HVAC Market Assessment, By Equipment [Heating, Ventilation, Air Conditioning], By Service [Installation, Maintenance and Repair], By Implementation [New Construction, Retrofit], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global HVAC market is projected to witness a CAGR of 6.94% during the forecast period 2024-2031, growing from USD 300.56 billion in 2023 to USD 514.11 billion in 2031. Heating, ventilation, and air conditioning (HVAC) systems adjust room temperature based on the users' needs. Manufacturers are able to create equipment that is more compact, effective, and efficient. The demand for HVAC systems such as air conditioners, heaters, and purifiers surges with the formation of new cities, modernized infrastructure, and rapid urbanization. The rising population across the globe is garnering market growth. Advanced technologies have influenced major equipment and solutions, making them more efficient, effective, and sustainable. The significant progress can be credited to sophisticated and novel HVAC technology such as movement-activated air conditioning, dual-fuel heat pumps, smart homes, and geothermal heating.

Advanced technologies such as movement-activated air conditioning, thermally driven air conditioning, on-demand hot water recirculatory, and ice-powered air conditioning are expected to propel the market growth. Furthermore, smart HVAC systems equipped with IoT technology allow for remote monitoring and control via smartphones and smart devices. Features such as predictive maintenance and energy usage analytics help optimize performance and reduce costs. Alongside this, the shift towards refrigerants with lower global warming potential, such as R-32, is becoming more prominent as regulations tighten around traditional refrigerants.

For instance, in May 2024, Lennox International Inc. announced a low global warming potential (GWP) refrigerant rollout for commercial and residential HVAC products. Since low GWP refrigerants drastically reduce the impact of damaging greenhouse gases, the change is expected to promote sustainable product usage among end-users.

Similarly, in June 2024, Mitsubishi Electric Trane HVAC US LLC (METUS) announced its upcoming launch of a new range of products utilizing a low global warming potential (GWP) refrigerant. The new products are anticipated to be available by early 2025.

Rapid Urbanization, Dynamic Temperature, and Technical Integration to Fuel Market Growth

Rapid urbanization, especially in the emerging economies of India and China, is increasing demand for residential and commercial constructions. Governments are investing in smart city projects that integrate the most advanced HVAC systems to enhance energy efficiency and sustainability. With the emergence of IoT, innovation has been introduced, leading end-users to smart HVAC systems. These systems can be engineered to optimize energy usage through the automation of the process and real-time monitoring. The adoption of variable refrigerant flow (VRF) systems, advanced chillers, and energy recovery ventilators (ERVs) is growing due to their efficiency and ability to reduce energy consumption.

The AI algorithms scan the data collected from HVAC equipment to predict the potential failure of any parts before they break. This way, maintenance becomes effective to limit downtime and repair costs. Machine learning can predict unusual patterns in system operations, thus alerting technicians to attend to specific needs that might need assessment. AI systems can change the HVAC settings according to real-time energy prices, occupancy levels, and weather forecasts for optimal energy usage and low costs.

For instance, in January 2024, Carrier Corporation introduced the release of a large inverter air conditioner using the latest technologies, such as artificial intelligence and inverter technology. It applies the 18-stage air control, allowing precise adjustment of wind strength specific to the user's choice, space, and settings. With high-efficiency inverter technology, it tracks minimal temperature changes according to indoor temperature, operating as much as necessary.

Stringent Government Compliance Due to Rising Pollution to Transform the Market Dynamics

Governments are implementing stricter energy efficiency laws, such as the energy efficiency ratio (EER) and seasonal energy efficiency ratio (SEER) ratings for HVAC systems. To fulfill these demands, manufacturers need to be creative, which will propel the creation of cutting-edge, energy-efficient solutions. To incentivize individuals and businesses to engage in environmentally friendly solutions, several regions provide tax rebates and incentives for the installation of high-efficiency HVAC systems. Governments are enforcing legislation requiring greater ventilation and air filtration in buildings due to their growing recognition of the relevance of IAQ in public health. The adoption of ecologically friendly HVAC solutions is being fueled by the stringent energy efficiency and emissions standards being implemented by governments across the globe. Manufacturers are being forced to develop low-impact replacements due to accords such as the Kigali Amendment, which phase out high-GWP (Global Warming Potential) refrigerants.

