

# HiRef's green thread connects public organizations in Emilia Romagna

## CUSTOMER REQUEST

Connecting a region's public organizations, such as schools, municipalities and hospitals, is key to ensuring the timeliness and efficiency of services offered to citizens. That's why HiRef was happy to collaborate with a major company in Emilia Romagna, which is involved in the implementation of Data Centers and with which it entered into a partnership that began in 2016 and has continued over the years.

The customer's need?

To build and deploy three Data Centers, part of a national plan to improve the digital infrastructure of the Public Administration, paying the utmost attention to **environmental and economic sustainability**, in full HiRef style.



## THE PROJECT: MULTI-ACCESSORIZED ISLANDS

**Reliability, energy efficiency and sustainability** are at the foundation of the construction model chosen, designed and implemented by HiRef for all three Data Centers.

**One or more multi-accessorized DataBox** and air conditioning units were installed at each site to cool and maintain the right temperatures for the servers.

**The DataBox islands fully met the customer's requirements: compact structures complete** with management software, power supply and cooling for the servers, pre-assembled and supplied by HiRef after being successfully tested: a convenient and efficient solution capable of not only to simplify the

implementation of the infrastructure, but to ensure total customization of the system. Precision, round-the-clock temperature control within the DataBox is provided by HRCCs, chilled-water rack cooler units capable of perfectly managing all thermo-hygrometric parameters.

**TVA240F and TPS141F, on the other hand, are the chillers chosen for cold production:** both with Indirect Free-Cooling for heat recovery, HFO refrigerants with low Global Warming Potential (GWP), screw and scroll compressors, ideal for ensuring consistency of performance.

Finally, units from the **TRF range**, air conditioners designed to maintain the hydronic balance of rooms and ensure **maximum cooling performance**, were installed in existing server rooms.



## CONTROL, SUPERVISION AND HUMAN VALUE

How to control all the parameters?

**With HiNode, the exclusive system**, designed and developed by HiRef for **air conditioning system management and supervision**. A new-generation software capable of communicating with all units and devices in the plant and acting with **predictive logic** to avoid downtime and ensure performance continuity.

Not just machines: HiRef believes in relationships and trust, which is why the service centers and After Sales are always ready to step in for any need and guarantee fast and competent service.

The recovery of heat produced by Data Centers, the predictive logic of the control system and the use of low-GWP refrigerant have made **a sustainable, environmental and economic difference**.



## COLD PRODUCTION AND REGULATION

The chillers chosen for the project are from the TPS and TVA range.

**TPS are air-condensed liquid chiller and heat pump units with scroll compressors.** In these projects they were chosen in the **Indirect Free-Cooling version**, but they are also available in chiller and reversible heat pump versions as well as in numerous power sizes, which make these units versatile and suitable for different system contexts.

The individual components of TPS are aimed at containing energy consumption, with a view to **saving** the whole system.



### The main advantages?

- **Acoustic comfort:** there is a choice of three different soundproofing arrangements
- **Everything you need is on board the machine:** the special arrangement of the components, combined with the close position of the plate heat exchangers and scroll compressors, allows you to benefit from generous condensing sections for Free-Cooling and internal space for the insertion of a wide range of accessories and hydraulic options.
- **Maximum efficiency** at partial loads thanks to the multiscroll solution, the use of electronically controlled expansion valves, the selection of plate heat exchangers, fan modulation, and variable flow management via circulation pumps.

TVA is the new range of class A air-cooled chillers designed for energy-efficient and sustainable processes.



### Main features?

**Low environmental impact:** TVA works with several low Global Warming Potential (GWP) refrigerants; there is a choice among HFO refrigerant R1234ze with GWP of 6, R134a and R513A.

**High efficiency-to-space ratios,** achieved thanks to the special V-shaped configuration of the heat exchange coils and their size, the largest among chillers on the market.

**High thermodynamic efficiency:** through the single-pass shell and tube evaporator and to the complete countercurrent in heat exchange, a low Total Equivalent Warming Impact (TEWI) can be achieved.

**Quiet and accessible:** compressor hoods are lined with sound-absorbing materials that dramatically reduce noise emissions. In addition, the Hi-Rail® system allows easy accessibility to the compressors to facilitate maintenance operations.

**Modularity and efficiency:** very deep modular "V" coils allow high exchange surfaces and high thermal efficiency in relation to the footprint of the unit. The Free-Cooling version has exchangers sized to achieve a Total Free-Cooling Temperature (TFT) of 10 °C.

For these and many other technical details go to the [TPS](#) and [TVA](#) pages.

### COLD CONTAINMENT AND PRECISION AIR CONDITIONING

To ensure maximum efficiency and customization of its Data Centers, the company has chosen DataBox islands, which are ideal for keeping servers at the predetermined temperature.

**DataBox islands are the best choice in terms of cold containment and server climate control accuracy:** turnkey modular structures that speed and simplify the implementation of the Data Center infrastructure.



**The DataBox islands are:**

- **modular and scalable**, designed to handle workloads that change over time;
- **designed to contain heat** and prevent cold and hot air volumes from mixing;
- **efficient**, because they handle lower air volumes than non-compartmentalized solutions.

Each DataBox island can be customized as designed, through the choice of different components and accessories. HiRef has supplied the company with multi-accessorized islands, pre-assembled with components that are part of the DataDom Line family: the DataRack, DataUPS, DataPDU, and DataPower.

**DataRack:** modular racks that accommodate servers, structured so that the top and bottom sides can be inspected separately and easily. The door opening system is customized according to the needs and security levels required.

**DataUPS:** components designed to ensure simple and risk-free integration. Compatible with any standard 19" rack cabinet, they feature high power density, up to 4x25 kW, and simplified, flexible wiring. Components are hot-swappable to enable fast and safe maintenance.

**DataPdu:** multi-socket electric units equipped with magneto-hydraulic switches to enable operation even in high temperature environments; customizable with different sensors for smoke detection, temperature detection, door opening, etc.

**DataPower:** the line of electrical switchboards specifically designed for power distribution in rack applications. They are highly configurable to ensure continuity of service according to specific customer needs.

For these and many other technical details go to the [DataBox page](#).

## TEMPERATURE UNDER CONTROL 24/24

To ensure round-the-clock temperature control within the DataBoxes HiRef has installed **HRCC rack cooler units with chilled water**, in row version, the configuration in which cold air is released in the "cold aisle" to each rack cabinet and warm air from the surrounding environment is drawn in by the rack cooler.

The HRCC range can also be configured in RACK, the version that generates a closed circuit between rack cooler and rack cabinet.

HRCC are particularly suitable for integration with chilled water systems with Free-Cooling chillers, since it is possible to make these coolers work even with higher water temperatures than the conventional 7/12°C or 10/15°C, but for more information see the product page.

For these and many other technical details go to the [HRCC page](#).

## CONTROL AND MANAGEMENT SYSTEM

The customer chose HiNode, **the unique system for the management and supervision of its facilities**. Innovative software that interfaces with all units and devices in the plants to optimize their operation. Operating data can be accessed locally, through the LCD or Touch screen

display, or remotely, through a web interface. **HiNode efficiently and effectively manages the distribution of heat loads among installed units, even if they are of different ranges**. Control algorithms determine which and how many resources should activate, giving priority at all times to simultaneity, then partial load regime and energy recovery. The goal is to achieve high energy efficiency and greater operating cost savings.

For these and many other technical details go to the [HiNode page](#).

