

Cryocooler Market by Recuperative Heat Exchanger, Regenerative Heat Exchanger, Heat Dissipation Pipe, Preventive Maintenance Services, Gifford-McMahon Cryocoolers, Stirling Cryocoolers, Joule Thomson Cryocoolers, Military, Space - Global Forecast to 2030

Market Report | 2025-09-16 | 266 pages | MarketsandMarkets

AVAILABLE LICENSES:

- Single User \$4950.00
- Multi User \$6650.00
- Corporate License \$8150.00
- Enterprise Site License \$10000.00

Report description:

The cryocooler market was valued at USD 3.48 billion in 2025 and is projected to reach USD 4.90 billion by 2030, registering a CAGR of 7.1% during the forecast period. The growth of cryocoolers is driven by rising adoption in satellite launches, space exploration, and defense applications, supported by government investments, technological advancements in cooling efficiency, and the growing need for cryogenic temperatures in quantum computing and medical imaging systems.

<https://www.marketsandmarkets.com/Market-Reports/cryocooler-market-247727537.html>

"Power conditioning unit in hardware type to grow at highest CAGR during forecast period"

By hardware type, the power conditioning unit segment is expected to witness the highest CAGR in the cryocooler market during the forecast period due to its critical role in ensuring stable and efficient power delivery for sensitive cryogenic systems. These units help regulate voltage fluctuations, minimize electrical noise, and protect delicate components from power disturbances, which is essential for vibration-sensitive applications such as space instruments, infrared sensors, and quantum computing devices. As cryocoolers find broader use in defense, aerospace, and medical imaging, the demand for a reliable and continuous power supply is becoming a key driver of adoption. Furthermore, integration with advanced control electronics and compact system designs is driving the requirement for reliable power conditioning solutions, ensuring long-term operational stability and enhanced performance of cryocooler systems.

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

"Pulse-tube cryocoolers segment accounted for significant share of cryocooler market in 2024"

By cryocooler type, the pulse-tube cryocoolers segment is estimated to account for a significant share of the overall cryocooler market in 2024 due to their ability to deliver high reliability, long operational life, and low vibration, making them suitable for satellite and space applications. These systems are increasingly being adopted for cooling infrared sensors, superconducting devices, and space telescopes, where vibration-sensitive instruments require stable performance. The growing demand for compact and maintenance-free cryocoolers in defense and aerospace missions is accelerating adoption, as these solutions ensure consistent cooling without mechanical wear. Furthermore, integration with advanced electronics, thermal management systems, and miniaturized payloads is driving their use in next-generation satellites and surveillance programs. These features ensure stable, efficient, and durable cryogenic performance, contributing to the increasing preference for pulse-tube technology in critical aerospace and defense applications.

"Closed-loop cycle to register higher CAGR in cryocooler market between 2025 and 2030"

The closed-loop cycle segment is projected to register the highest CAGR in the cryocooler market during the forecast period. This growth is attributed to rising adoption in medical imaging equipment, growing demand for efficient cooling in superconducting magnets, and the increasing focus on energy-efficient cryogenic systems. Closed-loop cryocoolers enable continuous and stable cooling performance without the need for frequent refilling, improving operational efficiency and reducing downtime. Furthermore, their ability to handle variable cooling loads makes them suitable for applications in MRI machines, cryogenic research, and emerging quantum technologies. The integration of closed-loop systems with automated controls and advanced thermal management solutions further enhances reliability and scalability, significantly contributing to market growth.

Extensive primary interviews were conducted with key industry experts in the cryocooler market space to determine and verify the market size for various segments and subsegments gathered through secondary research. The breakdown of primary participants for the report is shown below.

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

- By Company Type - Tier 1 - 20%, Tier 2 - 35%, Tier 3 - 45%
- By Designation- C-level Executives - 35%, Directors - 25%, Others - 40%
- By Region - North America - 45%, Europe -25%, Asia Pacific - 20%, RoW - 10%

The cryocooler market is dominated by a few globally established players, such as Sumitomo Heavy Industries, Ltd. (Japan), Thales (France), AMETEK, Inc. (US), Edwards Vacuum (UK), and Chart Industries, Inc. (US).

