Heat Pump Market Assessment, By Technology [Air-to-air, Air-to-water, Ground Source, Hybrid, Others], By Installation [Split System, Package System, Mini Split, Window Heat Pump], By Type [Reversible Heat Pumps, Non-Reversible Heat Pumps], By Rated Capacity [Up to 10 kW, 10 to 100 kW, Above 100 kW], By End-users [Residential, Commercial, Industrial], By Application [Heating, Heating and Cooling], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global heat pump market is projected to witness a CAGR of 10.32% during the forecast period 2024-2031, growing from USD 94.41 billion in 2023 to USD 207.13 billion in 2031. The market has evolved through the addition of efficient heating technologies, innovative integrations, and transformed heat sources. In the worldwide effort to reduce carbon emissions and promote sustainable living, heat pumps have become an attractive substitute for conventional home heating techniques. Heat pumps use renewable energy from the environment, such as from air, ground, or water, as opposed to traditional systems that burn fossil fuels, driving the growth of the market. The increased adoption of heat pumps in residential, commercial, and industrial spaces is due to their efficient functionality and capability to cover larger areas at an effective cost.
Another trend in the market includes evolving compressors of heat pumps. Compressors are essential as they control the refrigerant flow rate and compression process efficiently. Compressors specify the amount of heat energy that can be contained in refrigerants and, consequently, the range of temperature changes that the pump can achieve. Through evolving heat pump components, different ranges of heating and cooling have become a trend in the market. The requirements for various applications vary with respect to temperature, capacity, physical dimensions, and compatibility with current machinery. Rigid specifications are frequently placed on large-scale heat pumps regarding power output, utilization rates, heat source, and sink

temperatures. Hence, companies are introducing different versions of heat pumps.

For instance, in April 2024, Ideal Boilers Limited, a company based in the United Kingdom, launched a new series of monobloc air-source heat pumps for commercial building usage. The company launched the series with three versions, ranging in heating capacity between 14.1 kW to 17.96 kW, 26 kW and 32 kW, 50.2 kW and 66.8 kW, respectively. These models use difluoromethane (R32) as the refrigerant and come with a 2-year warranty.

Efficient Heating Solution and Stringent Policies to Propel Market Growth

Heat pumps are known for their higher efficiency and delivery of heating to a larger space. Heat pumps are more efficient than other heating systems and generally produce around three times more energy, making them 300% efficient. They are more efficient as the heat is absorbed from the environment rather than coming directly from an energy source, such as natural gas. Most countries have adopted many strict regulations to regulate carbon emissions. Heat pumps using renewable energy sources fit into these requirements and are, therefore, highly adapted for residential and commercial heating. In some instances, governments have offered incentives for the adoption of heat pumps. For instance, the implementation of heat pumps has accelerated due to actions taken by the British government. The government raised heat pump grants by 50% in October 2023. Such incentives include tax credits, rebates, and other forms of subsidies that make this investment more affordable. Companies are trying to deliver helpful resolutions in the region to cater to the revised guidelines while delivering efficient heating or cooling solutions.

For instance, in April 2024, Daikin Europe N.V. announced the launch of the R290 residential heat pump Altherma 4 HS-S+ series, which can be operated at an ambient temperature as low as -28 degrees Celsius. The new heat pump will come in four sizes: 8, 10, 12, and 14kW (2.3, 2.8, 3.4 and 4.0TR). R290 refrigerant comes under hydrocarbons which have become more relevant post ban of Hydrofluorocarbon in European countries.

Integration of Renewable Energy and Expanding Commercial Buildings to Fuel Market Growth

There is a rising trend in pairing heat pumps with solar panels and other renewable energy resources. This combination provides significant benefits in terms of energy efficiency and reduces reliance on fossil fuels. Improved refrigerants, advanced controls, and integration with home automation systems are enhancing the performance and appeal of heat pumps. Businesses are realizing the long-term benefits of heat pumps in heating and cooling. This trend is prevalent in industries focusing on sustainability and energy efficiency. Most businesses are concerned with saving on energy consumption and related operational costs. The heat pump is an efficient heating and cooling system that supports corporate sustainability goals. Most companies are exposed to a strict environmental law set up to control the carbon footprint of their industries. Companies, therefore, comply with such laws by ensuring they have cleaner systems of heating and cooling, and this, in turn, increases demand for heat pumps. The different roles of heat pumps are directing companies to introduce multipurpose heat pumps in the market.

