

Solid State Cooling Market by Product (Refrigerators, Freezers, Air Conditioners, Chillers, Coolers), Type (Single-stage, Multi-stage, Thermocycler), Technology (Thermoelectric, Electrocaloric, Magnetocaloric), Vertical, Region - Global Forecast to 2029

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Abstracts

The global solid state cooling market is expected to be valued at USD 0.8 billion in 2024 and is projected to reach USD 1.5 billion by 2029; it is expected to grow at a CAGR of 13.6% from 2024 to 2029. Increasing demand for energy-efficient and environmentally friendly cooling solutions across industries, advancements in semiconductor technology enabling more efficient and reliable solid-state cooling devices, expanding applications in electronics, automotive, aerospace, and healthcare sectors, and rising awareness of the detrimental effects of traditional cooling methods on the environment and energy consumption.

“Cooling systems in solid state cooling market to account for the highest market share during the forecast period.”

The solid-state cooling market for cooling systems is driven by several factors, including the rising demand for energy-efficient and environmentally friendly cooling solutions, technological advancements enabling higher efficiency and reliability in solid-state cooling devices, increasing applications across industries such as electronics, automotive, aerospace, and medical devices, and growing awareness of the limitations and environmental impacts of traditional cooling methods. As companies seek innovative and sustainable cooling solutions to address thermal management challenges, the solid-state cooling market for cooling systems experiences continued growth, catering to the diverse needs of various sectors.

“Thermoelectric technology in solid state cooling market to account for the highest market share during the forecast period.”

The solid-state cooling market for thermoelectric technology is propelled by several key factors, including the escalating demand for energy-efficient and environmentally friendly cooling solutions across industries such as electronics, automotive, aerospace, and healthcare, the advancements in semiconductor materials and manufacturing processes enabling improved performance and reliability of thermoelectric devices, the compact size and versatility of thermoelectric modules allowing for diverse applications, and the increasing awareness of the advantages of thermoelectric cooling, such as silent operation and precise temperature control. As companies and consumers prioritize sustainability and seek innovative cooling solutions, the solid-state cooling market for thermoelectric technology continues to grow, offering efficient and reliable alternatives to traditional cooling methods.

“Healthcare vertical in solid state cooling market to account for the highest market share during the forecast period.”

The solid-state cooling market for the healthcare vertical is experiencing significant growth due to the increasing demand for precise temperature control and reliable thermal management solutions in medical devices, laboratory equipment, and pharmaceutical storage. Solid-state cooling technologies offer advantages such as compact size, energy efficiency, and precise temperature control, making them ideal for applications such as blood analyzers, medical imaging systems, drug delivery devices, and vaccine storage units. Additionally, the growing emphasis on patient safety, regulatory compliance, and the need to preserve sensitive biological samples further drive the adoption of solid-state cooling solutions in the healthcare sector, fueling the growth of the market.

“Solid State Cooling market for North America to account for the second highest market share during the forecast period.”

The solid-state cooling market in North America is witnessing significant growth due to several factors, including the region's strong focus on technological innovation, robust industrial infrastructure, increasing adoption of energy-efficient and environmentally friendly cooling solutions across various industries, and rising demand for advanced thermal management solutions in electronics, automotive, healthcare, and aerospace sectors. Additionally, government initiatives promoting sustainable technologies and the presence of key market players further accelerate the growth of the solid-state cooling

market in North America, positioning it as a hub for innovation and market expansion in the industry.

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

By Company Type: Tier 1 – 10%, Tier 2 – 55%, and Tier 3 – 35%

By Designation: C-level Executives – 45%, Managers – 25%, and Others – 30%

By Region: North America – 55%, Europe – 20%, Asia Pacific – 15%, RoW – 10%

The key players operating in the Solid state cooling market are CUI Devices (US), Delta Electronics, Inc. (Taiwan), Ferrotec Holdings Corporation (Japan), Coherent Corp. (US), Laird Thermal Systems, Inc. (US).

Research Coverage:

The research report categorizes the Solid state cooling market, By Product (Refrigeration Systems and Cooling Systems), Type (Single-Stage, Multi-Stage, Thermocycler), Technology (Thermoelectric Cooling, Electrocaloric Cooling, Magnetocaloric Cooling, Other Technologies), Vertical (Automotive, Semiconductor & Electronics, Healthcare, Consumer (Residential), and Other Verticals (Aerospace & Defense, Industrial etc.)), Region (North America, Europe, Asia Pacific, and RoW).

Key Benefits of Buying the Report

Analysis of key drivers (Increasing demand for energy-efficient cooling solutions to drives market, Expansion of the IoT and smart home devices accelerate market growth, Rising adoption of electric vehicles (EVs) and hybrid electric vehicles (HEVs) to drive market, Growing data center industry to increase adoption of solid state cooling technology), restraints (High initial investment and manufacturing costs associated with solid-state cooling technology, Complexity in integrating solid-state cooling solutions into existing systems and infrastructure, Regulatory barriers and standards compliance requirements in healthcare and automotive industries), opportunities (Emerging applications in aerospace, defense, and consumer sectors to present opportunities for solid

state cooling market, Adoption of solid-state cooling technology in growing industrialization and urbanization), and challenges (Complexity in designing and engineering solid-state cooling systems for diverse applications and operating conditions, Shortage of qualified expert in thermoelectric cooling and thermal management) influencing the growth of the solid state cooling market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the solid state cooling market

Market Development: Comprehensive information about lucrative markets – the report analyses the solid state cooling market across varied regions.