The study includes an in-depth competitive analysis of these key players in the cryocooler market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the cryocooler market and forecasts its size by application (military, medical, commercial, environmental, energy, transport, research & development, space, agriculture & biology, mining & metal, other applications), offering (hardware, services), heat exchanger type (recuperative heat exchanger, regenerative heat exchanger), temperature range (1k-50k, □50k-150k, above 150k), operating range (open-loop cycle, closed-loop cycle), type (Gifford-McMahon Cryocoolers, Pulse-tube Cryocoolers, Stirling Cryocoolers, Joule Thomson Cryocoolers, Brayton Cryocoolers). It also discusses the market's drivers, restraints, opportunities, and challenges. It gives a detailed view of the market across the regions (North America, Europe, Asia Pacific, RoW). The report includes a supply chain analysis of the key players and their competitive analysis in the cryocooler ecosystem.

Key Benefits of Buying the Report:

- Analysis of key drivers (Accelerating demand in aerospace and defense catalyzes sustained cryocooler adoption, Quantum computing expansion necessitates advanced low-temperature thermal management solutions, Healthcare transformation fuels

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

helium-free MRI adoption across global institutions), restraint (High capital intensity constrains scalability across cost-sensitive customer segments, Complex maintenance cycles elevate operational expenditure and adoption hesitancy), opportunities (Quantum computing scale-up driving sub-4K pre-cooler demand surges, Rapid commercialization of small satellites generates demand for miniaturized cryocoolers), challenges (Geopolitical risks destabilize specialized component sourcing across critical region, Balancing performance and cost metrics complicates commercial-scale market entry)

-□Product Development/Innovation: Detailed insights into upcoming technologies, research and development activities, and new product launches in the cryocooler market

-□Market Development: Comprehensive information about lucrative markets - the report analyses the cryocooler market across varied regions.

-□Market Diversification: Exhaustive information about new products, untapped geographies, recent developments, and investments in the cryocooler market

-□Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players, such as Sumitomo Heavy Industries, Ltd. (Japan), Thales (France), AMETEK, Inc. (US), Edwards Vacuum (UK), and Chart Industries, Inc. (US), among others, in the cryocooler market

Table of Contents:

1	INTRODUCTION	26
1.1	STUDY OBJECTIVES	26
1.2	MARKET DEFINITION	27
1.3	STUDY SCOPE	27
1.3.1	MARKETS COVERED	28
1.3.2	INCLUSIONS AND EXCLUSIONS	29
1.3.3	YEARS CONSIDERED	30
1.4	CURRENCY CONSIDERED	30
1.5	UNIT CONSIDERED	30
1.6	LIMITATIONS	30
1.7	STAKEHOLDERS	30
1.8	SUMMARY OF CHANGES	31
2	RESEARCH METHODOLOGY	32
2.1	INTRODUCTION	32
2.2	RESEARCH APPROACH	34
2.2.1	SECONDARY DATA	34
2.2.1.1	List of major secondary sources	35
2.2.1.2	Key data from secondary sources	35
2.2.2	PRIMARY DATA	35
2.2.2.1	Breakdown of primaries	36
2.2.2.2	Key participants in interviews	36
2.2.2.3	Key data from primary sources	37
2.2.2.4	Key industry insights	37
2.3	FACTOR ANALYSIS	38
2.3.1	SUPPLY-SIDE ANALYSIS	38
2.3.2	DEMAND-SIDE ANALYSIS	39
2.4	MARKET SIZE ESTIMATION METHODOLOGY	39
2.4.1	BOTTOM-UP APPROACH	40
2.4.1.1	Approach to arrive at market size using bottom-up analysis (demand side)	40
2.4.2	TOP-DOWN APPROACH	41