For instance, in September 2024, Clivet S.p.A launched water-cooled multipurpose heat pump. The seasonal energy efficiency ratio of the polyvalent reversible heat pump is 7.72 to 7.53, and its seasonal coefficient of performance ranges from 4.44 to 4.59. This pump can reach flow temperatures of up to 55 degrees Celsius.

Highly Efficient Functionality and Lower Installation Costs to Fuel the Air-to-air Segment

Based on technology, the air-to-air heat pump technology holds the major share of the heat pump market, owing to the efficiency heat pumps provide. It utilizes substantially less electricity compared to standard heating systems, which can deliver huge energy savings. Air-to-air heat pump installations are usually less expensive than other types of systems, especially pumps that need a lot of ducting. Air-to-air heat pump maintenance is typically simple and reasonably priced, making it affordable for residential purposes. Heat pumps function at their best with routine maintenance and can be used for heating and cooling purposes. Hence, they are quite suitable for wide climatic applications and usage, attracting dual functionality in residential and commercial properties.

For instance, in November 2023, Daikin Industries Ltd. introduced new low-carbon VRV heat pumps for all types of commercial buildings. The VRV 5 system, an air-to-air heat pump system, offers all business buildings year-round, extremely energy-efficient heating and cooling.

Europe Dominates Heat Pump Market Share

Europe leads the market share in terms of revenue. European governments have implemented stringent regulations aimed at reducing carbon emissions, including the EU's Green Deal and various national policies promoting renewable energy. There is a

high level of awareness among European consumers about the benefits of heat pumps in terms of energy savings and environmental impact. Europe is home to many innovative companies and research institutions that are advancing heat pump technology and improving efficiency and performance.
For instance, in March 2024, the European Union revised its F-gas Regulation mandating a complete phase-out of the consumption of Hydrofluorocarbons (HFCs) across the region by 2050, along with specific phase-out dates for the usage of HFCs and HFO in some heating and cooling equipment. Furthermore, in April 2022, the association released an F-gas regulation that banned certain stationary split air-conditioning and split heat pump equipment, opening doors for hydrocarbons such as R290. Looking at opportunities like this, heat pump manufacturers across the globe are investing in Europe.
For instance, in October 2022, Chinese OEM Qingdao Haier Co., Ltd. showcased its R290 air-to-air split heat pump at the Chillventa Trade Show in Nuremberg, Germany. The company announced its plan to introduce the same pump in Europe in 2023.
Future Market Scenario (2024 - 2031F)
- The development of low-GWP (global warming potential) refrigerants that are more environmentally friendly is expected to improve the sustainability of heat pumps. Research into natural refrigerants, such as propane or carbon dioxide, is gaining traction.
- IoT integration with industrial HVAC systems is anticipated to automate future heat pumps and transform the market dynamics.
- Enhanced geothermal systems (EGS) and new drilling technologies are expected to make geothermal heat pumps more accessible and cost-effective, expanding their use in various climates.
Key Players Landscape and Outlook
Key players in the heat pump market strategically focus on innovation, sustainability, and market expansion to maintain competitiveness. Leading companies are investing heavily in research and development to enhance the efficiency and performance of heat pumps, integrating advanced technologies such as variable speed compressors and smart controls. Partnerships with renewable energy firms are becoming common, allowing for seamless integration of heat pumps with solar and geothermal systems. Additionally, many players are expanding their product portfolios to include hybrid systems that combine traditional heating methods with heat pump technology. Geographic expansion into emerging markets is another critical strategy, as these regions exhibit rising demand for energy-efficient solutions. Companies indulge in new product launches, extension of product range, etc.
For instance, in June 2024, Hisense International Co., Ltd. unveiled its next-generation R290 ATW heat pump at the 2024 Hisense Hi-Therma Series Heat Pump Launch Conference. The event features the introduction of a smart home energy management solution and the new 5E lifestyle concept, which emphasizes being environmentally friendly, effortlessly comfortable, easy to use, and energy efficient.
In March 2024, Trane Inc. announced its new range of HVAC products. The company introduced a new residential product portfolio featuring innovative design upgrades for its highly efficient heat pumps and air conditioners. These upgrades include the use of a next-generation refrigerant that has 78% less global warming potential (GWP). Engineered for greater efficiency, these re-designed products will help homeowners meet their heating and cooling requirements while lowering their energy costs and reducing their carbon footprints.