Market Diversification: Exhaustive information about new services, untapped geographies, recent developments, and investments in the solid state cooling market

Competitive Assessment: In-depth assessment of market shares, growth strategies and service offerings of leading players like CUI Devices (US), Delta Electronics, Inc. (Taiwan), Ferrotec Holdings Corporation (Japan), Coherent Corp. (US), Laird Thermal Systems, Inc. (US) among others in the Solid state cooling market.

Contents

1 INTRODUCTION

1.1 STUDY OBJECTIVES

1.2 MARKET DEFINITION

1.3 STUDY SCOPE

1.3.1 INCLUSIONS AND EXCLUSIONS

1.3.2 MARKETS COVERED

FIGURE 1 SOLID STATE COOLING MARKET SEGMENTATION

1.3.3 REGIONAL SCOPE

1.3.4 YEARS CONSIDERED

1.4 CURRENCY CONSIDERED

1.5 UNIT CONSIDERED

1.6 LIMITATIONS

1.7 STAKEHOLDERS

1.8 SUMMARY OF CHANGES

1.9 RECESSION IMPACT ON SOLID STATE COOLING MARKET

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 SOLID STATE COOLING MARKET: RESEARCH DESIGN

2.1.1 SECONDARY DATA

2.1.1.1 Major secondary sources

2.1.1.2 Key data from secondary sources

2.1.2 PRIMARY DATA

2.1.2.1 List of key participants in primary interviews

2.1.2.2 Key data from primary sources

2.1.2.3 Key industry insights

2.1.2.4 Breakdown of primaries

2.1.3 SECONDARY AND PRIMARY RESEARCH

2.2 MARKET SIZE ESTIMATION

FIGURE 3 RESEARCH FLOW OF MARKET SIZE ESTIMATION

2.2.1 BOTTOM-UP APPROACH

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY (SUPPLY SIDE):

REVENUE GENERATED FROM SALES OF SOLID STATE COOLING PRODUCTS AND SOLUTIONS

2.2.1.1 Approach to arrive at market size using bottom-up analysis (demand side)

FIGURE 5 MARKET SIZE ESTIMATION METHODOLOGY: BOTTOM-UP APPROACH

2.2.2 TOP-DOWN APPROACH

2.2.2.1 Approach to capture market share by using top-down analysis (supply side)

FIGURE 6 MARKET SIZE ESTIMATION METHODOLOGY: TOP-DOWN APPROACH

2.3 DATA TRIANGULATION

FIGURE 7 DATA TRIANGULATION

2.4 RESEARCH ASSUMPTIONS

2.5 RISK ASSESSMENT

TABLE 1 RISK FACTOR ANALYSIS

2.6 RECESSION ASSUMPTIONS

TABLE 2 PARAMETERS CONSIDERED TO ANALYZE RECESSION IMPACT

2.7 RESEARCH LIMITATIONS

3 EXECUTIVE SUMMARY

FIGURE 8 COOLING SYSTEMS TO CAPTURE MAJORITY OF MARKET SHARE IN 2029

FIGURE 9 THERMOELECTRIC COOLING TECHNOLOGY TO CAPTURE LARGEST SHARE OF SOLID STATE COOLING MARKET IN 2029

FIGURE 10 HEALTHCARE VERTICAL TO ACCOUNT FOR LARGEST MARKET SHARE IN 2029

FIGURE 11 ASIA PACIFIC ACCOUNTED FOR LARGEST SHARE OF SOLID STATE COOLING MARKET IN 2023

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN SOLID STATE COOLING MARKET

FIGURE 12 SURGING DEMAND FOR RELIABLE AND ENERGY-EFFICIENT SOLUTIONS TO PRESENT OPPORTUNITIES FOR SOLID STATE COOLING SYSTEM PROVIDERS

4.2 SOLID STATE COOLING MARKET IN ASIA PACIFIC, BY COUNTRY AND VERTICAL

FIGURE 13 CHINA AND SEMICONDUCTOR & ELECTRONICS VERTICAL TO HOLD LARGEST SHARE OF ASIA PACIFIC SOLID STATE COOLING MARKET IN 2024

4.3 SOLID STATE COOLING MARKET IN NORTH AMERICA, BY COUNTRY

FIGURE 14 US TO ACCOUNT FOR LARGEST SHARE OF NORTH AMERICAN SOLID STATE COOLING MARKET THROUGHOUT FORECAST PERIOD

4.4 SOLID STATE COOLING MARKET, BY GEOGRAPHY

FIGURE 15 CHINA TO EXHIBIT HIGHEST CAGR IN GLOBAL SOLID STATE COOLING MARKET FROM 2024 TO 2029

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 16 SOLID STATE COOLING MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

