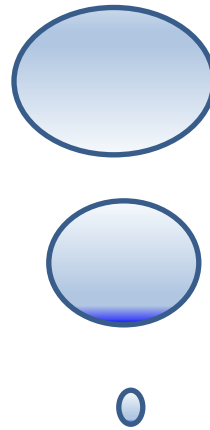




**Wind Turbine Bearings:
Market Shares, Strategies, and Forecasts,
Worldwide, 2018 to 2024**



www.wintergreenresearch.com
(781) 863-5078

WinterGreen Research, Inc.
Lexington, Massachusetts

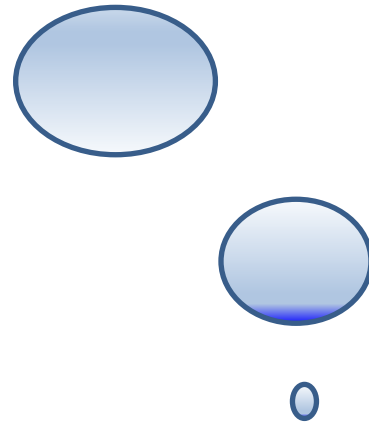
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CHECK OUT THESE KEY TOPICS

Wind Turbine Bearings: Lowering the Total Cost of Wind Turbine Construction and Implementation

Wind Turbine Bearings
Wind Generated Electricity
Wind Energy Bearings
Electricity Hub Distribution
Renewable Energy
Wind Mainstream Energy
Solution
Geared vs. Direct Wind
Technology

Onshore Wind Turbine
Bearings
Offshore Wind Turbine
Bearings
Vertical Wind Turbine
Bearings
Horizontal Wind Turbine
Bearings
Wind Turbine Scale

Wind Turbine Global Reach
Wind Turbine Local Presence
Digital Wind Turbine
Transformation
Global Warming
Increase in Energy Yield
boundaries

Wind Turbine Bearings: Technology Evolves To Provide Better Implementation of Renewable Energy

WinterGreen Research, INC.

**Wind Bearing Market Shares,
Dollars, Worldwide, 2016 and 2017**
In Millions of Dollars

	MM\$ 2016	% 2016	MM\$ 2017	% 2017
Company 1	XX	XX	XX	XX
Company 2	XX	XX	XX	XX
Company 3	XX	XX	XX	XX
Company 4	XX	XX	XX	XX
Company 5	XX	XX	XX	XX
Company 6	XX	XX	XX	XX
Company 7	XX	XX	XX	XX
Company 8	XX	XX	XX	XX
Company 9	XX	XX	XX	XX
Company 10	XX	XX	XX	XX
Company 11	XX	XX	XX	XX
Other	XX	XX	XX	XX
Total	XX	XX	XX	XX

Source: WinterGreen Research, Inc.

WinterGreen Research, INC.

Wind Turbine Bearings

Market Shares, Dollars, Worldwide, 2017			
In Millions of Dollars			
	MM\$	% \$	Units
Company 1	XX	XX	XX
Company 2	XX	XX	XX
Company 3	XX	XX	XX
Company 4	XX	XX	XX
Company 5	XX	XX	XX
Company 6	XX	XX	XX
Company 7	XX	XX	XX
Company 8	XX	XX	XX
Company 9	XX	XX	XX
Company 10	XX	XX	XX
Company 11	XX	XX	XX
Company 12	XX	XX	XX
Company 13	XX	XX	XX
Company 14	XX	XX	XX
Total (MM\$)	XX	XX	

Source: WinterGreen Research, Inc.

WinterGreen Research, INC.

Wind Roller Bearing Main Shaft Sets Market Shares, Units and Dollars Analysis, Worldwide, 2017

In Millions of Dollars

	MM\$ Roller Bearings High End	\$ per high end unit Shipment\$	% High End Bearings	MM\$ Roller Bearings Small/ Med	\$ per small/ medium Shipment\$	% Small/Med Bearings	\$MM Main Shaft	% Main Shaft	% Yaw, Pitch and Other	\$MM Total
Company 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 3	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 4	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 5	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 6	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 7	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 8	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 9	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 10	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Company 11	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Other	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Source: WinterGreen Research, Inc.

WinterGreen Research, INC.

