

# **Global HVAC&R Market: Analysis By Type (Cooling, Heating, Refrigeration and Indoor Air Quality), By End User (Residential, Commercial and Industrial), By Region Size & Forecast with Impact Analysis of COVID-19 and Forecast up to 2028**

<https://marketpublishers.com/r/G34220E99FE3EN.html>

Date: December 2023

Pages: 163

Price: US\$ 2,350.00 (Single User License)

ID: G34220E99FE3EN

## **Abstracts**

HVAC&R stands for heating, ventilation, air conditioning and refrigeration. HVAC&R is a broad field that encompasses various technologies and systems used to control the indoor environment of buildings, ensuring comfort, air quality, and temperature regulation. The structure of HVAC&R value chain comprises of component suppliers, manufacturers, distributors, contractors and end users. In 2022, the global HVAC&R market was valued at US\$259.37 billion, and is probable to reach US\$360.49 billion by 2028.

Global HVAC&R market has augmented in the historical period due to major factors including, global warming, economic development in emerging markets, increasing new households units, upgrade and renovation demand driven by higher energy costs, technological disruption, government support, changing climate conditions, and rapid urbanization. The rising need for energy-efficient and sustainable buildings is expected to further propel the growth of the HVAC&R system industry during the forecast period. The varied global climatic conditions and the strong need to maintain an ambient environment in a building are the key reasons that will positively impact the market over the forecast period. Furthermore, enhanced control systems and automation technologies can improve the efficiency of HVAC systems. Machine learning algorithms and artificial intelligence may play a significant role in optimizing system performance and adapting to changing conditions. The global HVAC&R market value is projected to grow at a CAGR of 5.64%, during the forecast period of 2023-2028.

### Market Segmentation Analysis:

**By Type:** According to the report, the global HVAC&R market is segmented into four types: Cooling, Heating, Refrigeration and Indoor Air Quality. Cooling HVAC&R market is sub segmented on the basis of type, including AC Equipment and others. Cooling segment acquired majority of share in the market in 2022, as the growth is driven by technological advancements, regulatory changes, environmental concerns, and evolving consumer preferences. It is expected that space cooling to deliver fast installation growth, particularly driven by residential air conditioners and data centre cooling. Whereas, heating segment would grow with the fastest rate, due to the integration of smart technologies in heating systems that allows for better control and automation. Smart thermostats, connected heating devices, and home automation systems contribute to improved energy management and increased convenience for users. Within heating, heat pumps would be the fastest-growing product segment.

**By End User:** According to the report, the global HVAC&R market is segmented into three end users: Residential, Commercial and Industrial. Residential segment acquired majority of share in the market in 2022, as an increasing number of multi-family and single-family homeowners are creating opportunities in the residential HVAC&R sector, therefore the demand for HVAC&R system is expected to be volatile in the developed countries. Whereas, commercial segment has the fastest growing CAGR, due to several trends, including green and smart technologies for automation systems. Many government initiatives have also been the reason for the growth of the market. Overall, the commercial sector is increasingly recognizing the value of investing in efficient and effective HVAC&R systems.

**By Region:** The report provides insight into the HVAC&R market based on the supply, namely Asia Pacific, Europe, North America and Rest of the World. Asia Pacific HVAC&R market enjoyed the highest market share in 2022 and the fastest CAGR, due to increasing demand from the residential, commercial office, and building sector. Major economies in Asia Pacific including, China, Japan, and India, are witnessing an increase in commercial construction activities as many companies in various industries are opening offices in different locations to secure their target and potential customer base. Also, China's market is experiencing an influx of public and private investment in real estate projects and various residential, industrial, and commercial developments due to explosive urbanization, which is contributing to the HVAC&R market growth. Additionally, Japan HVAC&R market is also expected to rise due to the augmenting company expansions and merger and acquisitions. For instance, in February 2023, Daikin Japan, one of the world's major air conditioning manufacturers, plans to supply

heat pumps and cooling systems to public buildings, including social housing, around the city, which will be remotely monitored and certified.

