



COMFORT AND EFFICIENCY
WITH WATER AND HEAT PUMPS
WLHP



Inspiring Solutions since 1989

CLIVET PRESENTATION

Established in 1989 in Feltre, near Belluno, by Bruno Bellò, the company started out with the production of chillers and heat pumps. It then went onto develop innovative specialised systems based on rooftop units, water loop systems and residential systems.

In 2016, thanks to the industrial partnership with MIDEA Group, Clivet completed its range of solutions by integrating it with VRF, MONO/MULTISplit products and Midea's technologies.



Shopping Centres



Offices



Light Commercial



Industrial



Hotels



Cinemas



Hospitals



Residential

For any application

Comfort starts with Clivet

Our air-conditioning systems have been designed to ensure total comfort in any kind of building, from small flats to large shopping centres. Integrated low-consumption units operate quietly to control temperature, humidity and air quality and constantly keep them all at an optimal level. The surroundings come back to life. The wellbeing of body and mind increases. The quality of life improves.

We increase comfort, saving energy and providing our customers with the best value for the entire life cycle of the system.

In over 30 years of activity focusing on the design, production and distribution of air conditioning and air handling systems combining high efficiency levels with a minimal environmental impact, Clivet has developed its own proposal to ensure sustainable comfort and wellbeing for people and the environment. Designing and developing year-round air conditioning solutions with innovative technologies is part of Clivet's DNA, which means the company has always been ready for the future.

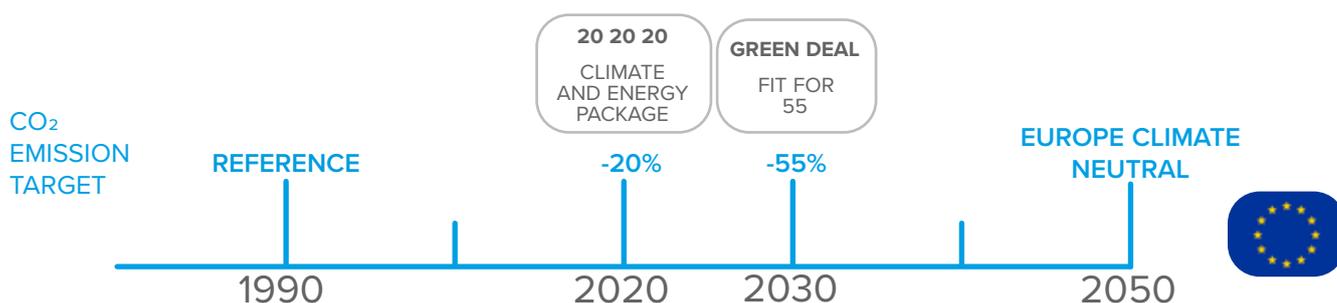
Sustainable Energy Path

We are currently living through a **revolution in our way of thinking and life style**, from both the economical and social point of view. National and International institutions are guiding this process towards a **more sustainable approach** to all **human activities**.

The **Green Deal** is a defined roadmap of the European Commission towards a more **sustainable economy, a reduction in human impact on the environment** and the **enhancement of the use of natural resources**. The number one aim is the reduction of CO₂ emissions and an increase in energy efficiency and the use of renewable energy.

Therefore, the important key points are the technological development of equipment that is able to reduce the human footprint in our world and at the same time ensure human wellbeing.

Major efforts are being made to increase the efficiency of the manufacturing processes, including the whole life cycle of the equipment from the raw material management to the recycle of components.



The Heat Pump is a **well-know technology that has been installed** in more than 15 million residential dwellings in Europe, contributing to savings of 41.07 Mt of greenhouse gas emissions in 2020 alone. (EHPA source).

Focusing on this sector, one of the main objectives of the Green Deal is the so-called “**Renovation Wave**”: this aims to at least **double the annual renovation rate of Heat Pumps in residential buildings to 35** million by 2030 (European Commission).

This scenario creates new opportunities to enhance European existing buildings energy performance.

Clivet is on track with solutions to meet this ongoing evolution in building energy performance:

- ✓ Ensuring Comfort, IAQ (Indoor Air Quality), Quiet Operation and Smart end user controls;
- ✓ Achieving lower first investment and operating costs for Landlords.