Wind Roller Bearing Yaw, Pitch, and Other Sets Market Shares, Units and Dollars, Worldwide, 2017

In Millions of Dollars

	MM\$ Yaw, Pitch Bearings High end	\$ per high end unit Shipment\$	% High End Bearings	MM\$ Yaw, Pitch Bearings Small/ Med	\$ per small/ medium Shipment\$	% Small/Med Bearings	\$MM Yaw Pitch and Other	\$MM Total	test
Company 1	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 2	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 3	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 4	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 5	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 6	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 7	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 8	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 9	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 10	xx	xx	xx	xx	xx	xx	xx	xx	xx
Company 11	xx	xx	xx	xx	xx	xx	xx	xx	xx
Other	xx	xx	xx	xx	xx	xx	xx	xx	xx
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: WinterGreen Research, Inc.

Wind Roller Bearing Main Shaft Sets Market Shares, Units Analysis, Worldwide, 2017

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Wind Turbine Market Shares,
GW Output, Worldwide, 2012 to 2017
In Gigawatts

	GW 2017	GW 2016	GW 2015	GW 2014	GW 2013	GW 2012	Installed GW 2017
Vestas	xx	xx	xx	xx	xx	xx	xx
% growth	xx	xx	xx	xx	xx	xx	xx
GE Wind Turbines	xx	xx	xx	xx	xx	xx	xx
% growth	xx	xx	xx	xx	xx	xx	xx
Siemens Gamesa	xx	xx	xx	xx	xx	xx	xx
% growth	xx	xx	xx	xx	xx	xx	xx
Other	xx	xx	xx	xx	xx	xx	xx
% growth	xx	xx	xx	xx	xx	xx	xx
Total	xx	xx	xx	xx	xx	xx	xx
% growth							

Source: WinterGreen Research, Inc.

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WinterGreen Research, INC.

Wind Turbine Market Shares, 2017 to 2024

Turbines Installed, Worldwide,

Turbines Shipped, Worldwide

In Gigawatts

	Installed 2017	Installed 2016	Installed 2015	Installed 2014	Installed 2013	Installed 2012	Installed 2011	Installed 2010
	2018	2019	2020	2021	2022	2023	2024	GW
	# Turbines	# Turbines	# Turbines	# Turbines	# Turbines	# Turbines	# Turbines	2024
Company 1	XX	XX	XX	XX	XX	XX	XX	
Company 2	XX	XX	XX	XX	XX	XX	XX	
Company 3	XX	XX	XX	XX	XX	XX	XX	
Other	XX	XX	XX	XX	XX	XX	XX	
Total	XX	XX	XX	XX	XX	XX	XX	

Note: Industry's bread-and-butter is 1.5- and 2-megawatt wind turbines

Source: WinterGreen Research, Inc.

WinterGreen Research, INC.

Wind Turbine Market Shares, Average Dollars per Turbine Shipped, Worldwide, In Millions of Dollars

	Shipped 2017 Average \$ per Turbine
Company 1	XX
Company 2	XX
Company 3	XX
Other	XX
Total	XX

Note: Industry's bread-and-butter is 1.5- and 2-megawatt wind turbines

Source: WinterGreen Research, Inc.

Wind Turbine Market Shares, Onshore, Offshore Dollars, Worldwide, 2012 - 2024 In Millions of Dollars

	% 2017 2018	MM\$ 2017 2019	MM\$ 2016 2020	MM\$ 2015 2021	MM\$ 2014 2022	MM\$ 2013 2023	MM\$ 2012 2024
Onshore	XX	XX	XX	XX	XX	XX	XX
Offshore	XX	XX	XX	XX	XX	XX	XX
Total MM\$	XX	XX	XX	XX	XX	XX	XX

Source: WinterGreen Research, Inc.

WinterGreen Research, INC.

Wind Turbine Market Shares, Vertical and Horizontal
 Dollars, Worldwide, 2012 - 2024
 In Millions of Dollars

	%	MM\$	MM\$	MM\$	MM\$	MM\$	MM\$
	2017	2017	2016	2015	2014	2013	2012
	2018	2019	2020	2021	2022	2023	2024
Vertical	xx	xx	xx	xx	xx	xx	xx
Horizontal	xx	xx	xx	xx	xx	xx	xx
Total MM\$	xx	xx	xx	xx	xx	xx	xx

Source: WinterGreen Research, Inc.

