

PROJECT PROFILE

Carrier

SPA CENTRE

A thermal water chiller gets an upgrade for even greater energy efficiency



Project description

A spa centre in the Auvergne region of France, which welcomes more than 430,000 people a year, is suffering from excessively high water temperatures, risking health problems, as well as overconsumption of water resources resulting in waste and extra costs.

During heatwaves, with temperatures exceeding 35°C, the production capacity of the Carrier chiller installed around ten years ago proved ineffective due to temperature and space constraints (space available around the chiller to encourage the recycling of hot air). With the centre's water no longer able to be regulated at a temperature that complied with health standards (not exceeding 12°C, with a tolerance of 14°C) and was suitable for the treatments offered, excessive watering was required, which proved to be very costly and damaged the condensers of the cooling unit due to heavy scale deposits.

As a result, as well as wasting resources and energy, this temperature control malfunction risked causing health problems, due to the development of bacteria in water that was too hot. Faced with these challenges, the spa decided to upgrade its water cooling installations by calling on Carrier Service BluEdge.



The challenges

Maintaining the perfect temperature of the spa water and preserving water resources.

Carrier proposed a BluEdge upgrade solution to improve energy efficiency and overcome the effects of the heatwave without having to automatically water the outdoor condensers, risking their deterioration .

By installing an adiabatic system on the existing installation, Carrier has not only enabled the thermal water process to be cooled, but also helped save water and energy.

Challenges and solutions

The solution adopted was to enable the establishment to operate normally during heatwaves (cooling of the thermal water process) while making significant water and energy savings: lowering the inlet air temperature to the condensers to between 11° and 15°C depending on the ambient temperature and humidity.



Technologies

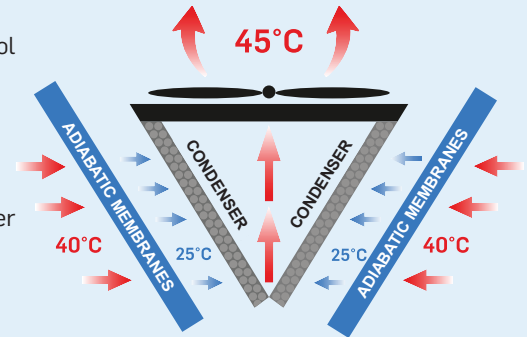
After a full audit, Carrier Service BluEdge installed an adiabatic system.

This adiabatic pre-cooling solution is suitable for all types of air-cooled chillers, air-cooled condensers, heat exchangers, rooftop units and refrigeration units.

As part of our customer's spa centre, the adiabatic system is mounted outside, in front of the condensers to be cooled.

It comprises:

- a unit to manage the flow and pressure of water diffused onto the media to control massive evaporation, causing a significant drop in temperature;
- a high-pressure spray nozzle panel, mounted externally in front of the condenser;
- a condenser protection membrane to prevent scale;
- a water treatment system that purifies the water and ensures that pipes and other components are protected from scale build-up;
- a control unit for the intelligent adiabatic system controlling its operation;
- a water recovery and recirculation module.



After treatment, some of the water sprayed onto the media evaporates instantly, reducing the condensation temperature in the cooling circuit. The non-evaporated water is recovered by pumps, then treated against legionella, filtered and recirculated. This is a closed circuit that improves the machine performance and reduces water and energy consumption.

Advantages

The adiabatic system has a number of advantages:

- Reduces refrigeration unit energy consumption by up to 37%
- Up to 41% increase in the refrigeration unit's capacity
- It provides 100% protection for air-cooled condensers
- No risk of scale forming on the condenser
- No risk of legionella in the water mist
- 100% condenser protection
- Keeps heat exchangers clean, ensuring low outlet temperatures and reduced pressure throughout the system

As part of its commitment to excellence, Carrier is now offering its BluEdge service package, which helps to maintain the efficiency of its products over time, thanks to predictive maintenance and the know-how and expertise of the technicians who maintain the machines.

By relying on the BluEdge services platform, plant performance is optimised, investments protected and the HVAC budget preserved.

More than just a service, BluEdge, with its hundred or so technicians across France, provides support from installation right through the product life cycle.