HEAT PUMPS

CORE TECHNOLOGY FOR EU DECARBONISATION PATH

Key data:

+325% installed Heat Pumps between 2010 and 2020

Stock: 15 Mio of pcs (2020)

Total Sales 1,6 Mio€ (2020)

Sales Projection: 3,7 Mio€ by 2030

[EHPA source](#)

Heat Pump Evolution

WLHP Presentation

The **Water Loop Heat Pump System** is a suitable solution for the air conditioning of shopping centres, office buildings and hotels.

The system is based on:

- ✓ **A two pipe uninsulated** water loop;
- ✓ **Neutral temperature water** (typically range: 20 - 35°C);
- ✓ **Water to Air Heat Pump terminal units** to satisfy heating and cooling demands;
- ✓ **Outdoor devices** to control the loop water temperature.

It is an ideal solution for applications where end-users can control their own local temperature independently from each other.

WLHP main benefits

- ✓ Simultaneous **Heating and Cooling** with **Energy Transfer**;
- ✓ **Minimum quantity of refrigerant** (-50% average vs VRF);
- ✓ Easy to design, install and maintain;
- ✓ Easy to extend the System: invest as you grow;
- ✓ Offers a complete, integrated and reliable system solution from **air conditioning, DHW and Air purification**;
- ✓ **Can utilize Natural sources such as** sea, lake, river, ground or well water;
- ✓ **Energy recovery** system integration using the excess heat from other areas in the building for example: food refrigeration processes or IT server rooms.

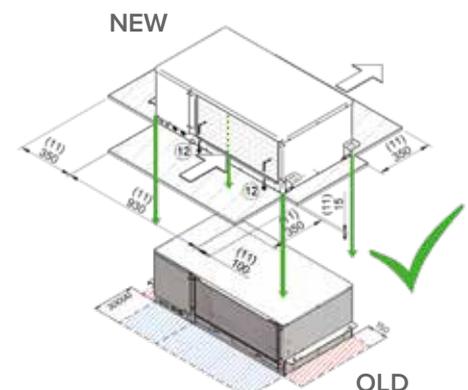
WLHP protagonist: simply Water

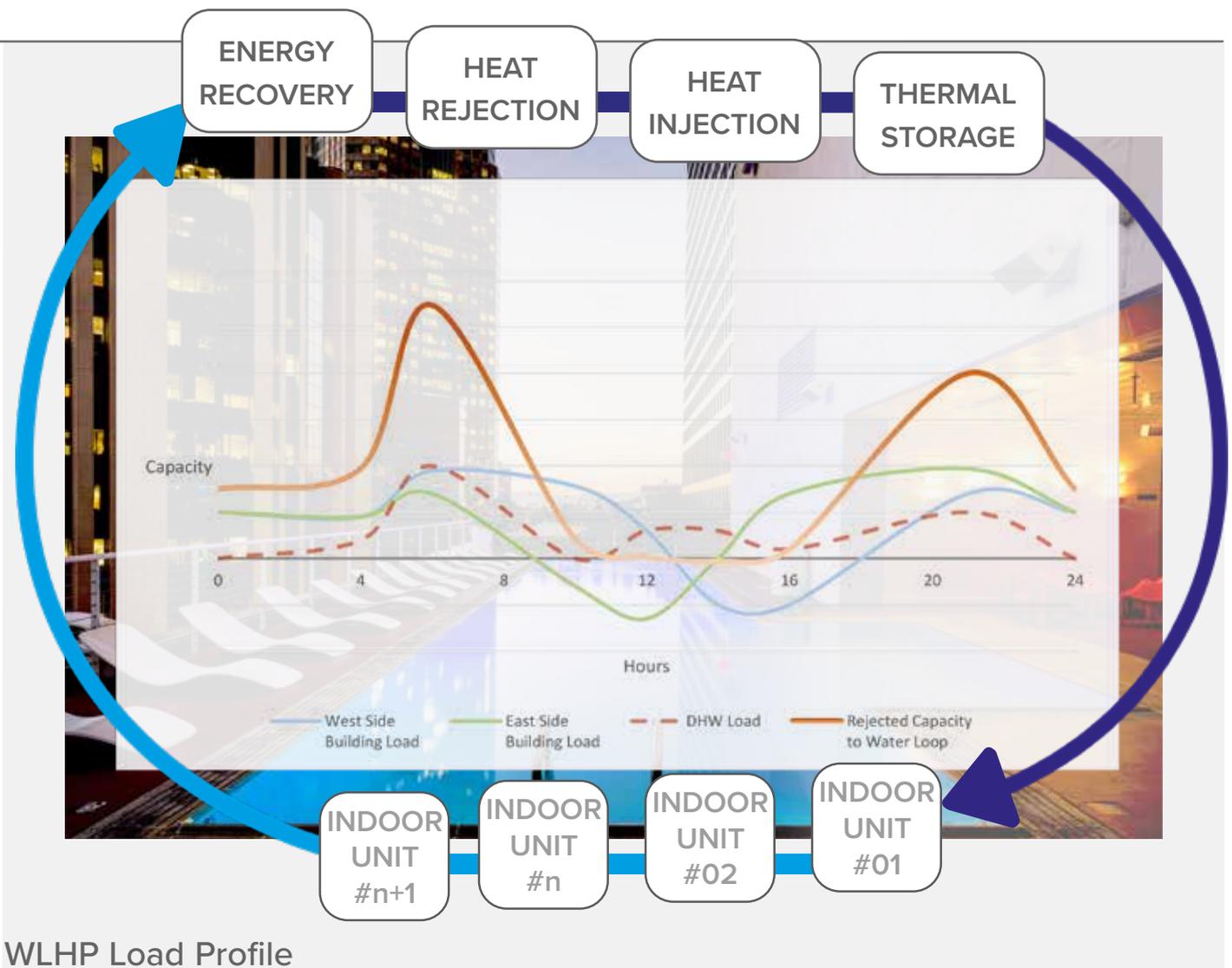
The benefits of water as an energy source and vehicle:

- ✓ **Thermal storage** function for rejected energy of indoor terminals;
- ✓ **No energy losses** on energy transfer;
- ✓ **Water thermal drift:**
 - To delay the outdoor source devices turning on only when water loop temperature strays from optimal range;
 - Takes further advantage of low outdoor temperatures occurring during the night.
- ✓ **FGas and refrigerant leakage inspection is limited** to outdoor heat pump devices only.

Benefits of upgrade existing system with new Clivet units

- ✓ **20% more efficient terminal units**;
- ✓ **25% more silent terminals units**;
- ✓ Easier and quicker old Clivet unit replacement thanks to:
 - Equal or smaller **overall dimensions**;
 - **Water connection** position and diameter remains the same;
 - Same **water flow rates**;
 - **Air supply and return sections** compliant with previous units;
 - Similar **capacity range**;
 - A wide range of **communication protocols**.





WLHP Load Profile

According to different sun exposure sides during a typical spring day in a hotel application

Ideal for buildings with opposite overlapping thermal loads

Buildings with large floor areas, different end-user comfort requirements and various sun exposure sides, are characterized by **frequent opposite thermal demand**. These need to be satisfied at the same time, requiring a **very flexible system**.

During these periods, the role of the water loop is enhanced. The **water loop transfers the rejected energy** directly from the terminal units in cooling mode to the terminal units requiring heating and vice versa. In this way, the **water loop temperature is balanced** and the **running time of the outdoor units is decreased or even not required**.

Similar benefits can be achieved in a cooling and heating urban district application, further boosting the overlapping loads and the performance of WLHP.

The Perfect System For Refurbishment

The WLHP system strengths make it interesting solution for new buildings, ensuring easy and quick installation, flexibility on building extensions and comfort and safety for people.

Furthermore, the **WLHP is even more interesting when a refurbishment of building is needed**, taking particularly advantages from the core of the system: the Water Loop.

It is **quite simple to seal off a defined building area** e.g. a floor, a group of rooms, or even a single hotel room.

In this way, **maintenance and replacement activities can be carried out step by step**, not disturbing the hotel guests.

Advantages:

- ✓ Financial **outlays spread** over time;
- ✓ **Reduced** or even **annulled** plant **downtime**;
- ✓ Accommodation **facilities open** for customers and tourists **all year long**.