5.2.1 DRIVERS

FIGURE 17 SOLID STATE COOLING MARKET: IMPACT ANALYSIS OF DRIVERS

5.2.1.1 Surging demand for energy-efficient cooling solutions

5.2.1.2 Rising implementation of IoT-enabled smart home devices

5.2.1.3 Growing adoption of electric and hybrid electric vehicles

5.2.1.4 Booming data center industry

5.2.2 RESTRAINTS

FIGURE 18 SOLID STATE COOLING MARKET: IMPACT ANALYSIS OF RESTRAINTS

5.2.2.1 High initial investment and manufacturing costs associated with solid state cooling technology

5.2.2.2 Complexities in integrating solid state cooling solutions into existing systems and infrastructure

5.2.2.3 Regulatory barriers and standards compliance requirements in healthcare and automotive industries

5.2.3 OPPORTUNITIES

FIGURE 19 SOLID STATE COOLING MARKET: IMPACT ANALYSIS OF OPPORTUNITIES

5.2.3.1 Emerging applications of solid state cooling technology in aerospace, defense, and consumer sectors

5.2.3.2 Growing industrialization and urbanization

5.2.4 CHALLENGES

FIGURE 20 SOLID STATE COOLING MARKET: IMPACT ANALYSIS OF CHALLENGES

5.2.4.1 Complexities in designing and engineering solid state cooling systems for diverse applications and operating conditions

5.2.4.2 Shortage of qualified experts with technical know-how regarding thermoelectric cooling and thermal management

5.3 TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS

FIGURE 21 TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS

5.4 PRICING ANALYSIS

5.4.1 AVERAGE SELLING PRICE OF SOLID STATE COOLING SYSTEMS OFFERED BY KEY PLAYERS

FIGURE 22 AVERAGE SELLING PRICE OF SOLID STATE COOLING PRODUCTS OFFERED BY KEY PLAYERS

TABLE 3 AVERAGE SELLING PRICE OF SOLID STATE COOLING PRODUCTS PROVIDED BY KEY PLAYERS (USD)

5.4.2 AVERAGE SELLING PRICE TREND, BY REGION

TABLE 4 AVERAGE SELLING PRICE OF SOLID STATE COOLING PRODUCTS, BY REGION (USD)

FIGURE 23 AVERAGE SELLING PRICE OF SOLID STATE COOLING PRODUCTS, 2020–2024

5.5 VALUE CHAIN ANALYSIS

FIGURE 24 SOLID STATE COOLING MARKET: VALUE CHAIN ANALYSIS

5.6 ECOSYSTEM ANALYSIS

FIGURE 25 KEY PLAYERS IN ECOSYSTEM

TABLE 5 ROLE OF PARTICIPANTS IN ECOSYSTEM

5.7 INVESTMENT AND FUNDING SCENARIO

FIGURE 26 FUNDING IN SOLID STATE TECHNOLOGY AND RELATED DEALS, 2018–2023

5.8 TECHNOLOGY ANALYSIS

5.8.1 CORE TECHNOLOGY

5.8.1.1 Thermoelectric cooling

5.8.1.2 Magnetic cooling

5.8.1.3 Electrocaloric cooling

5.8.1.4 Thermoelastic cooling

5.8.2 COMPLEMENTARY TECHNOLOGY

5.8.2.1 Heat exchangers

5.8.2.2 Thermal interface materials (TIMs)

5.8.2.3 Temperature sensors and control systems

5.8.2.4 Power electronics and drivers

5.8.3 ADJACENT TECHNOLOGY

5.8.3.1 Thermal management solutions

5.8.3.2 Energy harvesting systems

5.9 PATENT ANALYSIS

FIGURE 27 NUMBER OF PATENTS GRANTED IN SOLID STATE COOLING MARKET, 2013–2023

TABLE 6 LIST OF KEY PATENTS IN SOLID STATE COOLING MARKET, 2019–2023

5.10 TRADE ANALYSIS

5.10.1 IMPORT DATA

TABLE 7 IMPORT VALUES FOR HS CODE 8418-COMPLIANT PRODUCTS, BY COUNTRY, 2018–2022 (USD MILLION)

FIGURE 28 IMPORT DATA FOR HS CODE 8418-COMPLIANT PRODUCTS, BY COUNTRY, 2018–2022 (USD MILLION)

5.10.2 EXPORT DATA

TABLE 8 EXPORT VALUES FOR HS CODE 8418-COMPLIANT PRODUCTS, BY COUNTRY, 2018–2022 (USD MILLION)

FIGURE 29 EXPORT DATA FOR HS CODE 8418-COMPLIANT PRODUCTS, BY COUNTRY, 2018–2022 (USD MILLION)

5.11 KEY CONFERENCES AND EVENTS, 2024–2025

TABLE 9 SOLID STATE COOLING MARKET: LIST OF IMPORTANT CONFERENCES AND EVENTS

5.12 CASE STUDY ANALYSIS

5.12.1 INTEL INTEGRATED PHONONIC'S SOLID-STATE COOLING TECHNOLOGY INTO ITS DATA CENTERS TO REDUCE ENERGY CONSUMPTION AND ENVIRONMENTAL IMPACT

5.12.2 THERMO FISHER SCIENTIFIC INCORPORATED TE TECHNOLOGY'S SOLID-STATE COOLING MODULES INTO ITS ULTRA-LOW TEMPERATURE FREEZERS TO ENSURE PRECISE TEMPERATURE CONTROL AND STABILITY

5.12.3 BMW GROUP IMPLEMENTED II-VI MARLOW'S THERMOELECTRIC COOLING MODULES IN ELECTRIC VEHICLES (EVS) TO ENSURE EFFICIENT OPERATION AND PREVENT OVERHEATING

5.12.4 PHILIPS HEALTHCARE INTEGRATED LAIRD'S SOLID-STATE COOLING MODULES INTO ITS MEDICAL IMAGING EQUIPMENT TO MAINTAIN OPTIMAL OPERATING TEMPERATURE

