

# Quick Recovery in the Global Compressor Market

## Air Conditioning, Heat Pumps and Refrigeration Applications Surge

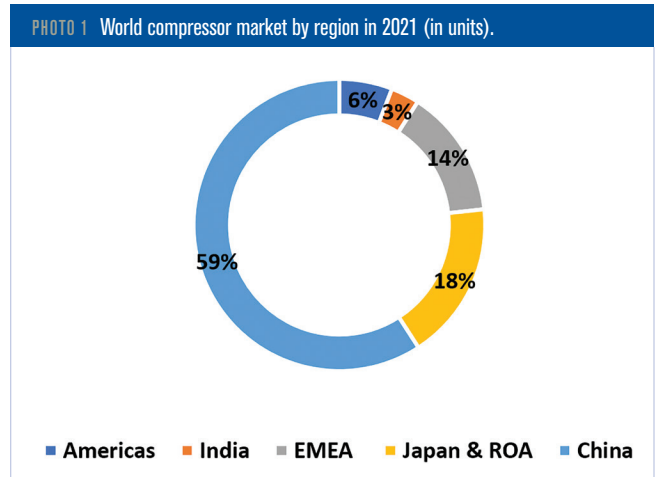
Contributed by BSRIA Worldwide Market Intelligence

**BRACKNELL, BERKSHIRE, U.K.**— The global compressor market was estimated at 486 million units sold in 2021. Refrigeration applications account for the lion's share, followed by air conditioning, then heat pumps. By 2023, the compressor market is expected to keep increasing above pre-pandemic levels, as applications in air conditioning, heat pumps and refrigeration will continue to surge thanks to global growth of HVAC systems and the trend toward electrification. In addition, drivers such as energy-efficiency legislation, the uptick of refrigerants with a lower environmental footprint and improvements in compressor capacities and performances are expected to push the value of the compressor market higher by leveraging sales growth.

Reciprocating compressors account for as much as 279 million units sold in 2021, the majority of which are small hermetic units for sales to OEM customers in the residential refrigerator industry.

Rotary compressors are second at 190 million, which are sold mostly for AC applications and heat pumps. This market is dominated by OEM sales for air conditioners, such as small splits, and to a much lower extent for heat pumps of small capacities. Scroll account for 16 million units. In recent years, rotary have been expanding in the higher capacities and have started replacing scroll in small VRF.

China is by far the largest market, in particular rotary and scroll that are used in the assembly of finished products. Rotary and hermetic reciprocating are the main types of compressors made in China, which is still a global production hub, with significant exports to overseas factories assembling final products mostly in Southeast Asia and Latin America. There is now only a limited number of companies which manufacture rotary



in Japan. Most of the production of rotary has shifted to other countries, increasingly Thailand and Malaysia. Indeed, the manufacturing of AC units requiring compressors in Thailand is one of the largest worldwide, after China. Manufacturing of compressors in India is also promoted by its government.

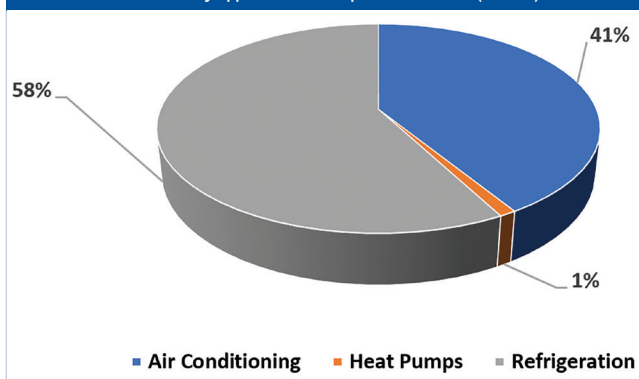
In the Americas, refrigeration is also the largest segment in the market, totalling 20 million units in 2021, with high volumes of hermetic reciprocating compressors for residential applications. Air conditioning is the second-largest application having experienced a drop of 10.3% compared with the previous year due to COVID-19. Rotary and especially scroll account for the largest share of AC compressors. The heat pump market is somewhat nascent in the Americas. In comparison, sales of heat pumps in Europe, the Middle East and Africa held up remarkably well in 2021, and their future looks bright as they are surfing on a wave of legislation for energy efficiency, increase in energy prices and further drivers for the decarbonization of buildings.

The adoption of inverters for compressors is in a rapid increase in all segments, countries and applications.

Awareness of energy conservation is a trend cutting across all regions of the world and has generated a demand for efficiency. This is met by the offering of variable speed drive compressors. However, the pace of adoption is not the same in all compressor types and applications. Air conditioning and heat pumps are far ahead in the inverter adoption, especially in rotary, screw and centrifugal. In scroll units the adoption is still patchier, due to their longer payback period and the presence of alternatives such as multiple compressor modulation and digital scrolls. In refrigeration, where modular applications may be used to offer variable load output, and also to guarantee redundancy in critical applications, the inverter adoption curve has been somehow flatter and delayed in time compared to air conditioning.

All regions are in a transition phase from high global warming potential (GWP) refrigerants to alternatives with a lower impact on the environment, albeit at different speeds. While China is transitioning from HCFC to HFC, the share of hydrocarbons now accounts for more than a third of refrigerants as they are used in refrigeration units for household use. Natural refrigerants such as NH<sub>3</sub> or CO<sub>2</sub> remain marginal. In the Americas, HFCs dominate the sectors of space cooling, heating and refrigeration, and the transition to alternative lower GWP refrigerants is slowly advancing at a faltering pace. The U.S. and Canada

PHOTO 2 Market share by application in compressors in 2021 (in units).



are at the forefront of regulation in the region and most of the Latin American countries are following with a time lag of the process set by their northern neighbors. The European Union is at the forefront of the battle against global warming, as the EU F-gas regulation encourages the phaseout of HFCs with a high GWP. In air conditioning, R-32 has rapidly become the refrigerant of choice replacing R-410A in small split systems, and for commercial refrigeration applications >40 kW, CO<sub>2</sub> has become the main option. India is phasing out HFCs and follows the Kigali Amendment to the Montreal Protocol, aiming at lowering high-GWP refrigerants by 85% before 2047. Natural refrigerants such as R-290 (propane), R-717 (NH<sub>3</sub>) and R-744 (CO<sub>2</sub>) will be used where possible. ■

## Industry Roundup

### Danfoss Welcomes Steven Lakin as New Director of Public and Industry Affairs

**BALTIMORE, MD.**—Danfoss has appointed Steven Lakin as its new director of public and industry affairs. Lakin is a government relations and public affairs professional with extensive experience working across multiple industries, with industry associations and with policy makers at the state and federal level. In his role with Danfoss, Lakin will engage key industry and government stakeholders at this critical junction where innovations in climate and sustainable solutions are gaining momentum in our national conversation.



### Study: Wood-Based Foam Could Cool Buildings

**AMERICAN CHEMICAL SOCIETY**—Researchers at the American Chemical Society have designed a lightweight foam made from wood-based cellulose nanocrystals that reflects sunlight, emits absorbed heat and is thermally insulating. This suggests the material could reduce buildings' cooling energy needs by more than a third.

### Considerations for Increasing the Chances of Achieving Net Zero

**MCKINSEY & COMPANY**—As momentum toward decarbonization continues to grow, some plans may be so cost-optimized they leave little room for deviation from the plan. Myriad factors could cause plans to be easily derailed. This article offers considerations for helping keep them on track. <https://tinyurl.com/4bzhzurd>