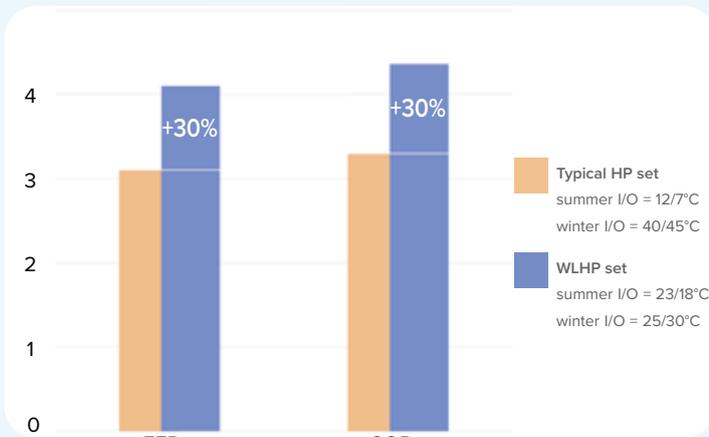
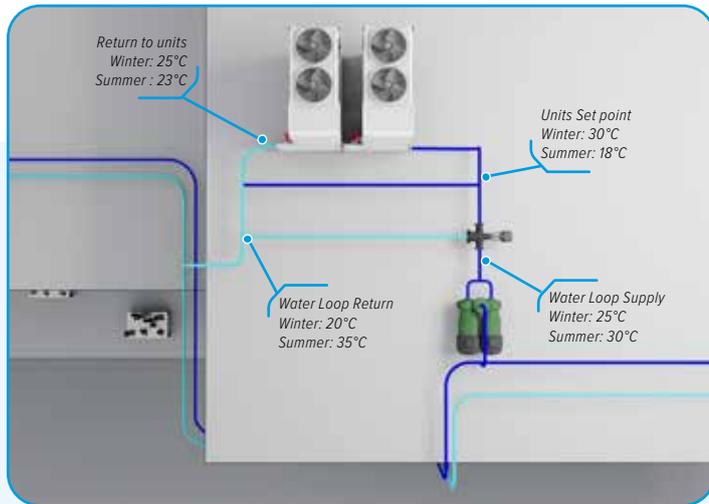
Functionalities

WORKING LOGIC WITH OUTDOOR SOURCE HEAT PUMPS

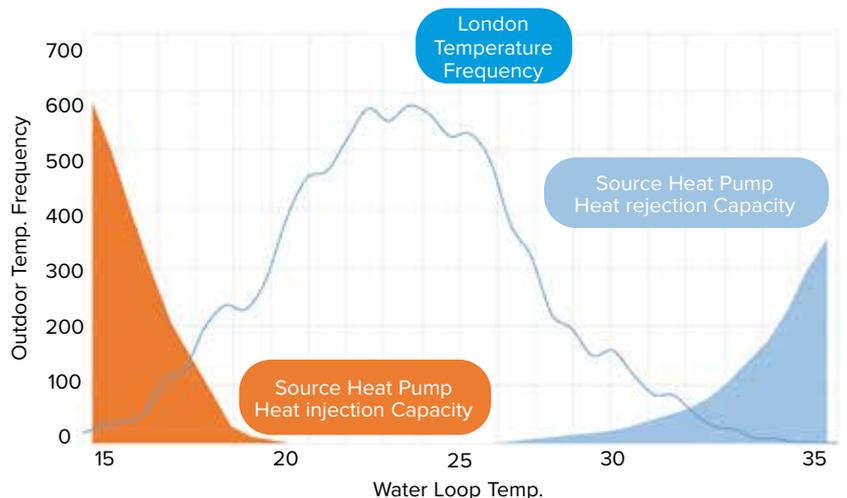
In Clivet's history, the adoption of the **HP** is a suitable solution for a **wide range of applications**. Hydronic heat pumps **perfectly fit the WLHP** solution.

Ensuring **high levels of efficiency and reliability**, the adoption of simple hydraulic schemes allows a wide **flexibility of loop temperature control** and, at the same time, the **optimum running conditions** for the heat pump.

As shown below, a primary and secondary circuit is required, with different temperatures managed by modulation of the 3 way valve.



Further **increase of overall system efficiency** comes from the **simultaneous load balance**; the source **heat pump working hours** is therefore **limited** only with hotter and colder outdoor temperatures, that typically occurs for **few hours per year**.