5.12.5 NASA PARTNERED WITH ATG TO DEVELOP SOLID STATE COOLING SYSTEMS FOR SPACE MISSIONS

5.13 STANDARDS AND REGULATORY LANDSCAPE

5.13.1 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 10 NORTH AMERICA: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 11 EUROPE: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 12 ASIA PACIFIC: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 13 ROW: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

5.13.2 STANDARDS AND REGULATIONS RELATED TO SOLID STATE COOLING MARKET

5.13.2.1 International Electrotechnical Commission (IEC) standards

5.13.2.2 Underwriters Laboratories (UL) Standards

5.13.2.3 ISO standards

5.13.2.4 ENERGY STAR certification

5.13.2.5 Safety regulations

5.14 PORTER'S FIVE FORCES ANALYSIS

TABLE 14 IMPACT OF PORTER'S FIVE FORCES ON SOLID STATE COOLING MARKET

FIGURE 30 PORTER'S FIVE FORCES ANALYSIS: SOLID STATE COOLING MARKET

5.14.1 THREAT OF NEW ENTRANTS

5.14.2 THREAT OF SUBSTITUTES

5.14.3 BARGAINING POWER OF SUPPLIERS

5.14.4 BARGAINING POWER OF BUYERS

5.14.5 INTENSITY OF COMPETITION RIVALRY

5.15 KEY STAKEHOLDERS AND BUYING CRITERIA

5.15.1 KEY STAKEHOLDERS IN BUYING PROCESS

FIGURE 31 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP 3 VERTICALS

TABLE 15 INFLUENCE OF KEY STAKEHOLDERS ON BUYING PROCESS FOR TOP 3 VERTICALS (%)

5.15.2 BUYING CRITERIA

FIGURE 32 KEY BUYING CRITERIA FOR TOP 3 VERTICALS

TABLE 16 KEY BUYING CRITERIA FOR TOP 3 VERTICALS

6 SOLID STATE COOLING MARKET, BY PRODUCT

6.1 INTRODUCTION

FIGURE 33 COOLING SYSTEMS TO HOLD LARGER MARKET SHARE THAN REFRIGERATION SYSTEMS THROUGHOUT FORECAST PERIOD

TABLE 17 SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 18 SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

TABLE 19 SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (THOUSAND UNITS)

TABLE 20 SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029

(THOUSAND UNITS)

6.2 REFRIGERATION SYSTEMS

TABLE 21 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 22 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

TABLE 23 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET, BY REGION, 2020–2023 (USD MILLION)

TABLE 24 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET, BY REGION, 2024–2029 (USD MILLION)

TABLE 25 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN NORTH AMERICA, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 26 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN NORTH AMERICA, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 27 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN EUROPE, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 28 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN EUROPE, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 29 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN ASIA PACIFIC, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 30 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN ASIA PACIFIC, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 31 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN ROW, BY REGION, 2020–2023 (USD MILLION)

TABLE 32 REFRIGERATION SYSTEMS: SOLID STATE COOLING MARKET IN ROW, BY REGION, 2024–2029 (USD MILLION)

6.2.1 REFRIGERATORS

6.2.1.1 Advancements in materials science, semiconductor technology, and thermal management to accelerate segmental growth

6.2.2 FREEZERS

6.2.2.1 Increasing demand for energy-efficient and environmentally friendly cooling solutions to drive market

6.3 COOLING SYSTEMS

TABLE 33 COOLING SYSTEMS: SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 34 COOLING SYSTEMS: SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

TABLE 35 COOLING SYSTEMS: SOLID STATE COOLING MARKET, BY REGION, 2020–2023 (USD MILLION)

TABLE 36 COOLING SYSTEMS: SOLID STATE COOLING MARKET, BY REGION, 2024–2029 (USD MILLION)

TABLE 37 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN NORTH AMERICA, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 38 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN NORTH AMERICA, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 39 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN EUROPE, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 40 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN EUROPE, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 41 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN ASIA PACIFIC, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 42 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN ASIA PACIFIC, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 43 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN ROW, BY REGION, 2020–2023 (USD MILLION)

TABLE 44 COOLING SYSTEMS: SOLID STATE COOLING MARKET IN ROW, BY REGION, 2024–2029 (USD MILLION)

6.3.1 AIR CONDITIONERS

6.3.1.1 Growing demand for cooling solutions with precise control, quiet operation, and minimal maintenance to fuel segmental growth

6.3.2 COOLERS

6.3.2.1 Surging demand for compact and high-power electronics to create opportunities for providers of coolers with high thermal performance

6.3.3 CHILLERS

6.3.3.1 Increasing demand for precise temperature control in medical equipment to foster segmental growth

7 SOLID STATE COOLING MARKET, BY TYPE

7.1 INTRODUCTION

FIGURE 34 SINGLE-STAGE SOLID STATE COOLING SYSTEMS TO HOLD LARGEST MARKET SHARE THROUGHOUT FORECAST PERIOD

TABLE 45 SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 46 SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

7.2 SINGLE-STAGE

7.2.1 GROWING ADOPTION OF ENERGY-EFFICIENT AND SUSTAINABLE COOLING SOLUTIONS TO FUEL MARKET GROWTH

TABLE 47 SINGLE-STAGE: SOLID STATE COOLING MARKET, BY REGION,

2020–2023 (USD MILLION)

