

Heat Pumps systems from Clivet for year around complete comfort

Heat pumps represent one of the most important green technologies for the future of heating, air conditioning and domestic hot water production in modern buildings, as expressed by IEA in the Technology Roadmap 2011. In this scenario, IEA forecast shows also that the contribution to this effect is roughly for 65% due to Heat Pump Technology development and that the total number of installed heat pump units in the residential sector for heating and cooling, and domestic hot water production will reach almost 3.5 billion by 2050, giving to heat pump technology a relevant place in the Heating and Cooling equipment of the future buildings. An additional important element in favor of Heat Pump Technology is: heat pumps assure not only space heating and domestic hot water production, but also cooling, and this represents, most of all in Southern Europe, a relevant amount of energy.



Bruno Bellò
President of Clivet S.p.A.

Year Round Complete Comfort Systems based on HP technology

Assumed that Heat Pumps have a key role in the future of comfort inside buildings, Clivet also believes that the future market of these equipment will be dominated by the concept of **Year Round Complete Comfort Systems**.



Components for Clivet's ELFOSystem GAIA for "Class A" single family houses.

This approach of Year Round Complete Comfort Systems, involves a new mind set in which Comfort Systems are a single entity in which all the elements are composed by products specifically designed to interact with each other, influencing the highest level of energy efficiency in generation, distribution, emission and control. These results cannot be reached by simply assembling individual products, because, even if we are using the best individual products available on the market, their interaction cannot guarantee the same level of efficiency of a complete system where all the elements have been designed since the beginning to work and interact together.

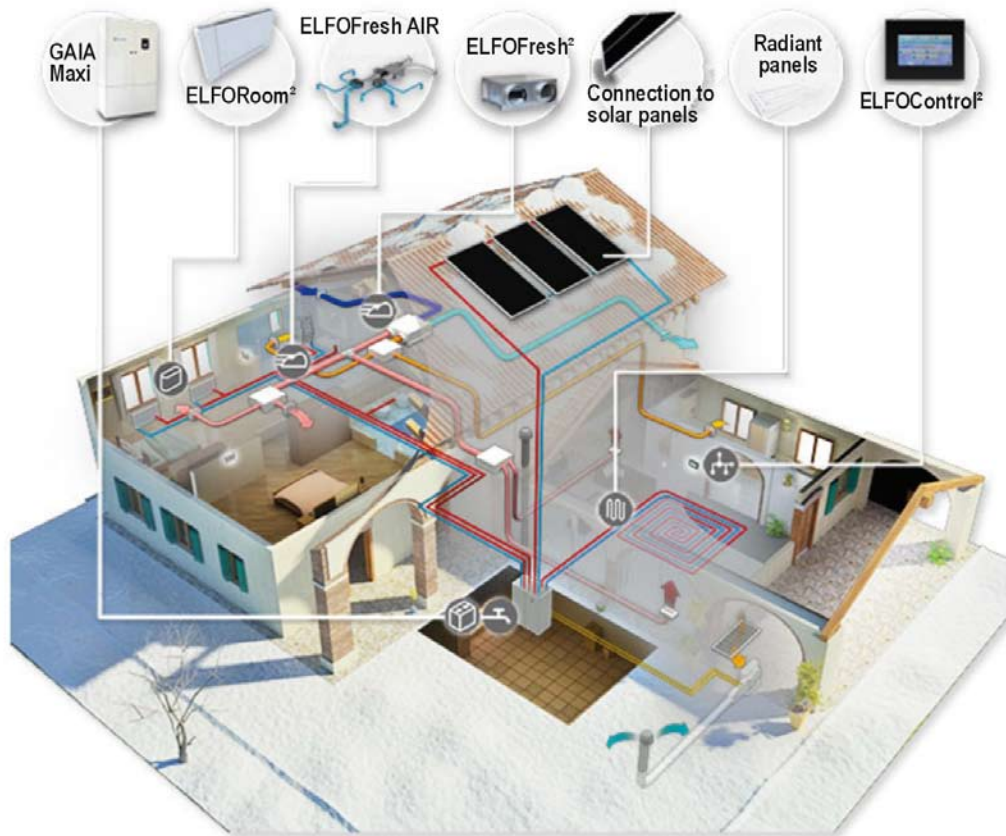
ELFOSystem is a Year Round Complete Comfort Systems, so all its elements are specifically designed in order to interact with each other, influencing the highest level of energy efficiency in generation, distribution, emission and control. ELFOSystem is available for 3 different applications:

ELFOSystem GAIA for new single family "Class A" houses

The awarded year round system ELFOSystem GAIA Edition for heating, air conditioning, domestic hot water production, air renewal and purification, which uses from 75% to 100% renewable energy for total and sustainable comfort in new single family houses.