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

2.4.2.1	Approach to arrive at market size using top-down approach (supply side)	41
2.5	DATA TRIANGULATION	42
2.6	RESEARCH LIMITATIONS	43
2.7	RISK ANALYSIS	43
3	EXECUTIVE SUMMARY	44
4	PREMIUM INSIGHTS	50
4.1	ATTRACTIVE GROWTH OPPORTUNITIES FOR PLAYERS IN CRYOCOOLER MARKET	50
4.2	CRYOCOOLER MARKET, BY OPERATING CYCLE	50
4.3	CRYOCOOLER MARKET, BY TEMPERATURE RANGE	51
4.4	CRYOCOOLER MARKET, BY HARDWARE TYPE	51
4.5	CRYOCOOLER MARKET IN ASIA PACIFIC, BY COUNTRY	52
4.6	CRYOCOOLER MARKET, BY REGION	52
4.7	CRYOCOOLER MARKET, BY GEOGRAPHY	53
5	MARKET OVERVIEW	54
5.1	INTRODUCTION	54
5.2	MARKET DYNAMICS	54
5.2.1	DRIVERS	55
5.2.1.1	Accelerating cryocooler demand from aerospace & defense sector	55
5.2.1.2	Surging adoption of quantum computing technology	55
5.2.1.3	Escalating demand for helium-free MRI systems by healthcare providers	56
5.2.2	RESTRAINTS	57
5.2.2.1	Low adoption in cost-sensitive markets due to high upfront costs and extended payback	57
5.2.2.2	Maintenance-driven expenditure and workforce skill gaps	58
5.2.3	OPPORTUNITIES	59
5.2.3.1	Emergence of sub-4K pre-coolers tailored for quantum data centers	59
5.2.3.2	Commercialization of small satellites	60
5.2.4	CHALLENGES	61
5.2.4.1	Geopolitical risks impacting specialized component sourcing	61
5.2.4.2	Commercial-scale expansion barriers due to performance-cost trade-offs	61
5.3	TRENDS/DISRUPTIONS IMPACTING CUSTOMER BUSINESS	62
5.4	PRICING ANALYSIS	63
5.4.1	PRICING RANGE OF CRYOCOOLERS, BY KEY PLAYER, 2024	64
5.4.2	AVERAGE SELLING PRICE TREND OF CRYOCOOLERS, BY REGION, 2021-2024	64
5.5	VALUE CHAIN ANALYSIS	65
5.6	ECOSYSTEM ANALYSIS	67
5.7	TECHNOLOGY ANALYSIS	68
5.7.1	KEY TECHNOLOGIES	69
5.7.1.1	Pulse tube cryocoolers	69
5.7.1.2	Stirling cryocoolers	69
5.7.2	COMPLEMENTARY TECHNOLOGIES	69
5.7.2.1	Thermal management & insulation	69
5.7.2.2	Cryogenic sensors & instrumentation	69
?		