For instance, in July 2024, Daikin Europe N.V. (Daikin Industries Ltd.) announced its support for the Global Cooling Pledge at the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28). The pledge commits to work together with the aim of reducing cooling-related emissions by at least 68%, relative to 2022 levels, by 2050.

Rising Temperature and Technological Advancements to Fuel Air Conditioning Segment

Based on equipment, the air conditioning segment leads the market share. With increased global temperatures, consumers are stressed about seeking increasingly efficient air conditioning solutions so that they can feel comfortable within their homes, offices, and buildings. End-users are urbanizing, wherein more building construction is expected to enhance the rise in temperatures as much as heat islands contribute to increased temperature rises, necessitating better air conditioning indoors. Furthermore, the continuous improvement in the energy efficiency of technologies, such as inverter-driven compressors and high SEER-rated units, makes air conditioning equipment more attractive for consumers looking for savings on energy costs. The installment of smart technology, which might include IoT connectivity, AI predictive maintenance, and mobile phone-enabled remote control, is certainly a factor that appeals to modern air conditioning systems.

For instance, in April 2022, Samsung India Limited launched the AI-enabled, DVM S2 Varial Refrigerant Flow (VRF) ACs with smarter and faster cooling. With its innovative artificial intelligence (AI) capabilities, the Samsung DVM S2 can detect the installation environment, providing optimal heating and cooling, and monitoring refrigerant leaks in real-time.

Asia-Pacific to Dominate the HVAC Market Share

Asia-Pacific leads the share of the global HVAC market with rapid construction, new projects, and a growing economy. The region is home to some of the world's most populous countries, leading to increased urban migration. Cities are expanding, and new buildings require efficient HVAC systems. Governments are investing heavily in infrastructure projects, including residential, commercial, and industrial buildings that necessitate advanced HVAC solutions. Economic expansion has led to a burgeoning middle class with higher disposable incomes, driving the demand for comfort and energy-efficient HVAC systems at homes and workplaces. The region's rapid industrial growth, especially in manufacturing and technology sectors, has increased the need for

sophisticated climate control systems. Asia-Pacific includes various climates, from tropical to temperate, necessitating a wide range of HVAC solutions tailored to local needs. Fluctuating global temperatures and extreme weather conditions have heightened the demand for cooling and heating systems, especially in countries such as India and Southeast Asia. Hence, companies are setting up their HVAC manufacturing facilities in these regions to expand their market reach.

For instance, in April 2024, PG Technoplast Private Limited, a wholly-owned subsidiary of PG Electroplast Limited (PGEL), inaugurated its new marquee air conditioning manufacturing facility for North India in Bhiwadi, Rajasthan. By making this calculated investment, the company hopes to increase its market share in the quickly increasing air conditioning industry and meet India's growing need for sustainable and energy-efficient cooling solutions.

In January 2024, Havells India Limited launched its country-made heat pump. This innovative heat pump uses 25% of the energy and produces up to 129 liters of water, ensuring constant access to hot water up to temperatures as high as 75□C.

Future Market Scenario (2024 □ 2031F)

□□Enhancement of indoor air quality (IAQ) and smart HVAC systems are expected to fuel the market growth.

□□Smart HVAC systems that provide energy efficiency and sustainability, including advanced filtration systems and ventilation solutions, are projected to fuel market growth.

□□The new HVAC product launches comply with GWP guidelines and are anticipated to add value to the market.

Key Players Landscape and Outlook

Companies are investing heavily in research and development to create advanced, energy-efficient, and smart HVAC systems that meet evolving consumer demands. Introducing eco-friendly refrigerants and systems designed to minimize environmental impact aligns with global sustainability trends. Players are incorporating IoT and AI into their products for enhanced monitoring, control, and predictive maintenance capabilities. Developing intuitive apps and interfaces that allow customers to control HVAC systems remotely improves users' experiences. Expanding into emerging markets of Asia-Pacific, Africa, and South America to capitalize on urbanization and economic growth is expected to increase the market presence of key players. Partnerships play a crucial role in the HVAC industry, helping companies leverage resources, expand their reach, and enhance their offerings.

For instance, in May 2024, Lennox International Inc. and Samsung Electronics Co. Ltd. signed an agreement forming a joint venture to sell ductless ACs and heat pumps, such as mini-split, multi-split, VRF products, in the United States and Canada. The newly established joint venture will be called Samsung Lennox HVAC North America. Samsung will own 50.1% of the joint venture, and Lennox will own the remaining 49.9%.

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