TABLE 48 SINGLE-STAGE: SOLID STATE COOLING MARKET, BY REGION,
2024–2029 (USD MILLION)

7.3 MULTI-STAGE

7.3.1 INCREASING NEED FOR COOLING SYSTEMS WITH HIGHER CAPABILITIES
IN AEROSPACE AND AUTOMOTIVE APPLICATIONS TO DRIVE MARKET

TABLE 49 MULTI-STAGE: SOLID STATE COOLING MARKET, BY REGION,
2020–2023 (USD MILLION)

TABLE 50 MULTI-STAGE: SOLID STATE COOLING MARKET, BY REGION,
2024–2029 (USD MILLION)

7.4 THERMOCYCLER

7.4.1 RISING DEMAND FROM RESEARCHERS AND DIAGNOSTIC
LABORATORIES FOR PCA AND DNA AMPLIFICATION APPLICATIONS TO
ACCELERATE MARKET GROWTH

TABLE 51 THERMOCYCLER: SOLID STATE COOLING MARKET, BY REGION,
2020–2023 (USD MILLION)

TABLE 52 THERMOCYCLER: SOLID STATE COOLING MARKET, BY REGION,
2024–2029 (USD MILLION)

8 SOLID STATE COOLING MARKET, BY TECHNOLOGY

8.1 INTRODUCTION

FIGURE 35 THERMOELECTRIC TECHNOLOGY TO HOLD LARGEST SHARE OF
SOLID STATE COOLING MARKET THROUGHOUT FORECAST PERIOD

TABLE 53 SOLID STATE COOLING MARKET, BY TECHNOLOGY, 2020–2023 (USD
MILLION)

TABLE 54 SOLID STATE COOLING MARKET, BY TECHNOLOGY, 2024–2029 (USD
MILLION)

TABLE 55 COMPARATIVE STUDY OF DIFFERENT SOLID STATE COOLING
TECHNOLOGIES AND THEIR POTENTIAL

8.2 THERMOELECTRIC COOLING

8.2.1 POTENTIAL TO OFFER PRECISE TEMPERATURE CONTROL TO BOOST
DEPLOYMENT IN DRUG STORAGE UNITS, AVIONICS, AND SATELLITES

8.3 ELECTROCALORIC COOLING

8.3.1 CLIMATE-FRIENDLY COOLING AND RAPID RESPONSE TIME TO
ACCELERATE ADOPTION IN ELECTRONICS AND MEDICAL DEVICES

8.4 MAGNETOCALORIC COOLING

8.4.1 LOWER ENERGY CONSUMPTION AND REDUCED NOISE LEVELS TO
INCREASE UTILIZATION IN HOUSEHOLD REFRIGERATORS, HEAT PUMPS, ETC.

8.5 OTHER TECHNOLOGIES

9 SOLID STATE COOLING MARKET, BY VERTICAL

9.1 INTRODUCTION

FIGURE 36 AUTOMOTIVE TO BE FASTEST-GROWING VERTICAL IN SOLID STATE COOLING MARKET FROM 2024 TO 2029

TABLE 56 SOLID STATE COOLING MARKET, BY VERTICAL, 2020–2023 (USD MILLION)

TABLE 57 SOLID STATE COOLING MARKET, BY VERTICAL, 2024–2029 (USD MILLION)

9.2 AUTOMOTIVE

9.2.1 INCREASING DEPLOYMENT OF COOLING SYSTEMS TO REGULATE TEMPERATURE, HUMIDITY, AND AIR QUALITY IN VEHICLES TO DRIVE MARKET

9.2.2 CASE STUDY: BMW COLLABORATED WITH GENTHERM TO INTEGRATE SOLID STATE COOLING SYSTEMS IN ITS VEHICLES FOR PERSONALIZED CLIMATE CONTROL

9.2.3 IMPACT ANALYSIS OF SOLID STATE COOLING TECHNOLOGY TYPES ON AUTOMOTIVE VERTICAL

9.3 SEMICONDUCTOR & ELECTRONICS

9.3.1 INCREASING FOCUS ON MAXIMIZING CAPABILITIES AND PERFORMANCE OF ELECTRONIC PRODUCTS TO ACCELERATE DEMAND

9.3.2 CASE STUDY: INTEL COLLABORATED WITH LAIRD THERMAL SYSTEMS TO INTEGRATE SOLID STATE COOLING TECHNOLOGY INTO CPUS FOR EFFICIENT HEAT DISSIPATION AND THERMAL MANAGEMENT

9.3.3 IMPACT ANALYSIS OF SOLID STATE COOLING TECHNOLOGY TYPES ON SEMICONDUCTOR & ELECTRONICS VERTICAL

9.4 HEALTHCARE

9.4.1 RISING FOCUS ON ENHANCING PATIENT SAFETY TO BOOST DEMAND

9.4.2 CASE STUDY: PFIZER COLLABORATED WITH PHONONIC TO DEPLOY SOLID STATE COOLING TECHNOLOGY IN VACCINE STORAGE UNITS TO ENSURE PRECISE TEMPERATURE CONTROL

9.4.3 IMPACT ANALYSIS OF SOLID STATE COOLING TECHNOLOGY TYPES ON HEALTHCARE VERTICAL

9.5 RESIDENTIAL

9.5.1 RISING DEMAND FOR EFFICIENT REFRIGERATORS AND AIR-CONDITIONING SYSTEMS FROM RESIDENTIAL CONSUMERS TO FUEL MARKET GROWTH

