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Slewing Bearing Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028Segmented By Rolling Element (Ball and Roller), By Gear Type (Internal Gear, Ungeared and External Gear), By Design (Cross Roller Slewing Ring Bearing, Single-row Four Point Contact Ball Slewing Ring Bearing, Three-row Roller Slewing Ring Bearings, Double-row Ball Slewing Ring Bearings and Others), By Application (Wind & Solar Energy, Aerospace & Defense, Medical, Industrial Machinery, Oil & Gas and Others), By Region, Competition

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Abstracts

The Global Slewing Bearing Market, valued at USD 5.17 billion in 2022, with a steady compound annual growth rate (CAGR) of 4.83% during the forecast period. Slewing bearings are witnessing robust demand, primarily driven by their increasing applications in the infrastructure industry and renewable energy sector. This upward trend is expected to persist in the near future, bolstered by substantial government investments in these sectors. Notably, slewing bearings serve as crucial components in windmill turbines, further propelling the growth of the slewing bearings market. Governments worldwide are acknowledging the strategic importance of the infrastructure industry, while the automobile sector relies on material handling equipment like cranes and forklifts, in which slewing bearings are vital components. Consequently, the slewing bearings market is anticipated to expand in parallel with increased investments in the infrastructure industry.

Key Market Drivers

Industrial Automation and Robotics Revolution

The rapid proliferation of industrial automation and the widespread adoption of robotics across various industries are key drivers in the global slewing bearing market. As manufacturers and logistics companies increasingly embrace automation and robotics in their operations, the demand for precise and reliable movement mechanisms becomes paramount. Slewing bearings play a pivotal role in enabling the rotation and movement of robotic arms, conveyor systems, and other automated equipment. In industries such as automotive manufacturing, e-commerce warehousing, and electronics assembly, robotics optimize production processes, enhance precision, and reduce the need for human labor. Slewing bearings ensure smooth and accurate motion, enabling robotic systems to efficiently handle intricate tasks. As businesses aim to streamline operations and boost productivity, there is an escalating demand for high-performance slewing bearings capable of withstanding continuous use and repetitive motion.

Moreover, the advent of Industry 4.0, characterized by the integration of data-driven technologies, artificial intelligence, and the Internet of Things (IoT), further underscores the importance of reliable motion control components. Smart factories and connected systems require intelligent slewing bearings capable of providing real-time data on performance, maintenance requirements, and predictive analytics. Manufacturers that can incorporate these smart features into their slewing bearings will gain a significant competitive edge in this dynamic market.

Renewable Energy Growth and Wind Turbine Installations

The global transition towards renewable energy sources, particularly wind power, serves as a significant catalyst for the slewing bearing market. Slewing bearings play a crucial role in facilitating the rotation of blades and nacelles in wind turbines, which are pivotal for wind energy generation. As governments and industries prioritize cleaner and more sustainable energy solutions, there has been a remarkable surge in wind energy installations worldwide. Consequently, this surge has created a substantial demand for reliable and durable slewing bearings. Countries like China, the United States, Germany, and India have made substantial investments in wind energy infrastructure to meet climate goals and reduce carbon emissions. Furthermore, offshore wind farms, harnessing stronger and more consistent winds, contribute to the increased demand for slewing bearings capable of withstanding challenging marine environments. The

integration of larger and more powerful wind turbines has necessitated advancements in slewing bearing design. These bearings must now handle higher loads, ensure smooth and continuous rotation, and require minimal maintenance to meet the rigorous demands of this expanding industry. Manufacturers that can engineer slewing bearings capable of meeting these stringent requirements will be well-positioned to capitalize on the ongoing renewable energy boom.

Key Market Challenges

Technological Advancements and Customization

The rapidly evolving technological landscape poses a significant challenge in the global slewing bearing market. As industries across various sectors demand increasingly precise, efficient, and adaptable solutions, slewing bearing manufacturers are confronted with the task of keeping pace with these advancements while ensuring cost-effectiveness and reliability. Incorporating advanced materials, such as corrosion-resistant alloys or self-lubricating coatings, and developing innovative designs to enhance load capacity and longevity necessitate extensive research and development. Moreover, as industries progressively seek customization to meet specific applications, manufacturers must strike a delicate balance between providing tailored solutions and maintaining economies of scale. Customization often entails intricate engineering, precise machining, and rigorous testing, which drive up production costs and lead times. Manufacturers that successfully navigate this challenge and offer technologically advanced, customizable solutions that fulfill the diverse requirements of industries will gain a competitive advantage in the market.

Counterfeit Products and Quality Assurance

The proliferation of counterfeit products poses a significant challenge to the global slewing bearing market. Substandard bearings that imitate authentic products not only compromise performance and reliability but also damage the reputation of legitimate manufacturers. Counterfeit bearings can lead to expensive machinery failures, safety risks, and increased maintenance costs for end-users. Ensuring quality assurance and traceability throughout the supply chain becomes crucial in combating counterfeit products. Manufacturers must implement stringent quality control processes, provide comprehensive documentation, and establish mechanisms for customers to authenticate their products. Furthermore, the global nature of the market presents difficulties in regulating and monitoring the distribution of counterfeit products. Effective resolution of this challenge necessitates collaborative efforts among manufacturers,

industry associations, and regulatory bodies.

