

## **THREE DIFFERENT TECHNOLOGIES IN A SINGLE MACHINE: ADIABATIC FREE-COOLING BY HIREF IN ONE OF THE MOST ADVANCED DATA CENTRES IN EUROPE**

*Sustainability and enhanced performance for a project co-designed with the client. Company founder Mauro Mantovan: "New solutions to reduce the Power Usage Effectiveness of the facility"*

Maximising the management of temperature, humidity and air distribution based on outdoor atmospheric conditions, managing thermal loads in the most efficient way, while ensuring straightforward installation and start-up of a system designed with later-stage expansion in mind. All this while allowing remote control of the entire system. HiRef, as a top player on the international cooling system scene, raised to this challenge posed by a TIER III type Hyperscale Data Centre located not far from Madrid. And here's the solution identified: **HiRef's adiabatic free-cooling.**

«Our main focus was the sustainability of this project - explains **Mauro Mantovan**, founder and CEO of HiRef. At the same time, the project relies on efficient technologies to reduce the data centre's Power Usage Effectiveness values. All this in a project designed not only "for" but "together with" our customer, thanks to a valuable co-design effort.»

### **THREE TECHNOLOGIES, ONE MACHINE: THE WINNING CHOICE OF DATABATIC**

From a technical point of view, 16 HDB0204 units were installed in this Spanish data centre for a total power of 2MW. Each DataBatic uses **three different operating modes** to meet the thermal demand of the server room: in cold climate conditions, the unit can operate exclusively by using indirect air free-cooling; as the external temperature increases, when free-cooling alone is no longer able to fully cover thermal load requirements, the unit uses the adiabatic cooling system (evaporative cooling) based on the air flow coming from the outside; when adiabatic cooling is no longer enough, a direct expansion mechanical system steps in to meet 100% of the load requirements (full back-up cooling).

### **ADVANTAGES OBTAINED**

The resulting benefit is an extended working range even in more temperate climates - or in any case, in thermal conditions not suitable for free-cooling systems - with a positive impact on exceptionally low operating costs.

In addition, to avoid any hot spots, the system has been equipped with HiNode, the HiRef software for integrated system control that maximises cooling effectiveness by ensuring even distribution throughout the area. In the Spanish data centre, HiNode analyses the load trend, calculates the optimal setpoint and manages the machines to achieve maximum efficiency. Continuity of service is also critically important in a

data centre, where even just minimal malfunctions are not acceptable. HiRef has included in the system an integrated dual power supply with an automatic quick restart kit for emergency situations.

### **SHARED DESIGN**

The value of this construction exceeds performance and technical considerations. The relationship established between HiRef and the customer, based on mutual trust and advice, was the extra asset leading to a co-creation project, from the very first design phases to the implementation of 4 FAT tests on 25% of the machines built, from installation to testing, in order to be granted data centre certification. The whole system is modular and scalable, for a project designed to expand over time.

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