Wind Turbine Bearing Regional Analysis

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WinterGreen Research, INC.

Wind Turbine Regional Analysis

Dollars and Percent, 2012 - 2017

In Percent

In Millions of Dollars

	2017 2018	2016 2019	2015 2020	2014 2021	2013 2022	2012 2023	2024
Total MM\$	xx	xx	xx	xx	xx	xx	xx
Americas % of total	xx	xx	xx	xx	xx	xx	xx
% of segment	xx	xx	xx	xx	xx	xx	xx
United States	xx	xx	xx	xx	xx	xx	xx
Canada	xx	xx	xx	xx	xx	xx	xx
Latin America	xx	xx	xx	xx	xx	xx	xx
Mexico	xx	xx	xx	xx	xx	xx	xx
Brazil	xx	xx	xx	xx	xx	xx	xx
Europe % of total	xx	xx	xx	xx	xx	xx	xx
% of segment	xx	xx	xx	xx	xx	xx	xx
Germany	xx	xx	xx	xx	xx	xx	xx
France	xx	xx	xx	xx	xx	xx	xx
UK	xx	xx	xx	xx	xx	xx	xx
Russia	xx	xx	xx	xx	xx	xx	xx
Italy	xx	xx	xx	xx	xx	xx	xx
Netherlands	xx	xx	xx	xx	xx	xx	xx
Asia / ME % of total	xx	xx	xx	xx	xx	xx	xx
% of segment	xx	xx	xx	xx	xx	xx	xx
China	xx	xx	xx	xx	xx	xx	xx
India	xx	xx	xx	xx	xx	xx	xx
Korea	xx	xx	xx	xx	xx	xx	xx
Japan	xx	xx	xx	xx	xx	xx	xx
Indonesia	xx	xx	xx	xx	xx	xx	xx
Saudi Arabia	xx	xx	xx	xx	xx	xx	xx
Israel	xx	xx	xx	xx	xx	xx	xx
UAE	xx	xx	xx	xx	xx	xx	xx
Iran	xx	xx	xx	xx	xx	xx	xx
Africa % of total	xx	xx	xx	xx	xx	xx	xx
% of segment	xx	xx	xx	xx	xx	xx	xx
South Africa	xx	xx	xx	xx	xx	xx	xx
Nigeria	xx	xx	xx	xx	xx	xx	xx
Egypt	xx	xx	xx	xx	xx	xx	xx
Algeria	xx	xx	xx	xx	xx	xx	xx
Total (MM\$)	xx	xx	xx	xx	xx	xx	xx

Source: WinterGreen Research, Inc.

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**Wind Turbine Bearing: Market Shares, Strategies, and Forecasts, Worldwide,
2018-2024**

LEXINGTON, Massachusetts (August 29, 2018) – WinterGreen Research announces that it has published a new study Wind Bearings: Market Shares, Strategy, and Forecasts, Worldwide, 2018 to 2024. The 2018 study has 427 pages, 256 tables and figures. The vendors in the wind bearings industry have invested in high-quality technology and processes to develop leading edge wind turbine capability a being implemented in the on shore and offshore sites.

There are a number of different bearing designs that can be found in the gearbox of a wind turbine, but most often, various combinations of CRBs, TRBs and ball bearings are used.

If the bearings are bigger, the bearings last longer, but making the bearings larger increases friction, which decreases turbine efficiency. Current bearings have a replacement cost that is too high. What we need is a quantum leap in bearing technology – bearing materials which are at least ten times tougher than current materials are evolving.

According to Susan Eustis, leader of the team that prepared the research, “Wind turbine bearings are mission-critical devices. They function inside MW-class turbines, endure dynamic and unpredictable stresses to support movement inside the system Stress is causing untimely, expensive repairs for many wind turbines. Reliability of mainshaft bearings is an issue. Recent turbine failures have been dramatic, investigation has centered on SRBs: Self-aligning Roller Bearings. Solutions for retrofitting single self-aligning roller bearings (SRBs) in a three-point mount arrangement, including wear-resistant SRBs and a pre-loaded TRB design are in play.”