OUTDOOR DEVICES: STORM MODULAR HEAT PUMPS

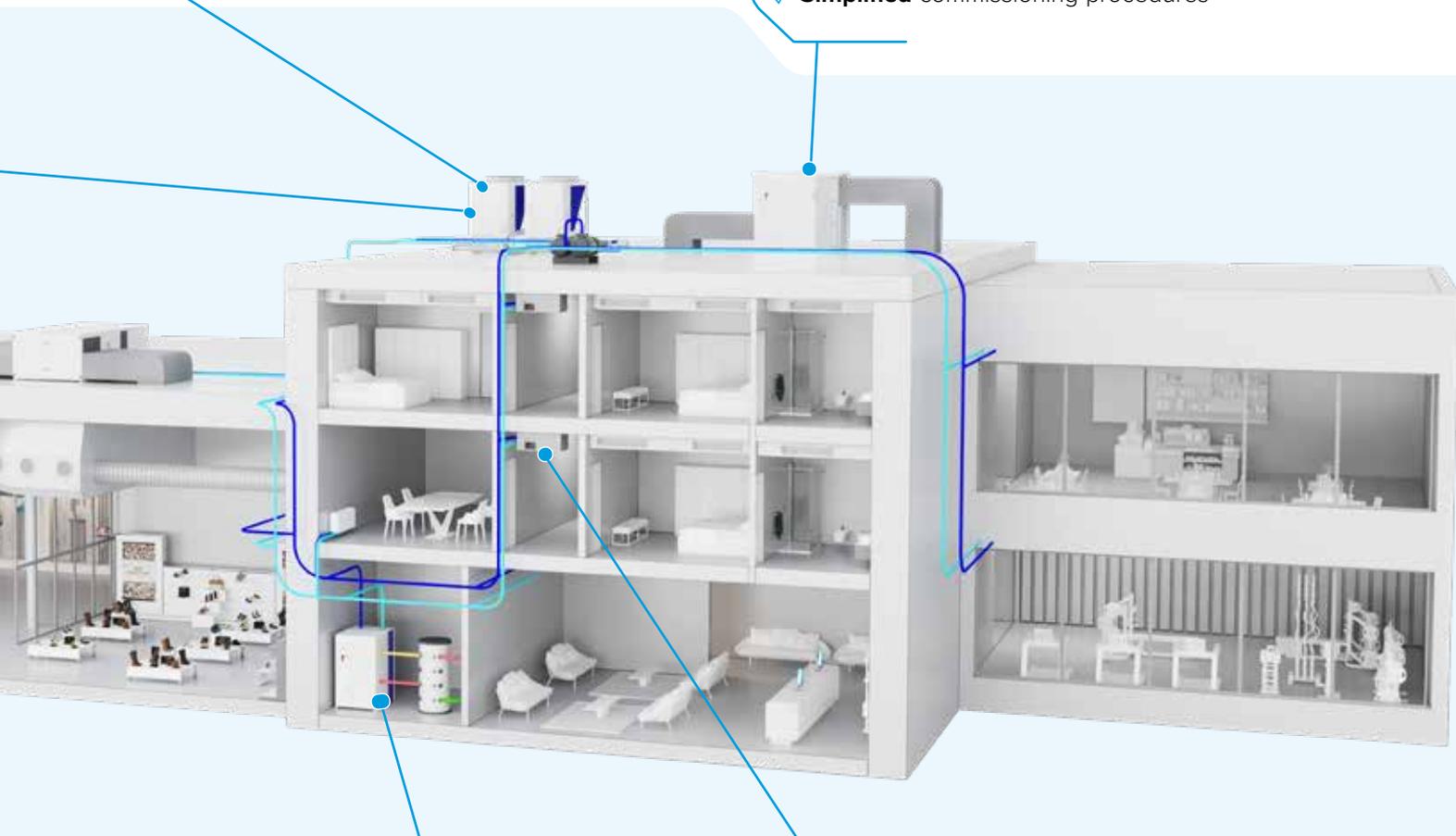
Thanks to the **full inverter technology** and to the **modular concept**, this solution ensures:

- ✓ **High reliability** with **low impact on first investment** thanks to a smart redundancy;
- ✓ **Space installation saving** with simplified water connections and in-built pumping system;
- ✓ **High energy efficiency**, both at full and part load;
- ✓ **Acoustic comfort**, with possibility to further increase using silent modes;
- ✓ **Adaptability** towards second steps development of the system;
- ✓ R32 (GWP 675) **green refrigerant**.

