INDUSTRY NEWS

U.S. Ranks 4th for VRF

Contributed by BSRIA Worldwide Market Intelligence

BRACKNELL, BERKSHIRE, U.K.—The United States is the fourth-biggest market for variable refrigerant flow (VRF) technology following China, Japan and South Korea, according to BSRIA World Air Conditioning Report 2021-102181, which was released in April. Globally the VRF market reached U.S. $12 billion in 2020, with a contraction of 4% compared to 2019 levels due to the impact of COVID-19.

VRF traditionally has been installed in light commercial and medium-size projects up to 300 kW (85 ton) capacity range. However, in the last decade the increase of mini-VRF sales (<20 kW [6 ton]) enabled its rapid penetration in the residential market. As of 2020, 55% of global VRF sales was comprised of mini-VRF, by volume. This trend is also seen in the U.S., where today around 24% of VRF sales are for residential applications.

The VRF market is a relatively mature market in Asia and Europe, but still relatively new in the Americas and Middle East, India and Africa.

In the Middle East, VRF units have been taking market share from rooftop units where they are traditionally installed in residential villas. In Asia and Europe, they have been taking the market share from multi-splits, rooftops, ducted single splits and scroll compressor chillers.

The U.S. market reached U.S. $657 million in 2020 and has seen significant growth in the last 10 years, with 19% growth in value terms (compound annual growth rate [CAGR]) between 2009 and 2019. In the U.S., VRF technology is taking share from traditional U.S. ducted units, packaged terminal air conditioner and residential and light commercial rooftops units, but less so replacing scroll chillers, due to the limited significance of this market.

The global success of VRF products can be attributed to factors such as its energy efficiency, especially at part load compared to conventional HVAC systems; its flexibility in zonal control, delivery of simultaneous heating and cooling; heat recovery and ease of installation with no ductwork required.

However, initial capital cost could be a deterring factor when it comes to decision making. Therefore, a life-cycle cost exercise should be carried out for a better comparison.

The range of applications vary hugely, from a single-family home to offices, data centers, hospitality, hospitals, etc. However, for VRF systems larger than 20 kW (6 kW), offices is a significant application. Outside the U.S., retail and hotels are also key applications for VRF, but this is less significant in the U.S. due to continued success of packaged terminal air conditioner units, which is unique to the North American market. In recent years, there has been an increasing adoption of VRFs in residential application and in the U.S., particularly in townhouses.

The monitoring of single-dwelling energy use through submetering allows landlords to charge each tenant for their energy use and in China, where the up-market properties are sought after with a preinstalled air-conditioning unit, this has encouraged the use of mini-VRFs. This trend has also been seen in other cities, for example in London. As the effects of climate change drive change for shorter and milder winters, a VRF unit’s ability to heat and cool efficiently meets this demand between seasons.

VRF is not the only Asia technology seeing growth in the U.S. There is also an increase in ductless split systems replacing traditional ducted splits technology; however, this is still from a low base.

Following the financial crises of 2008, several years had fewer large construction projects where large-capacity HVAC systems were specified. During these years, VRF technology was particularly popular.
Focus on Low Carbon

DOE Lays Out Plan to Cut Buildings' Energy, Emissions
WASHINGTON, D.C.—In May, the U.S. Department of Energy (DOE) announced actions to cut buildings' energy and emissions footprints, including an initiative that will focus on clean and efficient heating and cooling. The program, called the Initiative for Better Energy, Emissions, and Equity (E3), could advance the research, development and deployment of clean heating and cooling systems like heat pumps, advanced water heaters, low-to-no global warming potential refrigerants and smarter HVAC diagnostic tools.

Source: DOE

White House: How to Modernize Buildings
WASHINGTON, D.C.—The Biden administration is investing in new initiatives to improve building energy efficiency, modernize American buildings and be a net zero economy by 2050. One initiative is the U.S. Department of Energy's grid-interactive efficient buildings “road map” that includes recommendations to integrate buildings with solar and wind power through demand management and storage.

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