The global wind turbine bearing market is expected to be \$9.6 billion in 2024 driven by the availability and cost effectiveness of new, stronger, more efficient bearings. Next generation bearings permit wind turbines to product more power, operate in a less expensive manner, and last longer before bearing replacement. The adoption of widespread use of new bearings makes the turbine devices an optimized choice for renewable energy generation.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, electronics.ca, Bloomberg, and Thompson Financial.

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WinterGreen Research is positioned to help customers facing challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust wintergreen research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

Key Words: wind turbine bearings, Main bearings, slewing bearings, on-shore turbine bearings, off shore turbine bearings, bearing materials, renewable energy generation, wear resistant bearings, ,

Wind Turbine Bearings: Market Shares, Strategies, and Forecasts, Worldwide, 2018 to 2024

Report Methodology

This is the 805th report in a series of primary market research reports that provide forecasts in technology, communications, telecommunications, the Internet, computer, software, telephone equipment, health equipment, and energy. Automated process and significant growth potential are priorities in topic selection. The project leaders take direct responsibility for writing and preparing each report. They have significant experience preparing industry studies. Forecasts are based on primary research and proprietary data bases.

The primary research is conducted by talking to customers, distributors and companies. The survey data is not enough to make accurate assessment of market size, so WinterGreen Research looks at the value of shipments and the average price to achieve market assessments. Our track record in achieving accuracy is unsurpassed in the industry. We are known for being able to develop accurate market shares and projections. This is our specialty.

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The analyst process is concentrated on getting good market numbers. This process involves looking at the markets from several different perspectives, including vendor shipments. The interview process is an essential aspect as well. We do have a lot of granular analysis of the different shipments by vendor in the study and addenda prepared after the study was published if that is appropriate.

Forecasts reflect analysis of the market trends in the segment and related segments. Unit and dollar shipments are analyzed through consideration of dollar volume of each market participant in the segment. Installed base analysis and unit analysis is based on interviews and an information search. Market share analysis includes conversations with key customers of products, industry segment leaders, marketing directors, distributors, leading market participants, opinion leaders, and companies seeking to develop measurable market share.

Over 200 in depth interviews are conducted for each report with a broad range of key participants and industry leaders in the market segment. We establish accurate market forecasts based on economic and market conditions as a base. Use input/output ratios, flow charts, and other economic methods to quantify data. Use in-house analysts who meet stringent quality standards.

Interviewing key industry participants, experts and end-users is a central part of the study. Our research includes access to large proprietary databases. Literature search includes analysis of trade publications, government reports, and corporate literature.

Findings and conclusions of this report are based on information gathered from industry sources, including manufacturers, distributors, partners, opinion leaders, and users. Interview data was combined with information gathered through an extensive review of internet and printed sources such as trade publications, trade associations, company literature, and online databases. The projections contained in this report are checked from top down and bottom up analysis to be sure there is congruence from that perspective.

The base year for analysis and projection is 2017. With 2017 data and several years prior to that baseline, market projections were developed for 2018 through 2023. These projections are based on a combination of a consensus among the opinion leader contacts interviewed combined with understanding of the key market drivers and their impact from a historical and analytical perspective.

The analytical methodologies used to generate the market estimates are based on penetration analyses, similar market analyses, and delta calculations to supplement independent and dependent variable analysis. All analyses are displaying selected descriptions of products and services.

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This research includes reference to an ROI model that is part of a series that provides IT systems financial planners access to information that supports analysis of all the numbers that impact management of a product launch or large and complex data center. The methodology used in the models relates to having a sophisticated analytical technique for understanding the impact of workload on processor consumption and cost.

WinterGreen Research has looked at the metrics and independent research to develop assumptions that reflect the actual anticipated usage and cost of systems. Comparative analyses reflect the input of these values into models.

The variables and assumptions provided in the market research study and the ROI models are based on extensive experience in providing research to large enterprise organizations and data centers. The ROI models have lists of servers from different manufacturers, Systems z models from IBM, and labor costs by category around the world. This information has been developed from WinterGreen research proprietary data bases constructed as a result of preparing market research studies that address the software, energy, healthcare, telecommunications, and hardware businesses.

