

Energy renovation: diversified solutions to meet performance and decarbonisation challenges

As energy renovation of residential and non-residential buildings becomes a pillar of the energy transition, the variety of available technical solutions is a real lever for achieving targets on sufficiency, energy efficiency and carbon emission reduction.

Groupe Intuis has been developing high-performance, low-carbon and now connected equipment for over 70 years to optimise electricity use. All new thermodynamic solutions use R290 (propane), a refrigerant with a very low environmental impact.

Heat pumps: a central pillar of high-performance renovation

Heat pumps (HPs) have become the reference technology for combining energy performance with lower CO₂ emissions in buildings.

In single-family homes, small units (6-17 kW), in single or dual-service versions (space heating and domestic hot water),



Residential dual-service HTi 8 heat pump. @ Groupe Intuis



Éric Baudry, Director of Public Affairs, Intuis Group

cover most needs and do not require hybridisation with a gas boiler - simplifying retrofit.

For multi-family housing and small tertiary buildings, larger units (25-80 kW) also operate in single or dual service. In tougher climates or under energy performance contracts (EPCs), hybridisation can secure continuity of service and guaranteed outcomes. Units can be cascaded in multiples of their capacity, up to a combined output of 1.2 GW.

In addition, triple-service solutions for heating, domestic hot water and cooling are under development.

Heat-pump water heaters: the smart swap for electric tanks

Particularly suitable for renovating single-family homes and apartments, the heat pump water heater is the natural alternative to conventional electric storage water heaters. Its main advantage: cutting electricity consumption by a factor of three on average. It can be easily integrated into combined systems - as a backup to a gas boiler or to complement a single-service HP - providing maximum flexibility in renovation projects.

A new generation of heat pump water heaters appeared earlier this year, offering a triple-service product designed to meet heating, domestic hot water and cooling needs.

Intended for both new build and retrofit, it replaces a traditional water heater and pairs with latest-generation electric heating appliances.



Cascade installation of 80 kW HRC dual-service heat pumps. @ Groupe Intuis.

Smart electric heating: modernise without a full overhaul

With more than 10.5 million homes heated with electricity in France - over 60 million devices - the modernisation of electric heating is a central challenge for energy renovation.

New smart, connected electric heating equipment can cut energy use by nearly 18% when replacing devices more than 20 years old.

Remotely controllable, these appliances actively support operator-led demand response strategies: they enable dynamic demand management and better integration of renewables in the mix. Composite solutions that combine connected electric heaters and a heat pump water heater can, in certain single-family configurations, be paired with an air-to-air heat pump to provide summer comfort.

Electric boilers: a decarbonised alternative to gas in multi-unit buildings

Long marginalised, electric boilers are making a comeback with modulating, wall-hung models suited to renovation. They offer a proven, readily available solution to reduce the carbon footprint - provided insulation is optimised.

For individual dwellings, 6-24 kW models can replace existing gas boilers on a like-for-like basis, without altering the radiator network.

Several models provide both space heating and domestic hot water and, in some multi-family configurations, constitute an effective, high-performance replacement for individual gas boilers.

In multi-family buildings and the tertiary sector, high-capacity models up to 196 kW can act as backup to HPs, ensuring continuity of service during demand peaks or in constrained buildings.

Water-loop heat pumps: built for tertiary buildings

A water-loop heat pump (WLHP) system transfers heat to and from a closed water loop to which multiple low-capacity HPs are connected, meeting heating, cooling and air-handling needs in tertiary buildings.

This setup simplifies the management of buildings with diverse needs - for example, a north façade requiring heating while the south façade or sun-exposed areas already need cooling from March. It also suits head offices, hospitals and shopping centres that require consistent comfort and optimal indoor air quality.

In conclusion: diversity, flexibility and sufficiency

Far from a one-size-fits-all approach, building renovation relies on an adaptable technology mix at the crossroads of environmental, economic and regulatory demands. From heat pumps and electric boilers to heat pump water heaters and connected radiators, there is a wide range of low-carbon solutions to address the diversity of France's building stock and to support energy suppliers' flexibility strategies.

The key challenge now is to adapt regulations - particularly, at the French level, the DPE (France's Energy Performance Diagnosis) and the PEF (primary energy factor), as well as the support programme MaPrimeRénov' - so it fully reflects the real-world benefits of these low-carbon technologies in a balanced energy system. ●

About Groupe Intuis

Groupe Intuis, a subsidiary of Glen Dimplex Group, is a French industrial player committed to the environmental, energy and digital transition, supporting the construction and renovation of private and public residential and tertiary buildings. A specialist in thermal comfort, Groupe Intuis designs, develops and manufactures in France high-temperature heat pumps, domestic hot-water solutions and smart, connected electric heating appliances. Intuis is the only player to design and manufacture its heat pumps entirely in France..