The elements of ELFOSystem GAIA Edition are:

- GAIA, the heat pump with DC inverter technology which transfers heating and cooling energy, integrating all the components of a heating plant (including the production of hot water with 186 litre storage tanks and circulating pumps). GAIA derives 75% of its energy from the sun through heat pump technology which captures the energy contained in air, ground or water with just 25% from electricity. The unit is suitable for connection to solar panels, so that the domestic hot water can be produced with big savings. If used in combination with photovoltaic panels GAIA can become 100% renewable energy.
- ELFOFresh2, the unit for air exchange and purification with thermodynamic recovery and electronic filters (H10) can cool and heat the fresh air with minimum energy consumption. ELFOFresh2 can be integrated with ELFOFresh Air, the complete air distribution system easy to install and configurable on the web, which enhances efficiency with its low noise mechanical ventilation system.
- Distribution of hot and cold temperatures through radiant panels, radiators or ELFORoom2 fan coil



Components for Clivet's ELFOSystem for single family houses.

units (Clivet's terminals equipped with an exclusive electric motor which drastically reduces electricity consumption compared with a traditional fan coil unit).

- ELFOControl2, the central comfort control unit that allows to control the complete system for power generation, distribution, indoor comfort and rational use of the renewable sources. This control system dialogues with the user by a touch screen and manages all the system. ELFOControl2 is able to capture the comfort requirement input by the user and automatically calculates the most proper parameters to generate the capacity required with the most efficient and convenient use of GAIA and the rest of the System. If equipped with temperature sensors for each room, it allows to define the operating conditions for each element of the system.

Clivet ELFOSystem GAIA Edition meets the most varied requirements of new and existing systems and it doesn't use gas or other fossil fuels for heating, eliminating the risk of dangerous substances in the air.

ELFOSystem GAIA Maxi for large single family houses and renovation

ELFOSystem GAIA Maxi, the new hybrid system whose heart is GAIA Maxi, a packaged unit integrating solar thermal, heat pump and condensing boiler for heating, air conditioning, and domestic hot water production of single-family houses and renovations, in particular when structural or architectural constraints don't allow any upgrade on building envelope insulation performance.

The integration in a single unit of all these elements makes GAIA Maxi the solution with the best seasonal efficiency on the market. GAIA Maxi always favors the use of renewable energy sources, dramatically reduces the connection number and the plant footprint, ensuring maximum reliability and installation speed.

