

DATA CENTER IN FRANKFURT (GERMANY)

AquaForce® 30XF air-cooled screw chiller: the solution for the data center application, with integrated 100% free-cooling.



Project objective

Data centers have never been more strategic or critical than they are today. They have also never faced greater scrutiny regarding efficiency, availability, and flexibility. This is the case for this new construction project.

AquaForce® 30XF air-cooled chillers is a Carrier's premium solution designed for data center market, requiring maximum quality and optimal performance. This data center project was challenging with the sound level requirement, space constraint and a high level of efficiency expected by the customer. The project demonstrates Carrier's capability to support innovative, efficient solutions to help meet its aim of achieving outstanding performance and excellent reliability. Research and development department developed dedicated options based on the customer's request which are now proven technologies that became standard in the new product now available.

As a truly global partner, Carrier is able to support its customers from A to Z: offering a wide range of solutions and optimising performance at every stage of the data center lifecycle. At Carrier, we're here with specific solutions and expertise to help meet data center challenges with confidence.

A brand-new Data Center site



We supported this brand new data center project, located in Frankfurt (Germany), by putting together the specifications needed to deliver HVAC equipment designed to cool the site while reducing both energy consumption and carbon footprint.

Our new AquaForce® 30XF air-cooled chiller, designed for Data Center, newly launched in Europe features with this specific application. This air-cooled chiller has dedicated features especially designed to guarantee efficiency.

Carrier provided 38 AquaForce® 30XF air-cooled chiller units. All up to 1795 KW working at 16.6°C on 24.4 °C chilled water at an outdoor temperature of 39°C. Units are able to provide and ensure:

- **High energy efficiency** in both, partial and full load thanks to the frequency controlled. Also, chillers can be run in three different operating modes: pure compressor operation, pure free-cooling operation, combination of free cooling and compressor operation.
- **Service continuity & redundancy** with the option able to restore the power after 190 seconds. Due to the sensible arrangement of the components and the use of the V-condensers, it is possible to build approximatively 1800 KW on an area of 16.7 x 2.3 m.
- **Energy savings**, with the integrated free cooling function with an internal glycol circuit. On the customer side, there is no glycol in the system and the customer system is operated with pure water to obtain the best possible efficiency. The power factor is 0.98, i.e., almost 1, meaning nearly no energy is lost in the power grid.
- **Low noise level** with the frequency controlled.
- **Built-in solution**: in the main control cabinet, which contains all the components for regulating and controlling the chiller, electrical harmonic filters are installed in an extra compartment, for limiting the electrical harmonics to less than 5%. By reducing harmonic currents and contamination, the risk of malfunctions and problems is significantly reduced. Moreover, it helps reducing the absorption of reactive power, resulting in a longer service life.