Table of Contents:

6.3.1.2.2.□By Installation
6.3.1.2.2.1.□Split System
6.3.1.2.2.2.□Package System
6.3.1.2.2.3.□Mini Split
6.3.1.2.2.4.□Window Heat Pump
6.3.1.2.3.□By Type
6.3.1.2.3.1.□Reversible Heat Pumps
6.3.1.2.3.2.□Non-Reversible Heat Pumps
6.3.1.2.4.□By Rated Capacity
6.3.1.2.4.1.□Up to 10 kW
6.3.1.2.4.2.□10 to 100 kW
6.3.1.2.4.3.□Above 100 kW
6.3.1.2.5.□By End-users
6.3.1.2.5.1.□Residential
6.3.1.2.5.2.□Commercial
6.3.1.2.5.3.□Industrial
6.3.1.2.6.□By Application
6.3.1.2.6.1.□Heating
6.3.1.2.6.2.□Heating and Cooling
6.3.2.□Canada
6.3.3.□Mexico
*All segments will be provided for all regions and countries covered
7.□Europe Heat Pump Market Outlook, 2017-2031F
7.1.□Germany
7.2.□France
7.3.□Italy
7.4.□United Kingdom
7.5.□Russia
7.6.□Netherlands
7.7.□Spain
7.8.□Turkey
7.9.□Poland
8.□Asia-Pacific Heat Pump Market Outlook, 2017-2031F
8.1.□India
8.2.□China
8.3.□Japan
8.4.□Australia
8.5.□Vietnam
8.6.□South Korea
8.7.□Indonesia
8.8.□Philippines
9.□South America Heat Pump Market Outlook, 2017-2031F
9.1.□Brazil
9.2.□Argentina
10.□Middle East and Africa Heat Pump Market Outlook, 2017-2031F
10.1.□Saudi Arabia
10.2.□UAE

10.3. South Africa
11. Demand Supply Analysis
12. Import and Export Analysis
13. Value Chain Analysis
14. Porter's Five Forces Analysis
15. PESTLE Analysis
16. Pricing Analysis
17. Market Dynamics
17.1. Market Drivers
17.2. Market Challenges
18. Market Trends and Developments
19. Case Studies
20. Competitive Landscape
20.1. Competition Matrix of Top 5 Market Leaders
20.2. SWOT Analysis for Top 5 Players
20.3. Key Players Landscape for Top 10 Market Players
20.3.1. Trane Inc.
20.3.1.1. Company Details
20.3.1.2. Key Management Personnel
20.3.1.3. Products and Services
20.3.1.4. Financials (As Reported)
20.3.1.5. Key Market Focus and Geographical Presence
20.3.1.6. Recent Developments/Collaborations/Partnerships/Mergers and Acquisition
20.3.2. Midea Group
20.3.3. Mitsubishi Electric Corporation
20.3.4. Panasonic Corporation
20.3.5. Daikin Industries, Ltd.
20.3.6. Guangdong New Energy Technology Development Co., Ltd.
20.3.7. Systemair AB
20.3.8. Gree Electric Appliances Inc.
20.3.9. Hisense International Co., Ltd.
20.3.10. Robert Bosh LLC
20.3.11. LG Electronics Inc.
*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.
21. Strategic Recommendations
22. About Us and Disclaimer

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