PRIMARY AIR QUALITY

Clivet's Zephir³ is the **efficient** and **innovative** solution for primary air. It is suitable both for indoor and outdoor installation. Using **full stand-alone inverter** heat pump technology in combination with **electronic filtration** (ISO 16890 ePM1 90%) ensures:

- ✓ Active action **against bacteria and viruses** for purified fresh air
- ✓ **Accurate control** of supply air **temperature** and **humidity** to increased indoor comfort
- ✓ **Efficient recovery** of exhausted air energy
- ✓ 100% fresh outdoor air operation (**no contamination with exhaust air**)
- ✓ **Low ventilation** power consumption
- ✓ **Simplified** commissioning procedures



DHW DEMAND

WSHH-LEE1 (Hot Water Booster) is the ideal solution to produce **hot water** (up to **78°C**) taking advantage of the water in the loop as source.

As an indoor terminal unit, it can be **easily installed** connected to the water loop.

More than one unit can be installed in a **modular strategy**, matching step by step the evolution of DHW demand of the plant.

INDOOR HEAT PUMPS TERMINALS

The water cooled heat pumps guarantee **complete independent air conditioning** management all year long. The modern design and selection of all internal components allows:

- ✓ **High efficiency** in all working conditions;
- ✓ Enhanced unit **reliability**;
- ✓ **Silent** operation;
- ✓ Concealed installation behind an architectural enclosure or in a false ceiling;
- ✓ **User-friendly** controls.

The range

ROLE	UNITS	KEY BENEFITS
Indoor terminals water to air heat pumps		VERSATEMP EQV-X 2-4 kW Vertical Installation Perfect for furniture integration
		VERSATEMP EVH-X 2-4 kW Horizontal Installation Silent and efficient operation
		VERSATEMP EVH-X SPACE 5-30 kW Horizontal Installation Silent and efficient operation Suitable for extended air duct network
Water cooled Rooftop		CLIVETPack ² HSE CRH-XHE2 50-390 kW Outdoor installation Air conditioning, Renewal Air, Filtration and energy recovery
Primary Air		Zephir ³ 1000-14000 m ³ /h Outdoor or Indoor Installation Full inverter Heat pump Thermodynamic Recovery Supply accurate control and enhanced filtration
		ElfoFresh Large 1200-3300 m ³ /h Outdoor or Indoor Installation Thermodynamic Recovery Enhanced filtration
		AQX 1000-160000 m ³ /h Bespoke design Eurovent certified
DHW		WSHH-LEE1 70-280 kW Water To Water R134a heat pump Up to 78°C of hot water supply Perfect for Modular and independent Installation
Outdoor source Heat pumps		ELFOEnergy STORM EVO WSAN-YES 50-85 kW Full inverter, R32 Perfect for modular installation (up to 1360 kW)

WLHP Applications



OFFICES IN LONDON

2MW Installed using Bespoke Underfloor Units
 Phased Replacement distributed Over 5 Years
 Efficient Ventilation (EC fans) & Full Integration with BMS System



OFFICES IN GREENOCK

900kW Installed using ceiling void units
 3 Floors Phased Over 6 months
 Minimum Disruption To Staff



HOTEL IN MANCHESTER

125MW Installed using ceiling voids Units
 4000 Rooms Phased Replacement over 3 years
 No disruption to operation of rooms and guests



SHOPPING CENTRE IN BIRMINGHAM

Landlord installed the water loop
 Tenants installed 500kW of ceiling voids Units
 Cooling & Heating simultaneous to Various Tenants
 Improved energy and cost monitoring for Landlord



OFFICES IN LONDON

75kW Cooling Installed using large ceiling voids Units
 Run & Standby redundancy logic
 Rejected Heat recovered through Water Loop to buildings services

Why Clivet?



ENERGY SAVING

Devices developed to intelligently manage energy and their coordination according to environmental conditions. They allow: reduction of operating costs, maximum use of renewable energy, reduction of environmental impact, increase in the value of the property.



PROFESSIONAL INSTALLATION

Clivet entrusts the proposal of its products to specialized professionals.

Clivet certified technicians carry out the first start-up of the installed unit, checking its correct installation and optimal operation.



WARRANTY

Clivet's After-Sales Service reaches its Customers through a well-organized support network that is always on hand, as high technology levels require fast and skilled services.

Learn more about the warranty and service conditions for your country by contacting the Distributor or the Branch closest to you.