9.5.2 CASE STUDY: LG ELECTRONICS COLLABORATED WITH PHONONIC TO

DEPLOY SOLID STATE COOLING TECHNOLOGY IN REFRIGERATORS TO ENSURE EFFICIENT AND UNIFORM COOLING

9.5.3 IMPACT ANALYSIS OF SOLID STATE COOLING TECHNOLOGY TYPES ON RESIDENTIAL VERTICAL

9.6 OTHER VERTICALS

9.6.1 CASE STUDY: BOEING COLLABORATED WITH LAIRD THERMAL SYSTEMS TO IMPLEMENT SOLID STATE COOLING TECHNOLOGY IN AIRCRAFT AVIONICS SYSTEMS TO ENHANCE COMPONENT RELIABILITY AND LONGEVITY

9.6.2 IMPACT ANALYSIS OF SOLID STATE COOLING TECHNOLOGY TYPES ON OTHER VERTICALS (INDUSTRIAL AND AEROSPACE & DEFENSE)

10 SOLID STATE COOLING MARKET, BY REGION

10.1 INTRODUCTION

FIGURE 37 SOLID STATE COOLING MARKET FOR ASIA PACIFIC TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD

TABLE 58 SOLID STATE COOLING MARKET, BY REGION, 2020–2023 (USD MILLION)

TABLE 59 SOLID STATE COOLING MARKET, BY REGION, 2024–2029 (USD MILLION)

10.2 NORTH AMERICA

FIGURE 38 NORTH AMERICA: SOLID STATE COOLING MARKET

10.2.1 NORTH AMERICA: RECESSION IMPACT

TABLE 60 NORTH AMERICA: SOLID STATE COOLING MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 61 NORTH AMERICA: SOLID STATE COOLING MARKET, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 62 NORTH AMERICA: SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 63 NORTH AMERICA: SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

TABLE 64 NORTH AMERICA: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 65 NORTH AMERICA: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.2.2 US

10.2.2.1 Increasing number of construction projects to boost demand

TABLE 66 US: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 67 US: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.2.3 CANADA

10.2.3.1 Increasing investment in data center expansion to fuel market growth

TABLE 68 CANADA: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 69 CANADA: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.2.4 MEXICO

10.2.4.1 Rapid urbanization and infrastructure development to boost demand

TABLE 70 MEXICO: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 71 MEXICO: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.3 EUROPE

FIGURE 39 EUROPE: SOLID STATE COOLING MARKET SNAPSHOT

10.3.1 EUROPE: RECESSION IMPACT

TABLE 72 EUROPE: SOLID STATE COOLING MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 73 EUROPE: SOLID STATE COOLING MARKET, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 74 EUROPE: SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 75 EUROPE: SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

TABLE 76 EUROPE: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 77 EUROPE: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.3.2 UK

10.3.2.1 Increasing investment in electric vehicle infrastructure development to accelerate market growth

TABLE 78 UK: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 79 UK: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.3.3 GERMANY

10.3.3.1 Surging adoption of Industry 4.0 and smart manufacturing techniques to foster market growth

TABLE 80 GERMANY: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 81 GERMANY: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.3.4 FRANCE

10.3.4.1 Rising focus on reducing greenhouse gases to accelerate market growth

TABLE 82 FRANCE: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 83 FRANCE: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.3.5 REST OF EUROPE

TABLE 84 REST OF EUROPE: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 85 REST OF EUROPE: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.4 ASIA PACIFIC

FIGURE 40 ASIA PACIFIC: SOLID STATE COOLING MARKET

10.4.1 ASIA PACIFIC: RECESSION IMPACT

TABLE 86 ASIA PACIFIC: SOLID STATE COOLING MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 87 ASIA PACIFIC: SOLID STATE COOLING MARKET, BY COUNTRY, 2024–2029 (USD MILLION)

TABLE 88 ASIA PACIFIC: SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 89 ASIA PACIFIC: SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

TABLE 90 ASIA PACIFIC: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 91 ASIA PACIFIC: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.4.2 CHINA

10.4.2.1 Growing industrialization and urbanization to drive market

TABLE 92 CHINA: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 93 CHINA: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.4.3 JAPAN

10.4.3.1 Increasing need for advanced cooling solutions in healthcare to drive market

TABLE 94 JAPAN: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023

(USD MILLION)

TABLE 95 JAPAN: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029

(USD MILLION)

10.4.4 SOUTH KOREA

10.4.4.1 Booming electronics & semiconductor industry to create opportunities for market players

TABLE 96 SOUTH KOREA: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 97 SOUTH KOREA: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.4.5 REST OF ASIA PACIFIC

TABLE 98 REST OF ASIA PACIFIC: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 99 REST OF ASIA PACIFIC: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.5 ROW

10.5.1 ROW: RECESSION IMPACT

TABLE 100 ROW: SOLID STATE COOLING MARKET, BY REGION, 2020–2023 (USD MILLION)

TABLE 101 ROW: SOLID STATE COOLING MARKET, BY REGION, 2024–2029 (USD MILLION)

TABLE 102 ROW: SOLID STATE COOLING MARKET, BY TYPE, 2020–2023 (USD MILLION)

TABLE 103 ROW: SOLID STATE COOLING MARKET, BY TYPE, 2024–2029 (USD MILLION)

TABLE 104 ROW: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 105 ROW: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.5.2 MIDDLE EAST

