

Global Markets, Technologies and Devices for Energy Harvesting

<https://marketpublishers.com/r/G6AAC4CD34CEN.html>

Date: June 2023

Pages: 179

Price: US\$ 5,500.00 (Single User License)

ID: G6AAC4CD34CEN

Abstracts

Report Scope:

The report presents forecasts for energy harvesters for 2023 through 2028, with a base year of 2022, on a value basis. Market forecasts in terms of value are presented in U.S. dollars. It is important to note that energy harvesters can power wireless sensor nodes, which will ship by billions in the future. Energy harvesters will power several additional device categories that will not be as prolific in number as wireless nodes but will also experience tremendous growth.

Energy harvesting for this report is restricted to non-grid-connected applications and excludes power plants that use solar, wind and hydroelectric sources.

The forecasts are further broken down by energy source, end application and region. The report covers the following energy sources -

Solar and photovoltaic.

Thermal.

Vibration, displacement and mechanical (including biomechanical and electrostatic, also occasionally referred to simply as mechanical).

Radiation and electromagnetic.

Chemical.

End-use application categories include -

Telecommunications.

Building, construction and home automation.

Energy exploration, generation and distribution.

Environment and agriculture.

Industrial and automotive.

Defense.

Retail and logistics.

Medical.

The regional breakdown focuses on the following regions -

Americas.

Asia-Pacific (APAC).

Europe, the Middle East and Africa (EMEA).

The Summary and Highlights chapter provides a regional breakdown of the market value for energy harvesters. The Market Introduction chapter introduces energy harvesting and its definition, history, drivers and challenges. It also provides an overview of the larger market and breaks it down by the key characteristics of principal energy sources and application categories.

The Market Breakdown by Energy Source and the Market Breakdown by Application chapters provide an in-depth picture of energy harvester business opportunities. In terms of value, the energy harvester market is broken down by energy source and then by application category. The market for each energy source is in turn broken down by end-use application category. The market for each application category is in turn broken

down by energy source and region.

The Competitive Landscape chapter and the Company Profiles chapters identify the major categories of stakeholders involved in the development and commercialization of energy harvester technology. The Patent Analysis chapter covers innovations that impact energy harvesters. Patents are categorized by energy sources and areas of value, and they are analyzed based on years of issue, assignee countries and assignee organizations.

Report Includes:

37 data tables and 18 additional tables

An up-to-date overview and analysis of the global markets for energy harvesting devices and technologies

Analyses of the global market trends, with historic market revenue data (sales figures) for 2022, estimates for 2023, and projections of compound annual growth rates (CAGRs) through 2028

Estimation of the actual market size and revenue forecast for the global energy harvesting market in USD million values, and corresponding market share analysis based on the energy source, application, and region

Discussion of the major growth drivers, opportunities and challenges, technology updates, and the impact of macroeconomic variables influencing the market for energy harvesters as a basis for projecting demand in the next few years (2023-2028)

Review of the key patent grants and recent patent applications on energy harvesting technologies, with emphasis on emerging/upcoming technologies and new developments within the industry

Insight into the industry structure for energy harvesters, competitive aspects of each product segments, increasing R&D investments, market growth strategies, and company revenue share analysis

Identification of the major market players, their global rankings, and analysis of the competitive landscape based on recent developments and segmental

revenues

Descriptive company profiles of the leading global players, including BAE Systems, EnOcean (Siemens), Emerson, Honeywell Intl., Laird PLC, Texas Instruments Inc., and Textron Inc.

