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Daikin Expands Patent Non-Assertion Pledge for Equipment Using Low GWP Refrigerant HFC-32

Providing free access to 419 patents including the ones for VRF co-owned by European subsidiary

Daikin Industries, Ltd. has added 120 new patents to its “Pledge of Non-Assertion of Patents Relating to the Manufacture and Sale of HVAC-R (heating, ventilation, air conditioning, and refrigeration) Equipment Using the Single Component Refrigerant HFC-32 (R32).” Thirty of these patents relate to the manufacture and sale of VRF in Europe and are jointly held by Daikin Industries, Ltd. and its wholly owned subsidiary Daikin Europe N.V. A total of 419 patents can be used without the need for prior permission or written contract from Daikin. With this expansion, Daikin aims to facilitate further adoption of the HFC-32 refrigerant which has a lower impact to global warming than conventional refrigerants.

HFC-32 is a refrigerant that does not deplete the ozone layer, has a global warming potential (GWP) about one-third^{*1} of that of the conventional refrigerant R410A, and improves energy efficiency of air conditioning and heat pump equipment. Furthermore, being a single component refrigerant, recovery and reclamation are less complicated than blended refrigerants. HFC-32 thus reduces the amount of new refrigerant produced. The refrigerant itself is readily available and easy to obtain.

In the Kigali Amendment^{*2} to the Montreal Protocol in 2016, an agreement was reached to gradually reduce the effects of HFC refrigerants on GWP, and this amendment became effective in 2019. Countries that have ratified the Kigali Amendment are switching to lower GWP refrigerants, and in Europe where environmental awareness is high, the EU is exploring a revision of its F-gas Regulation to further limit the use of HFCs.

VRF is an air conditioning and heat pump system mainly for commercial buildings and residences that connects multiple indoor units to one outdoor unit. Because of its excellent energy conservation and convenience, demand for VRF systems has recently increased in Europe, and that trend is expected to continue. With Daikin Industries and Daikin Europe extending free access to co-owned patents related to VRF systems using HFC-32, future development of VRF systems in Europe will become simpler for air conditioning and heat pump manufacturers, leading to widespread adoption that will help mitigate the effects of global warming.

In 2011, Daikin offered free access to 93 patents for emerging countries and then extended this free access^{*3} to those patents worldwide in 2015. In 2019, it also announced “Pledge for Non-assertion of Patents” to subsequently filed patents. In 2021, pledged patents were further expanded, and many other companies are now able to develop and sell HVAC-R equipment that utilize Daikin technology. Currently, more than 160 million air conditioners and heat pumps using HFC-32 are sold worldwide in 100 countries^{*4}.

A list of the pledged patents and the specifics regarding the pledge are available at (<https://www.daikin.com/patent/r32>). Once listed, a pledged patent will not be removed, and the Pledge will not be withdrawn against a party unless that party triggers Daikin’s right of defensive termination by, for example, filing a lawsuit or other legal proceeding alleging patent infringement against single-component HFC-32 equipment provided by Daikin or one of its group companies.

*1 GWP values based on 100-year time horizon from IPCC Forth Assessment Report (AR4)

*2 Amendment of the Montreal Protocol agreed at the 28th Meeting of the Parties to the Montreal Protocol. Developed countries will act to mitigate the effects of global warming due to CO2 conversion of HFC by phasing down HFC

production and use by 85% from 2019 to 2036, and developing countries will achieve an 80% phasedown of HFCs from 2024 to 2045 (It is obligatory for some countries and regions to reduce by 85% from 2028 to 2047).

- *3 For details, refer to "[Daikin Offers Worldwide Free Access to Patents for Equipment Using Next-Generation Refrigerant](#)" on September 10, 2015.
- *4 Data estimated by Daikin as of June 2021

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