10.5.2.1 Smart city initiatives to drive market

TABLE 106 MIDDLE EAST: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 107 MIDDLE EAST: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.5.3 SOUTH AMERICA

10.5.3.1 Rapid industrialization, urbanization, and technological advancements to drive market

TABLE 108 SOUTH AMERICA: SOLID STATE COOLING MARKET, BY PRODUCT,

2020–2023 (USD MILLION)

TABLE 109 SOUTH AMERICA: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

10.5.4 AFRICA

10.5.4.1 Growing need for efficient cooling solutions across various sectors to drive market

TABLE 110 AFRICA: SOLID STATE COOLING MARKET, BY PRODUCT, 2020–2023 (USD MILLION)

TABLE 111 AFRICA: SOLID STATE COOLING MARKET, BY PRODUCT, 2024–2029 (USD MILLION)

11 COMPETITIVE LANDSCAPE

11.1 INTRODUCTION

11.2 KEY PLAYER STRATEGIES/RIGHT TO WIN, 2023

TABLE 112 OVERVIEW OF STRATEGIES ADOPTED BY COMPANIES IN SOLID STATE COOLING MARKET, 2023

11.3 REVENUE ANALYSIS OF KEY PLAYERS IN SOLID STATE COOLING MARKET, 2018–2022

FIGURE 41 REVENUE ANALYSIS OF KEY PLAYERS IN SOLID STATE COOLING MARKET, 2018–2022

11.4 MARKET SHARE ANALYSIS, 2023

FIGURE 42 MARKET SHARE OF MAJOR PLAYERS, 2023

TABLE 113 DEGREE OF COMPETITION

11.4.1 KEY PLAYERS IN SOLID STATE COOLING MARKET, 2023

11.5 COMPANY VALUATION AND FINANCIAL METRICS

FIGURE 43 COMPANY VALUATION (USD MILLION), 2023

FIGURE 44 FINANCIAL METRICS (EV/EBITDA), 2023

11.6 BRAND/PRODUCT COMPARISON

FIGURE 45 BRAND/PRODUCT COMPARISON

11.7 COMPANY EVALUATION MATRIX: KEY PLAYERS, 2023

11.7.1 STARS

11.7.2 EMERGING LEADERS

11.7.3 PERVASIVE PLAYERS

11.7.4 PARTICIPANTS

FIGURE 46 SOLID STATE COOLING MARKET: COMPANY EVALUATION MATRIX (KEY PLAYERS), 2023

11.7.5 COMPANY FOOTPRINT: KEY PLAYERS

11.7.5.1 Company overall footprint (key players)

FIGURE 47 SOLID STATE COOLING MARKET: COMPANY OVERALL FOOTPRINT (KEY PLAYERS)

11.7.5.2 Product footprint (key players)

TABLE 114 SOLID STATE COOLING MARKET: PRODUCT FOOTPRINT (KEY PLAYERS)

11.7.5.3 Technology footprint (key players)

TABLE 115 SOLID STATE COOLING MARKET: TECHNOLOGY FOOTPRINT (KEY PLAYERS)

11.7.5.4 Type footprint (key players)

TABLE 116 SOLID STATE COOLING MARKET: TYPE FOOTPRINT (KEY PLAYERS)

11.7.5.5 Vertical footprint (key players)

TABLE 117 SOLID STATE COOLING MARKET: VERTICAL FOOTPRINT (KEY PLAYERS)

11.7.5.6 Region footprint (key players)

TABLE 118 SOLID STATE COOLING MARKET: REGION FOOTPRINT (KEY PLAYERS)**11.8 COMPANY EVALUATION MATRIX: STARTUPS/SMES, 2023**

11.8.1 PROGRESSIVE COMPANIES

11.8.2 RESPONSIVE COMPANIES

11.8.3 DYNAMIC COMPANIES

11.8.4 STARTING BLOCKS

FIGURE 48 SOLID STATE COOLING MARKET: COMPANY EVALUATION MATRIX (STARTUPS/SMES), 2023

11.8.5 COMPETITIVE BENCHMARKING, STARTUPS/SMES, 2023

11.8.5.1 List of startups/SMEs

TABLE 119 SOLID STATE COOLING MARKET: LIST OF STARTUPS/SMES

11.8.6 COMPANY FOOTPRINT: STARTUPS/SMES

11.8.6.1 Company overall footprint (startups/SMEs)

FIGURE 49 SOLID STATE COOLING MARKET: COMPANY OVERALL FOOTPRINT (STARTUPS/SMES)

11.8.6.2 Product footprint (startups/SMEs)

TABLE 120 SOLID STATE COOLING MARKET: PRODUCT FOOTPRINT (STARTUPS/SMES)

11.8.6.3 Technology footprint (startups/SMEs)

TABLE 121 SOLID STATE COOLING MARKET: TECHNOLOGY FOOTPRINT (STARTUPS/SMES)

11.8.6.4 Type footprint (startups/SMEs)

TABLE 122 SOLID STATE COOLING MARKET: TYPE FOOTPRINT (STARTUPS/SMES)

11.8.6.5 Vertical footprint (startups/SMEs)

TABLE 123 SOLID STATE COOLING MARKET: VERTICAL FOOTPRINT
(STARTUPS/SMES)

11.8.6.6 Region footprint (startups/SMEs)

TABLE 124 SOLID STATE COOLING MARKET: REGION FOOTPRINT
(STARTUPS/SMES)