Contents

CHAPTER 1 INTRODUCTION

Overview
Study Goals and Objectives
Reasons for Doing This Study
What's New in This Update?
Scope of Report
Intended Audience
Research Methodology
Information Sources
Geographic Breakdown
Analyst's Credentials
BCC Custom Research
Related BCC Research Reports

CHAPTER 2 SUMMARY AND HIGHLIGHTS

Market Overview

CHAPTER 3 MARKET OVERVIEW

Introduction
Definition of Energy Harvesting
Principal Objective of Energy Harvesting
Mechanics of Energy Conversion
Energy Capture and Conversion
Energy Storage and Management

CHAPTER 4 MARKET DYNAMICS

Overview
Market Drivers
High Efficiency and Significant Cost Reductions in Solar and PV Systems
Carbon Footprint Reduction
Growing Implementation of Internet of Things (IoT)
Increased Awareness
Improvements in Transducer Materials

Miniaturization of Energy Harvester Circuitry
Improvements in Heat and Temperature Resistance
Abundance of Sources
Market Challenges
Damage to Energy Harvesting Devices Due to Climate Conditions
Low Energy Extraction and Storage
Porter's Five Forces Analysis
SWOT Analysis
Impact of COVID-19 on Global Market for Energy Harvesting
Impact of the Russia-Ukraine War on the Energy Harvesting Industry
Climate Policies and Regulation
Value Chain Analysis
Energy-Conversion Specialists
Power Management Circuit Developers
Device Manufacturers/OEMs
Academic and Research Institutions

CHAPTER 5 MARKET BY ENERGY SOURCE

Overview
Thermal
Market Size and Forecast
Vibration, Displacement and Mechanical Sources (Including Biomechanical and Electrostatic)
Market Size and Forecast
Solar and Photovoltaic
Market Size and Forecast
Radiation and Electromagnetic
Market Size and Forecast
Chemical
Market Size and Forecast

CHAPTER 6 MARKET BY APPLICATION

Overview
Automotive
Key Applications
Market Size and Forecast
Building, Construction and Home Automation

Key End Uses
Market Size and Forecast
Defense
Key Applications
Market Size and Forecast
Medical
Key Applications
Market Size and Forecast
Environment and Agriculture
Key Applications
Market Size and Forecast
Telecommunications
Key End Uses
Market Size and Forecast
Retail and Logistics
Key Applications
Market Size and Forecast
Energy Exploration, Generation and Distribution
Key Applications
Market Size and Forecast
Industrial
Key Applications
Market Size and Forecast

CHAPTER 7 MARKET BY REGION

Overview
Americas Market for Energy Harvesting
Asia-Pacific Market for Energy Harvesting
EMEA Market for Energy Harvesting

CHAPTER 8 EMERGING TECHNOLOGIES AND DEVELOPMENTS

Overview
Flexible Piezoelectric Generators
Wearable Thermoelectric Generators (TEGs)
Use of Sensors in Wearables
Growing Focus on Green Energy
Role of Wireless Sensors

Power Management in Wireless Sensors
Waveforms and Standards
IEEE 802.15.4 Standard
Recent Developments

CHAPTER 9 PATENT ANALYSIS

Introduction
Trends by Category
Biological Energy Harvesters
Chemical or Electrolytic Energy Harvesters
Communication Techniques Employed by Devices Powered with Energy Harvesting
Electrical Energy Harvesters
Energy Harvester-Based Sensor Development and Component Assembly
Energy Harvester Material Development and Processing
Energy Harvester Power Management
Hydraulic, Ocean and Fluid Flow Energy Harvesters
Kinetic Energy Harvesters
Mechanical and Vibration Energy Harvesters
Photovoltaic Solar Light Energy Harvesters
Piezoelectric Energy Harvesters
Radiation/Electromagnetic Energy Harvesters
Thermal Energy Harvesters
Trends by Year
Trends by Country
Trends by Assignee

