Waste Heat Recovery System Market by Application (Preheating and Steam & Electricity Generation), End-Use Industry (Petroleum Refining, Metal Production, Cement, Chemicals, Pulp & Paper), and Region - Global Forecast to 2027

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Report description:

The global WHRS market size is expected to grow from USD 72.5 Billion in 2022 to USD 102.1 Billion by 2027 at a compound annual growth rate (CAGR) of 7.1% during the forecast period. WHRS is all about the technologies, best practices, and processes implemented by companies to make processes more energy-efficient and reduce the environmental impact associated with the waste heat. Some key benefits of WHRS include power reduction, fuel and maintenance reduction, emission reduction.
The development of cutting-edge WHRS technologies seeks to boost both the economic and environmental performance of the waste heat recovery industry. The government has launched a variety of initiatives and laws to promote the use of clean and efficient energy technologies, such as waste heat recovery systems. The EU encourages Member States to implement waste heat recovery solutions by promoting best practices and providing incentives. Countries have either directly or indirectly aided in the recovery and utilisation of waste heat. Heat planning regulation, taxation, subsidies, heat pricing regulation, a ban on electrical heating, and a district cooling law are all in place in Denmark to assist WHRS. In Italy, the Italian Energy Management Authority (ARERA) has included Waste Heat Recovery in the white certificate program from 2011 with the EEN 9-11, enabling a 5-year advantage.
"By application, Steam & electricity generation anticipated in order to record high ranking market share of 57.4% in 2021"
The WHRS are used in a variety of sectors to generate steam and electricity. Companies can considerably lower their energy expenditures by adopting these WHRS systems to generate steam or electricity. The increased demand for energy, as well as the emphasis on making operations more energy efficient, is driving the market for WHRS in steam and power production applications in sectors such as metal manufacturing, chemical, petroleum refining, and cement.
Steam is a popular way to utilise recovered waste heat. It is generated as a result of boiler combustion or as a byproduct of an industrial plant. Because steam generation from waste heat sources is crucial to a variety of end-use industries, it is an important

WHRS application. One of the advantages of steam generating is its great heat capacity and adaptability. However, if the boiler and distribution system are inefficient, steam generation might be costly. When waste heat steam is used for industrial purposes, it significantly reduces the amount of fuel needed. The heat from exhaust gas can be used to produce heat, but only if the heat amount, temperature range, working time, and other parameters are suitable.
Recycled waste heat from various sources is used to generate mechanical energy that powers an electric generator to produce electricity. There are power cycles for generating electricity, such as the steam rankine, ORC, and kalina cycles; however, new technologies such as thermoelectric and piezoelectric generation are now being investigated, which can produce electricity directly from heat. It is essential to understand the thermodynamic constraints on power generation at various temperatures when generating electricity from WHR. The temperature of the waste heat source shows the efficiency of power generation. Even though electricity generated employing waste heat is limited to medium- to high-temperature waste heat sources, the development of alternate power cycles may increase the viability of generation at low temperatures. These systems are cost-effective when it comes to collecting a significant amount of energy from waste heat, but their efficiency suffers at these temperatures.
"Europe region is predicted as the largest-growing region in the WHRS market"
In terms of value, the market in Europe is estimated to grow at the CAGR of 4.9% between 2022 and 2027, to reach USD 34.8 Billion by 2027. In terms of value, the Germany was the largest market for WHRS in Europe in 2021. The market in the Germany is estimated to grow at a CAGR of 4.5% between 2022 and 2027, in terms of value.
During the forecast period, Europe is expected to dominate the global WHRS market. Because of the growth of sustainable practises in countries such as Germany, Russia, France, the U.k., and the rest of Europe, the region has emerged as the largest consumer and promoter of WHRS practises. The desire to protect the environment through better technology is expected to drive the WHRS market in this region.
Extensive primary interviews were conducted to determine and verify the market size for several segments and sub-segments and information was gathered through secondary research.
The break-up of primary interviews is given below:
By Company type: Tier1:50% Tier2:40% Tier3:10%
By Designation: Managers: 30% C-level executives: 50% Others: 20%
By region: North America: 10% Europe: 20% APAC: 50% Middle East &Africa: 10% South America: 10%
Notes: Others include sales, marketing, and product managers.
Tier 1: >USD 1 Billion; Tier 2: USD 500 million-1 Billion; and Tier 3: <USD 500 million
The companies profiled in this market research report include are ABB Ltd. (Switzerland), Wood (John Wood Group Plc) (UK), Ormat Technologies Inc. (U.S.), General Electric Co. (US), Mitsubishi Heavy Industries Ltd. (Japan), Echogen Power Systems Inc. (US), Econotherm Ltd. (UK), Thermax Limited (India), Siemens AG (Germany), Cool Energy Inc. (Colorado) among others.
Research Coverage:
This research report categorizes the WHRS market on the basis of application and region. The report includes detailed information regarding the major factors influencing the growth of the WHRS market, such as drivers, restraints, challenges, and opportunities. A detailed analysis of the key industry players has been done to provide insights into business overviews, products & services, key strategies, expansions, new product developments, and recent developments associated with the market.
Reasons to Buy the Report
The report will help market leaders/new entrants in this market in the following ways:
1. This report segments the WHRS market comprehensively and provides the closest approximations of market sizes for the overall market and subsegments across verticals and regions.
2. The report will help stakeholders understand the pulse of the market and provide them information on the key market drivers, restraints, challenges, and opportunities.
3. This report will help stakeholders understand the major competitors and gain insights to enhance their position in the business. The competitive landscape section includes expansions, new product developments, and joint ventures.

Table of Contents:

*Details on Business overview, Products/Solutions/Services offered, Recent Developments, MNM view might not be captured in case of unlisted companies.

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