ASSISTANCE AND MAINTENANCE

Clivet has a widespread network of service centers in Italy and abroad. This guarantees rapid interventions, limits travel expenses for any type of on-site intervention for repairs, modifications, verification of the condition of the unit.

For assistance or information on maintenance programs, contact the Authorized Service Center in your area.



SPARE PARTS

The original Clivet spare parts are available at the spare parts warehouse of the Clivet headquarters in Feltre, offering replacement spare parts even in the event of discontinued units.

On the Italian territory there are local warehouses, with the possibility of collecting the goods even on pre-holiday and public holidays.



CLIVET UK

Clivet Group UK Ltd can provide expert service and maintenance support for your WLHP heat pump systems, both in the field and at our dedicated workshop facility.

With fully qualified technicians and engineers Clivet Group UK Ltd offer specialist planned preventative maintenance solutions to meet your specific needs.



CERTIFICATIONS

Most Clivet models meet both prerequisites 2 and 3 of the Energy and Environment thematic area. They also meet the parameters of Credit 4 which allows to acquire 2 points (Leed 2009)

Participating units on
www.eurovent-certification.com

Data contained in this catalogue are not binding
and may be changed by the Manufacturer without notice.

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Clivet, in compliance with Regulation 517/2014, informs that its products
contain or work with the use of fluorinated greenhouse gases.

**ALWAYS READY FOR
THE FUTURE**

INSPIRING SOLUTIONS

For over 30 years of working on the design, manufacturing and distribution of air conditioning and handling systems, combining high efficiency with minimal environmental impact, Clivet has developed solutions to ensure sustainable comfort and the well-being of people and the environment.

Designing and developing year-round air conditioning solutions with innovative technologies are part of Clivet's DNA, which means the company has always been ready for the future.

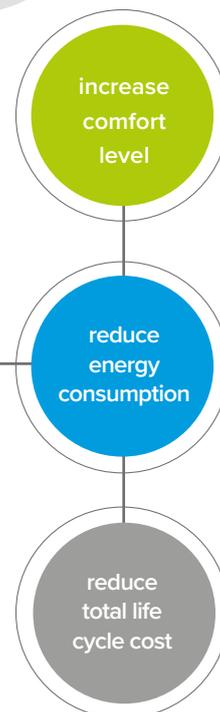


COMFORT FOR THE PLANET & PEOPLE

OUR VALUES

**IN THE RESIDENTIAL,
COMMERCIAL AND INDUSTRIAL SECTORS**

Increasing comfort, saving energy and providing customers with the best value for the entire life cycle of the system: these are the values that inspire our systems for the residential, services and industrial sectors.



FOR OVER 30 YEARS WE HAVE BEEN OFFERING SOLUTIONS TO ENSURE SUSTAINABLE COMFORT AND THE WELL-BEING OF PEOPLE AND THE ENVIRONMENT

www.clivet.com

MideaGroup
humanizing technology



Valid from: December 2021
DF22C048GB-00



CLIVET S.p.A.

Via Camp Lonc 25, Z.I. Villapaiera
32032 Feltre (BL) - Italy
Tel. +39 0439 3131 - info@clivet.it

CLIVET GMBH

Hummelsbütteler Steindamm 84,
22851 Norderstedt, Germany
Tel. +49 40 325957-0 - info.de@clivet.com

Clivet Group UK LTD

Units F5 & F6 Railway Triangle,
Portsmouth, Hampshire PO6 1TG
Tel. +44 02392 381235 -
Enquiries@Clivetgroup.co.uk

CLIVET LLC

Office 508-511, Elektroavodskaya st. 24,
Moscow, Russian Federation, 107023
Tel. +7495 6462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO

Dubai Silicon Oasis (DSO), Headquarter
Building, Office N. EG-04 & EG-05,
PO BOX 342009, Dubai, UAE
Tel. +971 56 433 3823 - info@clivet.com

Clivet South East Europe

Jaruščica 9b
10000, Zagreb, Croatia
Tel. +385916065691 - info.see@clivet.com

Clivet Airconditioning Systems Pvt Ltd

Office No.501 & 502,5th Floor, Commercial -I,
Kohinoor City, Old Premier Compound, Off
LBS Marg, Kiroi Road, Kurla West, Mumbai
Maharashtra 400070, India
Tel. +91 22 30930200 - sales.india@clivet.com