11.9 COMPETITIVE SCENARIOS AND TRENDS

11.9.1 PRODUCT/SERVICE LAUNCHES

TABLE 125 SOLID STATE COOLING MARKET: PRODUCT/SERVICE LAUNCHES,
JANUARY 2020–NOVEMBER 2023

11.9.2 DEALS

TABLE 126 SOLID STATE COOLING MARKET: DEALS, JANUARY
2020–NOVEMBER 2023

12 COMPANY PROFILES

12.1 KEY PLAYERS

(Business Overview, Products/Services/Solutions Offered, MnM View, Key Strengths and Right to Win, Strategic Choices Made, Weaknesses and Competitive Threats, Recent Developments)*

12.1.1 COHERENT CORP.

TABLE 127 COHERENT CORP.: COMPANY OVERVIEW

FIGURE 50 COHERENT CORP.: COMPANY SNAPSHOT

TABLE 128 COHERENT CORP.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 129 COHERENT CORP.: PRODUCT/SERVICE LAUNCHES

TABLE 130 COHERENT CORP.: DEALS

12.1.2 CUI DEVICES

TABLE 131 CUI DEVICES: COMPANY OVERVIEW

TABLE 132 CUI DEVICES: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 133 CUI DEVICES: PRODUCT/SERVICE LAUNCHES

TABLE 134 CUI DEVICES: DEALS

12.1.3 DELTA ELECTRONICS, INC.

TABLE 135 DELTA ELECTRONICS, INC.: COMPANY OVERVIEW

FIGURE 51 DELTA ELECTRONICS, INC.: COMPANY SNAPSHOT

TABLE 136 DELTA ELECTRONICS, INC.: PRODUCTS/SOLUTIONS/SERVICES
OFFERED

12.1.4 FERROTEC HOLDINGS CORPORATION

TABLE 137 FERROTEC HOLDINGS CORPORATION: COMPANY OVERVIEW

FIGURE 52 FERROTEC HOLDINGS CORPORATION: COMPANY SNAPSHOT

TABLE 138 FERROTEC HOLDINGS CORPORATION:

PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 139 FERROTEC HOLDINGS CORPORATION: DEALS

12.1.5 LAIRD THERMAL SYSTEMS, INC.

TABLE 140 LAIRD THERMAL SYSTEMS, INC.: COMPANY OVERVIEW

TABLE 141 LAIRD THERMAL SYSTEMS, INC.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 142 LAIRD THERMAL SYSTEMS, INC.: PRODUCT/SERVICE LAUNCHES

12.1.6 CRYSTAL LTD.

TABLE 143 CRYSTAL LTD.: COMPANY OVERVIEW

TABLE 144 CRYSTAL LTD.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

12.1.7 KOMATSU LTD.

TABLE 145 KOMATSU: COMPANY OVERVIEW

FIGURE 53 KOMATSU: COMPANY SNAPSHOT

TABLE 146 KOMATSU: PRODUCTS/SOLUTIONS/SERVICES OFFERED

12.1.8 SOLID STATE COOLING SYSTEMS

TABLE 147 SOLID STATE COOLING SYSTEMS: COMPANY OVERVIEW

TABLE 148 SOLID STATE COOLING SYSTEMS:

PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 149 SOLID STATE COOLING SYSTEMS: PRODUCT/SERVICE LAUNCHES

12.1.9 TE TECHNOLOGY, INC.

TABLE 150 TE TECHNOLOGY, INC.: COMPANY OVERVIEW

TABLE 151 TE TECHNOLOGY, INC.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

12.1.10 TEC MICROSYSTEMS GMBH

TABLE 152 TEC MICROSYSTEMS GMBH: COMPANY OVERVIEW

TABLE 153 TEC MICROSYSTEMS GMBH: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 154 TEC MICROSYSTEMS GMBH: PRODUCT/SERVICE LAUNCHES

*Business Overview, Products/Services/Solutions Offered, MnM View, Key Strengths and Right to Win, Strategic Choices Made, Weaknesses and Competitive Threats, Recent Developments might not be captured in case of unlisted companies.

12.2 OTHER PLAYERS

12.2.1 ALIGN SOURCING LLC.

12.2.2 AMS TECHNOLOGIES AG

12.2.3 EVERREDTRONICS

12.2.4 XIAMEN HICOOL ELECTRONICS CO., LTD.

12.2.5 INHECO INDUSTRIAL HEATING & COOLING GMBH

12.2.6 KRYOTHERM

12.2.7 MERIT TECHNOLOGY GROUP

12.2.8 PHONONIC

12.2.9 SHEETAK

12.2.10 THERMONAMIC ELECTRONICS (JIANGXI) CORP., LTD.

12.2.11 WELLEN TECHNOLOGY CO., LTD.

12.2.12 EUROPEAN THERMODYNAMICS LTD.

12.2.13 THERMOELECTRIC COOLING AMERICA CORPORATION

12.2.14 MEERSTETTER ENGINEERING

12.2.15 CUSTOM THERMOELECTRIC, LLC

13 APPENDIX

13.1 DISCUSSION GUIDE

13.2 KNOWLEDGESTORE: MARKETSANDMARKETS' SUBSCRIPTION PORTAL

13.3 CUSTOMIZATION OPTIONS

13.4 RELATED REPORTS

13.5 AUTHOR DETAILS

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