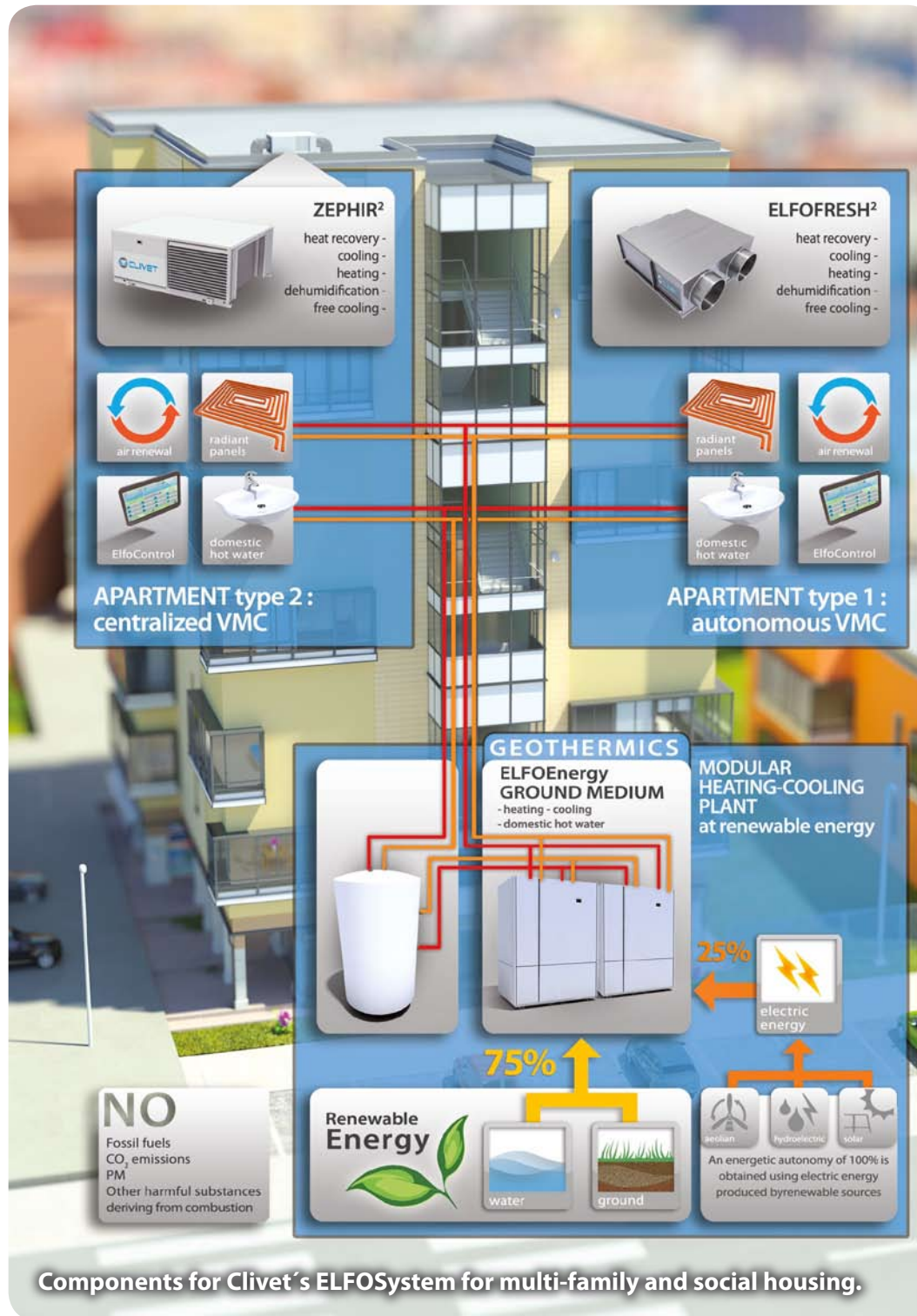
As ELFOSystem GAIA Edition, also ELFOSystem GAIA Maxi can be integrated with ELFOFresh2, ELFORoom2 and ELFOControl2, providing complete all year round comfort from a unique manufacturer with more than 20 years experience in heat pump solutions focused on the occupants comfort and energy saving whilst respecting the environment.

ELFOSystem BUILDING for multi-family and social housing

ELFOSystem BUILDING, the complete and intelligent renewable energy system for heating, air conditioning, domestic hot water production, air renewal and purification, ideal solution for multi-family and social housing. The heart of the complete system ELFOSystem BUILDING is ELFOEnergy Ground Medium, the new indoor water and ground source heat pump from 30 to 280 kW (COP from 5,5 to 5,9) at the top of its category for seasonal efficiency, which meets Eurovent's Class A requirements in heating and cooling mode.

The other elements of ELFOSystem BUILDING are:

- ELFOFresh2, decentralized individual packaged indoor ventilation and purification system with thermodynamic energy recovery, able to satisfy 80% of thermal need of the building,
- Zephir2, centralized indoor ventilation and purification system with energy recovery, able to satisfy 50% of thermal need of the building,
- ELFORoom2, ELFOspace, ELFOspace BOX2, ELFOduct (CFD, CF), the hydronic terminals with temperature control room by room, minimal design and small dimensions, variable fan speed, homogeneous temperature and low consumption,
- ELFOControl2, the new advanced control system optimizing efficiency and ensuring the correct operation in the whole living space, managing up to 12 climatic areas and 40 elements in total.



Also residential applications by Clivet has proven to reach significant savings due to technology based on 20 years of experience in the commercial and industrial sectors and the collaboration with well-known groups such as McDonald's®, Bennet®, Auchan®, McArthurGlen®, IKEA®, NH Hotels®, Warner Village Cinemas®, UCI Cinemas®, Ferrari®, Microsoft® and Enel®. 3E

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