YOU MUST HAVE THIS STUDY

Wind Turbine Bearings: Market Shares, Strategies, and Forecasts, Worldwide, 2018-2024

Table of Contents

Wind Turbine: Executive Summary

The study is designed to give a comprehensive overview of the Wind Turbines market segment. Research represents a selection from the mountains of data available of the most relevant and cogent market materials, with selections made by the most senior analysts. Commentary on every aspect of the market from independent analysts creates an independent perspective in the evaluation of the market. In this manner the study presents a comprehensive overview of what is going on in this market, assisting managers with designing market strategies likely to succeed.

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ABOUT THE COMPANY

WinterGreen Research, research strategy relates to identifying market trends through reading and interviewing opinion leaders. By using analysis of published materials, interview material, private research, detailed research, social network materials, blogs, and electronic analytics, the market size, shares, and trends are identified. Analysis of the published materials and interviews permits WinterGreen Research senior analysts to learn a lot more about markets. Discovering, tracking, and thinking about market trends is a high priority at WinterGreen Research. As with all research, the value proposition for competitive analysis comes from intellectual input.

WinterGreen Research, founded in 1985, provides strategic market assessments in telecommunications, communications equipment, health care, Software, Internet, Energy Generation, Energy Storage, Renewable energy, and advanced computer technology.

Industry reports focus on opportunities that expand existing markets or develop major new markets. The reports access new product and service positioning strategies, new and evolving technologies, and technological impact on products, services, and markets. Innovation that drives markets is explored. Market shares are provided. Leading market participants are profiled, and their marketing strategies, acquisitions, and strategic alliances are discussed. The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in telecommunications and advanced computer technology markets for over 30 years.

The studies provide primary analytical insight about the market participants. By publishing material relevant to the positioning of each company, readers can look at the basis for analysis. By providing descriptions of each major participant in the market, the reader is not dependent on analyst assumptions, the information backing the assumptions is provided, permitting readers to examine the basis for the conclusions.

WinterGreen Research is positioned to help customers facing challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust wintergreen research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

About The Principal Authors

Susan Eustis, President, co-founder of WinterGreen Research, is a senior analyst. She has done research in communications, healthcare equipment, and computer markets and applications. She holds several patents in microcomputing and parallel processing. She has the original patents in electronic voting machines. She has new patent applications in format varying, multiprocessing, electronic voting, and oxygen management. She is the author of recent studies of the drone and robot marketing strategies, Internet equipment, biometrics, biomaterials, a study of Internet Equipment, Artificial Intelligence, IoT, Worldwide Telecommunications Equipment, Top Ten Telecommunications, Digital Loop Carrier, Web Hosting, Web Services, and Application Integration markets. Ms. Eustis is a graduate of Barnard College. Ms. Eustis was named Top Woman CEO in 2012 by Who's Who Worldwide. She was named Top Woman Market Research Analyst in 2012, 2013, 2014, 2015, and 2016. She has been twice featured on the cover of the Women of Distinction magazine. She was cited in a recent Time Magazine article and major media articles on Youth Sports market growth. Recently she has been quoted by The New York Times, the Wall Street Journal, HBO, the London Times and many others on that topic. Bloomberg, Barron's, the Wall Street Journal, and others quoted the studies on blockchain and cybercurrency.

About the WinterGreen Research Team: The WinterGreen Research Team is comprised of senior analysts that prepare the market research and analysis that is offered to the client and developed using an iterative process to achieve a final study. Typical projects include providing market/viability research. The team can look at how drones can be applied to critical infrastructures safety, including: type of market existing, Barriers, Forecast demand and competitors, SWOT and competitive advantages, Price Analysis, product design recommendations (marketing orientation).

Research is typically for many different regions or localities, for example EU countries including Spain, UK, Nordic, Germany, and France. Typical projects profile the United States and areas of Asia. It is common to three representative countries from South America, Brazil, Argentina, Chile, and Mexico. Representative countries from Asia APAC typically include Japan, China, India, and Australia.

Critical infrastructure safety, including: type of market existing, barriers to entry and to faithful execution of product provision, forecast of demand, market share, SWOT, competitive advantage of major competitors, identification of new technologies and new companies, price performance analysis, product design recommendations, and marketing considerations are typical topics covered.