

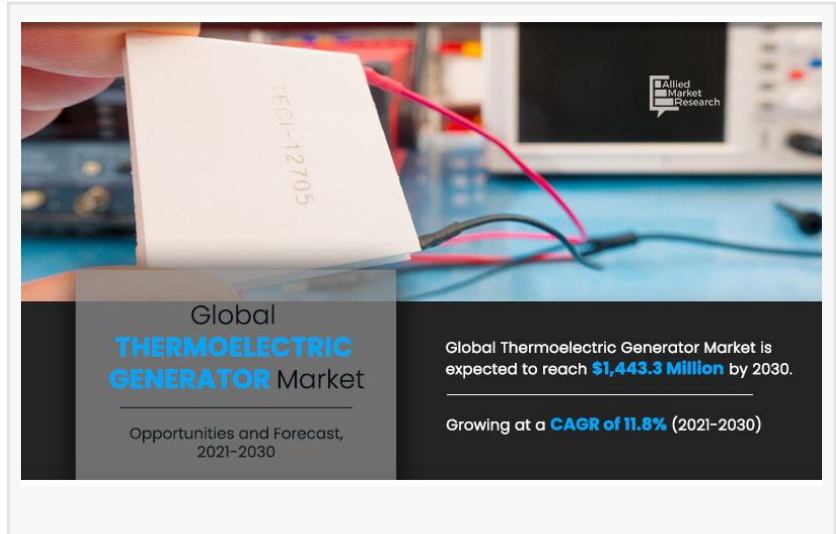
# Thermoelectric Generator Market Surges Toward \$1.44 Billion by 2030: Waste Heat Recovery, Aerospace Drive Growth

□□ *Global Thermoelectric Generator Market Accelerates with 11.8% CAGR, Fueled by Waste Heat Recovery & Aerospace Demand* □

WILMINGTON, DE, UNITED STATES,  
August 6, 2025 /EINPresswire.com/ --

The global [thermoelectric generator market](#) is gaining strong momentum as industries increasingly prioritize energy efficiency and sustainable solutions.

According to a recent report by Allied Market Research, the market was valued at \$472.5 million in 2020 and is projected to reach \$1.44 billion by 2030, growing at a robust CAGR of 11.8% from 2021 to 2030.



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Thermoelectric generator market to hit \$1.44B by 2030, driven by clean energy, aerospace demand & waste heat recovery innovations."

*Allied Market Research*

Thermoelectric generators (TEGs) convert heat directly into electricity by leveraging the Seebeck and Peltier effects. These innovative devices use thermoelectric materials capable of turning temperature differences into electric voltage, allowing them to recover waste heat from industrial, automotive, and aerospace operations. Their unique properties — compact design, no moving parts, and eco-friendly operation — are positioning them as a vital component in the transition toward low-emission and

self-powered systems.

## □ Market Drivers: Why Thermoelectric Generators Are in Demand

Several key factors are contributing to the rapid growth of the thermoelectric generator market:

□ Sustainability Push: As governments and industries globally adopt stringent emissions regulations, TEGs offer a cleaner energy alternative with zero chemical emissions.

□ Waste Heat Recovery Technologies: Increased implementation of [waste heat recovery systems](#) in manufacturing and transportation is driving TEG adoption.

□ Automotive Electrification: Automakers are integrating TEGs to enhance energy efficiency, especially in hybrid and electric vehicles.

□ Aerospace and Defense: With their reliability in extreme environments, TEGs are widely used in space missions, military equipment, and aircraft systems.

These trends underscore the growing appeal of thermoelectric generators in various sectors — from powering remote sensors to boosting overall energy efficiency in industrial setups.

□ Material Analysis: Bismuth Telluride Leads

Based on material, the market is segmented into bismuth telluride, lead telluride, and others. Among these, bismuth telluride dominated the global share in 2020, accounting for over 66% of the total market and is expected to grow at the fastest CAGR of 12.0% during the forecast period. Its superior thermoelectric properties and cost-effectiveness make it the material of choice across multiple applications.

□ Applications: Waste Heat Recovery at the Forefront

By application, the waste heat recovery segment led the market in 2020 with a share exceeding 46% and is expected to expand at a CAGR of 12.4%. TEGs are increasingly deployed in industrial furnaces, diesel generators, and power plants to convert waste heat into usable energy. Other key applications include:

□ Energy Harvesting

□ Direct Power Generation

□ Co-Generation Systems

As energy efficiency becomes a top priority, these systems are gaining traction globally.

Procure This Report (268 Pages PDF with Insights, Charts, Tables, and Figures):

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□ End-Use Industry: Aerospace Dominates, Industrial Fastest Growing

In terms of end-use, the aerospace segment emerged as the market leader in 2020 with over 26% share, thanks to the critical role of TEGs in powering spacecraft and satellites. However, the industrial segment is projected to witness the highest CAGR of 12.4%, fueled by rising demand for decentralized power and off-grid energy solutions.

Other major end-use segments include:

- Automotive

- Healthcare

- Consumer Electronics

- Regional Outlook: North America Tops, Asia-Pacific Rises

Geographically, North America held the largest share of the thermoelectric generator market in 2020, accounting for around 39% of the global revenue. The region's early adoption of advanced energy technologies, coupled with strong aerospace and automotive sectors, contributes to its market dominance.

However, Asia-Pacific is expected to witness the fastest growth during the forecast period, driven by rapid industrialization, rising environmental awareness, and government support for clean energy projects in countries like China, Japan, and South Korea.

- Competitive Landscape

The global [thermoelectric generator industry](#) is moderately consolidated, with major players focusing on technological innovation, partnerships, and expansion. Key market participants include:

Gentherm, Inc.

Ferrotec Holdings Corporation

Yamaha Corp.

Thermo Electric Company, Inc.

Laird Thermal Systems

Komatsu Ltd.

Kyocera Corporation

Phononic Devices

Evident Thermoelectrics

II-VI Marlow, Inc.

These companies are investing in R&D to improve material efficiency and broaden TEG applications across new sectors.

#### □ Impact of COVID-19

The COVID-19 pandemic temporarily disrupted the thermoelectric generator market, causing delays in manufacturing and project execution. Lockdowns, supply chain interruptions, and reduced industrial activity created short-term challenges. However, the pandemic also highlighted the need for resilient and clean energy systems, paving the way for long-term growth in the TEG market.

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#### □ Conclusion

With increasing environmental concerns and growing demand for efficient energy conversion, the thermoelectric generator market is poised for robust expansion. The combination of cutting-edge material innovation, widespread industrial applications, and global sustainability goals ensures that thermoelectric generators will play a significant role in the future of energy.

As industries continue to seek eco-friendly and efficient power solutions, thermoelectric generators are not just a trend — they are a necessity for the next generation of clean energy technologies.

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Pawan Kumar, the CEO of Allied Market Research, is leading the organization toward providing high-quality data and insights. We are in professional corporate relations with various companies and this helps us in digging out market data that helps us generate accurate research data tables and confirms utmost accuracy in our market forecasting. Each and every data presented in the reports published by us is extracted through primary interviews with top officials from leading companies of domain concerned. Our secondary data procurement methodology includes deep online and offline research and discussion with knowledgeable professionals and analysts in the industry.

David Correa

Allied Market Research

+ + 1 800-792-5285

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