Key Market Trends

Advancements in Material Science and Design

Advancements in material science and design are propelling innovation in the global slewing bearing market. As industries demand higher load capacities, improved durability, and enhanced performance, manufacturers are exploring novel materials and designs to meet these evolving requirements. Cutting-edge materials, such as high-strength steels and advanced polymers, are being employed to augment the load-bearing capacity of slewing bearings while reducing weight. These materials facilitate the development of compact and lightweight designs capable of handling heavy loads, making them suitable for applications in space-constrained or weight-sensitive environments. Furthermore, innovative bearing geometries and raceway designs are being investigated to optimize load distribution and minimize friction. These design enhancements contribute to increased efficiency, reduced wear, and extended operational life for slewing bearings. Manufacturers that invest in research and development to create more efficient and durable designs while considering industry-specific needs will remain at the forefront of this trend.

Segmental Insights

Rolling Element Insights

Ball segment is expected to dominate the market during the forecast period. The ball segment is a crucial element within the global slewing bearing market, constituting a significant subset of the overall market. Slewing bearings, also known as turntable bearings or slewing rings, are substantial bearings engineered to handle axial, radial, and moment loads. They facilitate rotational movement between different machinery or equipment components. The ball segment in the slewing bearing market specifically refers to slewing bearings that employ ball bearings as the rolling elements. Ball segment slewing bearings provide exceptional load-carrying capacity by distributing loads across multiple ball bearings. This design efficiently supports both axial and radial loads. The raceway design of ball segment slewing bearings ensures smooth and low-friction rotation. Compared to other rolling elements like rollers or gears, ball bearings have a more compact profile. This compact design proves advantageous in applications with limited space, such as machinery operating in confined working areas. The rolling motion of the ball segment between the inner and outer raceways facilitates smoother

rotation, reducing friction and wear. This characteristic is of utmost importance in applications that demand precise and continuous movement.

Gear Type Insights

External Gear segment is expected to dominate the market during the forecast period. Slewing bearings, also referred to as turntable bearings or slewing rings, play a vital role in facilitating rotational movement between different machinery or equipment components. The external gear segment of the slewing bearing market comprises bearings that incorporate external gears around the outer diameter of the bearing's ring. External gear slewing bearings offer enhanced load distribution by engaging with other components through the external gears. This design ensures even force and moment distribution, thereby improving the bearing's load-carrying capacity and efficiency. Moreover, the presence of external gears enables efficient transmission of rotational motion. By meshing these gears with a suitable driver, such as a motor or gear motor, the slewing bearing can be easily rotated, enabling precise and controlled movement. This torque transmission capability makes external gear slewing bearings suitable for applications requiring high torque, such as heavy machinery and equipment. Construction machinery, including excavators, tower cranes, and concrete pumps, extensively utilize external gear slewing bearings. The external gear mechanism enables controlled rotation, facilitating precise movement and positioning of heavy loads.

Regional Insights

Asia-Pacific is expected to dominate the market during the forecast period. The Asia Pacific region has played a crucial role in the growth and dynamics of the global slewing bearing market. Being a diverse and economically dynamic region, Asia Pacific has witnessed significant advancements in various industries that utilize slewing bearings, including construction, wind energy, material handling, and manufacturing. Rapid economic growth and industrialization in Asia Pacific have propelled the demand for infrastructure projects, energy generation, and manufacturing activities. These sectors heavily rely on slewing bearings for applications such as cranes, excavators, wind turbines, and industrial machinery. Major contributors to this growth include China, India, Japan, and South Korea, with their large-scale construction projects and wind energy installations bolstering the demand for slewing bearings. The construction industry in Asia Pacific has been expanding due to urbanization and increased investments in infrastructure. Slewing bearings play a critical role in heavy machinery used for construction purposes, including tower cranes, excavators, and concrete

pumps. As cities continue to expand and new structures are erected, the demand for construction machinery and, consequently, slewing bearings has witnessed a significant surge in the region.

Key Market Players

Schaeffler India Limited

The Timken Company

Antex corp

NSK Ltd.

La Leonessa S.p.A

Fenghe Slewing Bearing

Zhejiang Tianma Bearing Group Co., Ltd.

WaFangDian Rolling Bearing Manufacturing CO.,LTD.

Xuzhou Helin Slewing Bearing Co., Ltd.

Defontaine Group

Report Scope:

In this report, the Global Slewing Bearing Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Global Slewing Bearing Market, By Rolling Element:

Ball

Roller

Global Slewing Bearing Market, By Gear Type:

Internal Gear

Ungeared

External Gear

Global Slewing Bearing Market, By Design:

Cross Roller Slewing Ring Bearing

Single-row Four Point Contact Ball Slewing Ring Bearing

Three-row Roller Slewing Ring Bearings

Double-row Ball Slewing Ring Bearings

Others

Global Slewing Bearing Market, By Application:

Wind & Solar Energy

Aerospace & Defense

Medical

Industrial Machinery

Oil & Gas

Others

Global Slewing Bearing Market, By Region:

North America

Europe

South America

Middle East & Africa

Asia Pacific

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Slewing Bearing Market.

Available Customizations:

Global Slewing Bearing Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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