CHAPTER 10 COMPETITIVE INTELLIGENCE

Overview
Ranking of Top Companies
List of Market Players

CHAPTER 11 COMPANY PROFILES

ADVANCED LINEAR DEVICES INC.
AMBIENT MICRO
ANALOG DEVICES INC.
ARVENI

BAE SYSTEMS
CITIZEN WATCH CO., LTD.
CYMBET CORP.
DIGI INTERNATIONAL INC.
EMERSON ELECTRIC CO.
ENOCEAN GMBH
ENVISION SOLAR
EUROSUISSE INTERNATIONAL LTD.
FERRO SOLUTIONS
FREESCALE (NXP SEMICONDUCTORS)
FUTURE ELECTRONICS
G24 POWER LTD.
GAS SENSING SOLUTIONS LTD.
HONEYWELL INTERNATIONAL INC.
IXYS/LITTLEFUSE INC.
KCF TECHNOLOGIES
KINETRON
LAIRD PLC
LEVITON MANUFACTURING CO. INC.
LUMEDYNE TECHNOLOGIES
MARLOW INDUSTRIES
MICROPELT
MICROSEMI CORP.
MICROSTRAIN INC.
MIDE TECHNOLOGY CORP.
MOOG INC.
MORGAN TECHNICAL CERAMICS
PERPETUA POWER SOURCE TECHNOLOGIES INC.
PERPETUUM LTD.
PHONONIC INC.
POWERFILM SOLAR INC.
POWERCAST CORP.
SEIKO WATCH CORP.
SIEMENS AG
SMART MATERIAL CORP.
SOLARONIX SA
STMICROELECTRONICS
TELLUREX CORP.
TEXAS INSTRUMENTS INC. (TI)

TEXTRON INC.
THALES GROUP
TRANSENSE TECHNOLOGIES PLC
QORVO INC.

CHAPTER 12 APPENDIX: ACRONYMS

List Of Tables

LIST OF TABLES

Summary Table: Global Market for Energy Harvesters, by Region, Through 2028

Table 1: Impact of Market Dynamics

Table 2: Policy Changes for Renewable Energy Generation Targets

Table 3: GHG Reduction Targets, by Country or Region, 2020

Table 4: CO2 Emissions from Fossil Fuels, by Country, 2020

Table 5: Efficiency of Different Energy Harvesting Sources

Table 6: Global Market for Energy Harvesting, by Energy Source, Through 2028

Table 7: Global Market for Thermal Energy Harvesting, by Application, Through 2028

Table 8: Global Market for Thermal Energy Harvesting, by Region, Through 2028

Table 9: Global Market for Vibration, Displacement and Mechanical Energy Harvesting, by Application, Through 2028

Table 10: Global Market for Vibration, Displacement and Mechanical Energy Harvesting, by Region, Through 2028

Table 11: Global Market for Renewable Energy, by Technology, 2021 and 2022

Table 12: Global Market for Solar and Photovoltaic Energy Harvesting, by Application, Through 2028

Table 13: Global Market for Solar and Photovoltaic Energy Harvesting, by Region, Through 2028

Table 14: Global Market for Radiation and Electromagnetic Energy Harvesting, by Application, Through 2028

Table 15: Global Market for Radiation and Electromagnetic Energy Harvesting, by Region, Through 2028

Table 16: Global Market for Chemical Energy Harvesting, by Application, Through 2028

Table 17: Global Market for Chemical Energy Harvesting, by Region, Through 2028

Table 18: Global Market for Energy Harvesting, by Application, Through 2028

Table 19: Global Market for Energy Harvesters Used in Automotive Applications, by Region, Through 2028

Table 20: IoT Applications with Energy Harvesting Technology for Building, Construction and Home Automation

Table 21: Global Market for Energy Harvesting in Building, Construction and Home Automation, by Region, Through 2028

Table 22: Global Market for Energy Harvesters used in Defense, by Region, Through 2028

Table 23: Global Market for Energy Harvesting in Medical Applications, by Region, Through 2028

Table 24: IoT Applications with Energy Harvesting Technology for Environment and Agriculture

Table 25: Global Market for Energy Harvesting in Environment and Agriculture, by Region, Through 2028

Table 26: Global Market for Energy Harvesting in Telecommunications, by Region, Through 2028

Table 27: Global Market for Energy Harvesting in Retail and Logistics, by Region, Through 2028

Table 28: Global Market for Energy Harvesting in Energy Exploration, Generation and Distribution, by Region, Through 2028

Table 29: Global Market for Energy Harvesting in Industrial Application, by Region, Through 2028

Table 30: Global Market for Energy Harvesting, by Region, Through 2028

Table 31: Americas Market for Energy Harvesting, by Application, Through 2028

Table 32: Americas Market for Energy Harvesting, by Energy Source, Through 2028

Table 33: Americas Market for Energy Harvesting, by Country, Through 2028

Table 34: Asia-Pacific Market for Energy Harvesting, by Application, Through 2028

