

F-Gases: A critical link to decarbonization

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Decarbonizing our economy is the defining challenge of our time. To date, the European Union (EU) has been a global leader on decarbonization, setting the planet's most ambitious emissions reductions targets. But to ensure decarbonization objectives are more than well-intentioned goals, we must radically change key aspects of our day-to-day lives. This includes revolutionising the way we heat and cool our homes, offices, and industrial installations, as well as the schools, hospitals, and other infrastructure on which our lives depend. Heat pumps can be a silver bullet for accelerating this transition.

Consumers are catching on to the value of heat pumps – 2022 was a record-breaking year for the heat pump market, with around 3 million units sold across 16 European markets¹. These heat pumps replace roughly 4 billion cubic metres of natural gas, avoiding about 8 million tonnes of CO₂ emissions. They are a critical, cost-efficient solution for driving international climate efforts, as heat pumps significantly reduce greenhouse gas emissions and enhance energy efficiency. Indeed, by the end of 2022, the heat pumps installed across Europe had avoided over 54 million tonnes of CO₂ – the equivalent of the annual emissions of Greece².

Demand for heat pumps is expected to grow. Aside from increased awareness of their benefits, initiatives like the European Union's Energy Performance of Buildings Directive are encouraging building renovations and the use of heat pumps, in line with the European Green Deal.

Equally important in reducing emissions is the type of refrigerant heat pumps use. HFO (hydrofluoroolefins) refrigerants offer a combination of high performance, low GWP (global warming potential), and safety, a view that is supported by most experts, leading heat pump equipment manufacturers and associations, the European Commission, and the International Energy Agency. HFOs enable a transition to a far more environmentally friendly solution when compared to legacy refrigerants without compromising performance – in fact, they offer optimal performance across various applications and sectors, cut costs, and have been deemed safe for their intended uses by rigorous studies.

With this in mind, it is of paramount importance that the European Parliament and Council deliver balanced proposals that allow diverse refrigerants – and HFOs in particular – to play a role in decarbonization. A restrictive policy approach that prioritizes specific refrigerants, such as the industrial gases known as “natural refrigerants,” overlooks the unique contributions of HFOs to decarbonization. Moreover, such a policy is likely to generate unintended consequences. For example, the vast majority of heat pumps today are designed to be compatible with HFOs. Should HFO access be limited, thousands if not millions of heat pumps would be rendered obsolete. This would be a disaster in terms of costs for citizens, families, and contractors, and would cause an incredible amount of material waste, bringing heat pump expansion across Europe to a grinding halt or, even worse, feeding illegal trade of FGAS to the EU.

Moreover, to ensure we can implement heat pumps at scale, refrigerants must be safe to use in a variety of applications. Most HFOs are classified as A2L refrigerants, and the global standard for evaluating the safety of refrigerants (ASHRAE) classifies commercially available and proven A2L refrigerants as non-toxic with low flammability. This makes them preferable than many alternatives, some of which are highly flammable and restricted under EU building regulations.

¹ European Heat Pump Association, “Heat pump record: 3 million units sold in 2022, contributing to REPowerEU targets” (https://www.ehpa.org/press_releases/heat-pump-record-3-million-units-sold-in-2022-contributing-to-repowerEU-targets/)

² European Heat Pump Association, “Frequently Asked Questions” (<https://www.ehpa.org/frequently-asked-questions/>)

EHPA estimates that around 60 million³ heat pumps would be installed in the EU by 2030, a figure that invigorates hope around decarbonization. To remain on this path, however, the EU should avoid creating counterproductive conditions that slow heat pump adoption. Diversity of choice is critical to attaining the objectives of the EU Green Deal through the use of heat pumps and, from an equipment design and market deployment perspective, their rapid adoption depends on access to the entire panel of refrigerants and a smooth shift toward low GWP HFOs. Additionally, restricting access to F-gas refrigerants would disrupt supply chains, product design, and engineering, with adverse consequences for heat pump implementation across Europe and the achievement of REPowerEU targets. The lack of viable alternatives in heat pumps might also prolong European reliance on fossil fuels for heating, undermining climate and energy progress.

With this in mind, and given the urgency of the moment, the EU and the planet cannot afford to jeopardize the heat pump transition. Decarbonization will only materialise if we use the best tools at our disposal, which offer the optimal balance of environmental sustainability, performance, safety, and cost-effectiveness. As we make consequential choices on the road to decarbonization, decision-makers should determine the most effective uses of limited time and resources.

We have once-in-a-generation opportunity to take swift and strategic action. To make sure we deliver on this opportunity, we must preserve access to the technologies needed to propel Europe into a more prosperous, secure, and sustainable future.

³ European Heat Pump Association (https://www.ehpa.org/2022/06/12/ehpa_news/repowerEU-heat-pump-strategy-required-to-help-sector-deliver/)