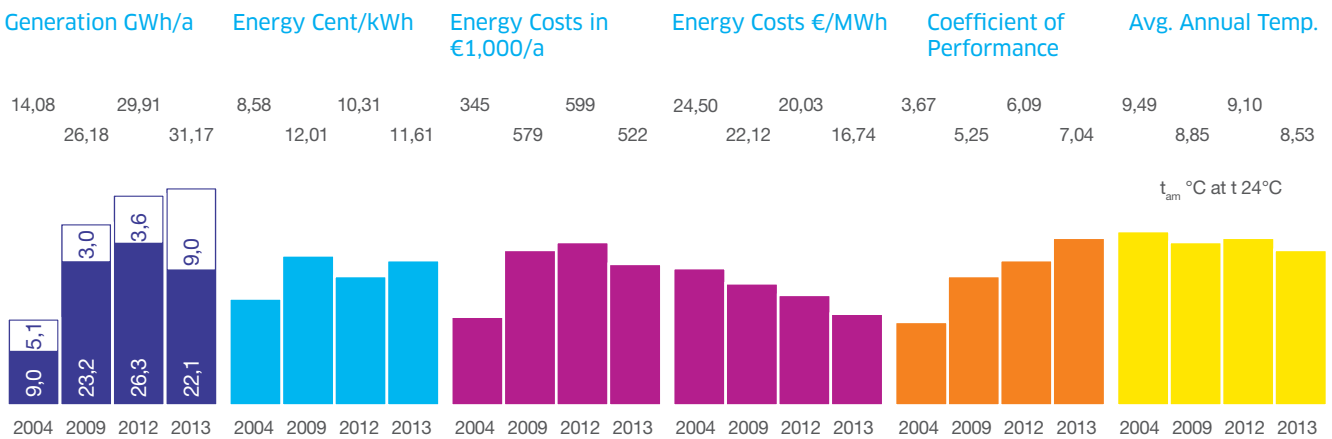
The second stage of the project took place during winter 2012 and involved replacing two reciprocating chillers with two water-cooled X060 QUANTUM chillers in the operations control centre. The most important factor was that QUANTUM has an incredibly quiet mode of operation. The low sound and vibration levels were vital as the operating rooms are directly adjacent to the offices. The service package provided to Amadeus Data Processing GmbH by ENGIE Refrigeration was rounded off with a comprehensive maintenance agreement for the QUANTUM chillers.



In addition to their highly efficient cooling performance and other features, X060 QUANTUM chillers impress with their low sound and vibration levels.

Conclusion: lower expenditure rising despite rising energy costs and increased demand

Integrating the four QUANTUM chillers into the ring system at Amadeus Data Processing GmbH was a complete success: despite rising energy costs (light-blue) and an increasing energy demand (blue), Amadeus was able to reduce its energy costs (purple). This development is directly linked to the rising coefficient of performance (orange), which can be significantly attributed to the energy-efficient QUANTUM chillers. This is an outstanding result particularly considering the fluctuations observed with the average annual temperature (yellow).



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