Table 35: Asia-Pacific Market for Energy Harvesting, by Energy Source, Through 2028

Table 36: Asia-Pacific Market for Energy Harvesting, by Country, Through 2028

Table 37: EMEA Market for Energy Harvesting, by Application, Through 2028

Table 38: EMEA Market for Energy Harvesting, by Energy Source, Through 2028

Table 39: EMEA Market for Energy Harvesting, by Country, Through 2028

Table 40: Assignees with Three or More U.S. Patents on Energy Harvesting Technologies, 1976–May 2018

Table 41: Energy Harvesting Technologies, BAE Systems

Table 42: Energy Harvesting Technologies, Boeing

Table 43: Energy Harvesting Technologies, EnOcean

Table 44: Energy Harvesting Technologies, Honeywell Corp.

Table 45: Energy Harvesting Technologies, Intel Corp.

Table 46: Energy Harvesting Technologies, Lockheed Martin

Table 47: Energy Harvesting Technologies, Halliburton Energy Services Inc.

Table 48: Energy Harvesting Technologies, Microstrain Inc.

Table 49: Energy Harvesting Technologies, Schlumberger Technology

Table 50: Energy Harvesting Technologies, Texas Instruments Inc.

Table 51: Energy Harvesting Technologies, Veryst Engineering LLC

Table 52: Ranking of Top Companies: Global Energy Harvesting Market

Table 53: List of Market Players: Global Energy Harvesting Market

Table 54: Acronyms Used in the Global Energy Harvesting Market

List Of Figures

LIST OF FIGURES

Summary Figure: Global Market Shares of Energy Harvesters, by Region, 2022

Figure 1: Five Blocks of Energy Harvesting System

Figure 2: Energy Harvesting Workflow

Figure 3: Mechanism of Energy Harvesting Techniques

Figure 4: Architecture of Energy Harvesting Devices for Storage

Figure 5: Architecture of Energy Harvesting Devices for Direct Use

Figure 6: Global Number of IoT Connected Devices, 2022-2028

Figure 7: Porter's Five Forces Analysis: Market for Energy Harvesting

Figure 8: Market for Energy Harvesting: SWOT Analysis

Figure 9: Impact of COVID-19 on the Market for Energy Harvesting

Figure 10: Global Crude Oil Price Trends, 2015-2023

Figure 11: Annual CO2 Emissions, by Fossil Fuels, 2015-2021

Figure 12: Market for Energy Harvesting: Value Chain Analysis

Figure 13: Global Market Shares of Energy Harvesting, by Energy Source, 2022

Figure 14: Global Market Shares of Energy Harvesting, by Energy Source, 2028

Figure 15: Global Market Shares of Thermal Energy Harvesting, by Application, 2022

Figure 16: Global Market Shares of Thermal Energy Harvesting, by Application, 2028

Figure 17: Global Market Shares of Thermal Energy Harvesting, by Region, 2022

Figure 18: Global Market Shares of Thermal Energy Harvesting, by Region, 2028

Figure 19: Global Market Shares of Vibration, Displacement and Mechanical Energy Harvesting, by Application, 2022

Figure 20: Global Market Shares of Vibration, Displacement and Mechanical Energy Harvesting, by Application, 2028

Figure 21: Global Market Shares of Vibration, Displacement and Mechanical Energy Harvesting, by Region, 2022

Figure 22: Global Market Shares of Vibration, Displacement and Mechanical Energy Harvesting, by Region, 2028

Figure 23: Global Market Shares of Solar and Photovoltaic Energy Harvesting, by Application, 2022

Figure 24: Global Market Shares of Solar and Photovoltaic Energy Harvesting, by Application, 2028

Figure 25: Global Market Shares of Solar and Photovoltaic Energy Harvesting, by Region, 2022

Figure 26: Global Market Shares of Solar and Photovoltaic Energy Harvesting, by Region, 2028

Figure 27: Global Market Shares of Radiation and Electromagnetic Energy Harvesting, by Application, 2022