North America HVAC&R market is the second largest market in HVAC&R industry. This market augmented in the historical years due to the green building strategy being one of the most important footholds in this market. Green buildings are designs and structures that utilize nominal energy to cool or heat the property. Builders restore ventilation, heating, and air conditioning systems. They focus on using sustainable building materials that maintain a constant building temperature and bring in natural airflow to reduce the energy consumption of the HVAC&R system. The US is the second-largest HVAC&R market in terms of sales value and installation volume. The US HVAC&R market has augmented due to the Government support for high energy efficiency HVAC products such as the Inflation Reduction Act of 2022 (IRA) is the largest-ever climate investment by the US federal government in its history, projected to reduce greenhouse gas (GHG) 31% to 44% below 2005 levels by 2030.

#### Global HVAC&R Market Dynamics:

**Growth Drivers:** Global Warming plays a pivotal role in driving growth in the global HVAC&R market as extreme heat will result in two significant growth trends in space cooling - fast penetration of air conditioners in low-latitude developing countries that are facing increasing extreme hot weathers, as well as penetration of air conditioners in high latitude developed areas such as northern Europe, Canada, and Hokkaido in Japan. Also, there are significant potential for upgrade purchases, backed by government incentives and regulatory changes. According to IEA, as of 2022, financial incentives for heat pumps are already available in over 30 countries, which together cover more than 70% of heating demand. Further, the market is expected to increase due to increasing AC installations, rapid urbanization, amplified disposable income, upgrade and renovation demand, economic development in emerging markets, government incentives/policy/regulations, etc.

**Challenges:** The market's expansion is projected to be hampered by high maintenance, as it introduces a range of issues impacting both businesses and end-users. The complexity of Heating, Ventilation, Air Conditioning, and Refrigeration systems demands regular and meticulous maintenance to ensure optimal performance. However, when maintenance requirements are high, businesses face increased operational costs, as more resources are directed towards servicing and repairs. The other challenges that HVAC&R market faces include skill shortage, etc.

**Trends:** One of the most distinct and pervasive trends observed in the global HVAC&R market is growing data centre cooling. HVAC makers are mostly engaged in outside server rack cooling for data centres, key players including Daikin, Mitsubishi Electric, Carrier, Trane, and Schneider. They provide equipment such as computer room air conditioners, chillers, and air handling units of chilled water systems for medium- to large-size data centres. Thus, surging the demand for HVAC&R equipment. More trends in the market are believed to augment the growth of HVAC&R market during the forecasted period include, augmenting heat pumps, growing energy efficient solutions, district cooling, growth in the use of variable refrigerant flow (VRF) systems, etc.

#### Impact Analysis of COVID-19 and Way Forward:

The pandemic of COVID-19 had a negative impact on the HVAC&R business. The COVID-19 outbreak has affected the growth of the HVAC&R equipment industry owing to the lockdown measure in the countries and delay in manufacturing and production of HVAC equipment which are utilized in residential, commercial, and industrial spaces. Many construction projects were delayed or put on hold during the pandemic, impacting the installation of HVAC&R systems. Furthermore, the pandemic led to disruptions in global supply chains, affecting the production and delivery of HVAC&R components and equipment.

#### Competitive Landscape and Recent Developments:

Global HVAC&R market is fragmented. Market players have implemented sustainable growth techniques in the market. To strengthen their position in the market, some of the leading competitors are pursuing various growth methods such as mergers, acquisitions, collaborations, and agreements. Key players of global HVAC&R market are:

Johnson Controls International PLC  
Mitsubishi Electric Corporation  
Daikin Industries, Ltd.  
Lennox International Inc.  
Trane Technologies Plc  
Samsung Electronics Co., Ltd.  
Panasonic Corporation  
Midea Group  
Voltas Limited  
LG Electronics

Fujitsu General Limited  
Carrier Global Corporation  
Haier Group Corporation (Haier Smart Home Co., Ltd.)  
Danfoss AS  
Zhuhai Gree Electric Appliances Co., Ltd.

The key players are constantly investing in strategic initiatives, such as new product launches, introducing their products to emerging markets and more, to maintain a competitive edge in this market. For instance, in February 2023, Daikin Europe N.V., a subsidiary of Daikin, signed an MoU for a collaborative partnership with the Greater Manchester Combined Authority (GMCA), consisting of 10 wards and cities in the northwest region of England. Also, in January 2023, Johnson Controls announced that it acquired Hybrid Energy AS, a provider of high-temperature energy management solutions focusing on heat pumps for district heating and industrial processes. In 2023, Mitsubishi announced a US\$0.2bn investment in an air conditioner plant in India. In the US, the company has a 50:50 joint venture with Trane, formed in 2018, that provides HVAC products in the US.

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