Figure 28: Global Market Shares of Radiation and Electromagnetic Energy Harvesting, by Application, 2028

Figure 29: Global Market Shares of Radiation and Electromagnetic Energy Harvesting, by Region, 2022

Figure 30: Global Market Shares of Radiation and Electromagnetic Energy Harvesting, by Region, 2028

Figure 31: Global Market Shares of Chemical Energy Harvesting, by Application, 2022

Figure 32: Global Market Shares of Chemical Energy Harvesting, by Application, 2028

Figure 33: Global Market Shares of Chemical Energy Harvesting, by Region, 2022

Figure 34: Global Market Shares of Chemical Energy Harvesting, by Region, 2028

Figure 35: Global Market Shares of Energy Harvesting, by Application, 2022

Figure 36: Global Market Shares of Energy Harvesting, by Application, 2028

Figure 37: Global Market Shares of Energy Harvesters Used in Automotive Applications, by Region, 2022 and 2028

Figure 38: Global Market Shares of Energy Harvesting in Building, Construction and Home Automation, by Region, 2022 and 2028

Figure 39: Global Market Shares of Energy Harvesters Used in Defense, by Region, 2022 and 2028

Figure 40: Global Market Shares of Energy Harvesters Used in Medical Applications, by Region, 2022 and 2028

Figure 41: Global Market Shares of Energy Harvesting in Environment and Agriculture, by Region, 2022 and 2028

Figure 42: Global Market Shares of Energy Harvesting in Telecommunications, by Region, 2022 and 2028

Figure 43: Global Market Shares of Energy Harvesters Used in Retail and Logistics, by Region, 2022 and 2028

Figure 44: Global Market Shares of Energy Harvesting in Energy Exploration, Generation and Distribution, by Region, 2022 and 2028

Figure 45: Global Market Shares of Energy Harvesting in Industrial Application, by Region, 2022 and 2028

Figure 46: Global Market Shares of Energy Harvesting, by Region, 2022

Figure 47: Global Market Shares of Energy Harvesting, by Region, 2028

Figure 48: Americas Market for Energy Harvesting, 2022-2028

Figure 49: Americas Market Shares of Energy Harvesting, by Application, 2022

Figure 50: Americas Market Shares of Energy Harvesting, by Application, 2028

Figure 51: Americas Market Shares of Energy Harvesting, by Energy Source, 2022

Figure 52: Americas Market Shares of Energy Harvesting, by Energy Source, 2028

- Figure 53: Americas Market Shares of Energy Harvesting, by Country, 2022
- Figure 54: Americas Market Shares of Energy Harvesting, by Country, 2028
- Figure 55: Asia-Pacific Market for Energy Harvesting, 2022-2028
- Figure 56: Asia-Pacific Market Shares of Energy Harvesting, by Application, 2022
- Figure 57: Asia-Pacific Market Shares of Energy Harvesting, by Application, 2028
- Figure 58: Asia-Pacific Market Shares of Energy Harvesting, by Energy Source, 2022
- Figure 59: Asia-Pacific Market Shares of Energy Harvesting, by Energy Source, 2028
- Figure 60: Asia-Pacific Market Shares of Energy Harvesting, by Country, 2022
- Figure 61: Asia-Pacific Market Shares of Energy Harvesting, by Country, 2028
- Figure 62: EMEA Market for Energy Harvesting, 2022-2028
- Figure 63: EMEA Market Shares of Energy Harvesting, by Application, 2022
- Figure 64: EMEA Market Shares of Energy Harvesting, by Application, 2028
- Figure 65: EMEA Market Shares of Energy Harvesting, by Energy Source, 2022
- Figure 66: EMEA Market Shares of Energy Harvesting, by Energy Source, 2028
- Figure 67: EMEA Market Shares of Energy Harvesting, by Country, 2022
- Figure 68: EMEA Market Shares of Energy Harvesting, by Country, 2028

I would like to order

Product name: Global Markets, Technologies and Devices for Energy Harvesting

Product link: <https://marketpublishers.com/r/G6AAC4CD34CEN.html>

Price: US\$ 5,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G6AAC4CD34CEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970