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 5.7.3 ADJACENT TECHNOLOGIES 70
 - 5.7.3.1 Thermoelectric coolers (Peltier devices) 70
 - 5.7.3.2 Quantum technologies 70
 - 5.8 PATENT ANALYSIS 70
 - 5.9 TRADE ANALYSIS 73
 - 5.9.1 IMPORT SCENARIO (HS CODE 8418) 74
 - 5.9.2 EXPORT SCENARIO (HS CODE 8418) 75
 - 5.10 KEY CONFERENCES AND EVENTS, 2025-2026 76
 - 5.11 CASE STUDY ANALYSIS 77
 - 5.11.1 SHI'S HIGH-CAPACITY 4 KGM-JT RJT-100 CRYOCOOLER SYSTEM FOR INDUSTRIAL SRF ACCELERATORS 77
 - 5.11.2 CRYOR'S FLEXIBLE AND ADAPTABLE CRYOCOOLER SOLUTION FOR RESEARCH LABORATORIES 77
 - 5.11.3 CREARE'S MECHANICAL CRYOCOOLER FOR NICMOS INFRARED VISION RECOVERY ON HUBBLE SPACE TELESCOPE 78
 - 5.11.4 BLUEFOR' PT450 PULSE TUBE CRYOCOOLER MEETING PERFORMANCE AND ENERGY EFFICIENCY GOALS 78
 - 5.12 INVESTMENT AND FUNDING SCENARIO 78
 - 5.13 REGULATORY LANDSCAPE 79
 - 5.13.1 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS 79
 - 5.13.2 KEY REGULATIONS 81
 - 5.14 PORTER'S FIVE FORCES ANALYSIS 81
 - 5.14.1 INTENSITY OF COMPETITIVE RIVALRY 83
 - 5.14.2 THREAT OF SUBSTITUTES 83
 - 5.14.3 BARGAINING POWER OF BUYERS 83
 - 5.14.4 BARGAINING POWER OF SUPPLIERS 83
 - 5.14.5 THREAT OF NEW ENTRANTS 84
 - 5.15 KEY STAKEHOLDERS AND BUYING CRITERIA 84
 - 5.15.1 KEY STAKEHOLDERS IN BUYING PROCESS 84
 - 5.15.2 BUYING CRITERIA 85
 - 5.16 IMPACT OF GEN AI/AI ON CRYOCOOLER MARKET 85
 - 5.17 2025 US TARIFF IMPACT ON CRYOCOOLER MARKET 86
 - 5.17.1 INTRODUCTION 86
 - 5.17.2 KEY TARIFF RATES 87
 - 5.17.3 PRICE IMPACT ANALYSIS 88
 - 5.17.4 IMPACT ON COUNTRIES/REGIONS 89
 - 5.17.4.1 US 89
 - 5.17.4.2 Europe 89
 - 5.17.4.3 Asia Pacific 90
 - 5.17.5 IMPACT ON APPLICATIONS 91
- ?
- 6 CRYOCOOLER MARKET, BY OFFERING 92
 - 6.1 INTRODUCTION 93
 - 6.2 HARDWARE 94
 - 6.2.1 COMPRESSOR 95
 - 6.2.1.1 Ability to minimize vibration and acoustic interference in sensitive systems to accelerate demand 95
 - 6.2.2 COLD HEAD 96
 - 6.2.2.1 Extended maintenance-free operation to boost demand 96
 - 6.2.3 HEAT DISSIPATION PIPE 97
 - 6.2.3.1 Rising use of additive manufacturing to fabricate complex heat

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

pipe geometries to fuel segmental growth 97

6.2.4 POWER CONDITIONING UNIT 97

6.2.4.1 Ability to withstand radiation and voltage fluctuations to propel market 97

6.2.5 OTHER HARDWARE TYPES 98

6.3 SERVICES 98

6.3.1 TECHNICAL SUPPORT 99

6.3.1.1 Need for on-demand expertise to ensure operational continuity to push segmental growth 99

6.3.2 PRODUCT REPAIR & REFURBISHMENT 99

6.3.2.1 Rising focus on extending product lifecycle and maximizing ROI to boost demand 99

6.3.3 PREVENTIVE MAINTENANCE 100

6.3.3.1 Significant focus on reducing downtime and avoiding costly system failures to surge demand 100

6.3.4 CUSTOMER TRAINING 100

6.3.4.1 Requirement to keep customers updated with latest operational practices to spike demand 100

7 CRYOCOOLER MARKET, BY HEAT EXCHANGER TYPE 102

7.1 INTRODUCTION 103

7.2 RECUPERATIVE HEAT EXCHANGER 104

7.2.1 INCREASING CRYOGENIC ADOPTION IN SPACE PROGRAMS TO SUPPORT SEGMENTAL GROWTH 104

7.3 REGENERATIVE HEAT EXCHANGER 105

7.3.1 SUPERIOR THERMAL STABILITY AND BETTER UNIFORMITY TO BOOST DEMAND 105

8 CRYOCOOLER MARKET, BY OPERATING CYCLE 106

8.1 INTRODUCTION 107

8.2 OPEN-LOOP CYCLE 108

8.2.1 EXCELLENCE IN HANDLING HIGH THROUGHPUT AND ADAPTING TO VARYING PROCESS REQUIREMENTS TO SPIKE DEMAND 108

?

8.3 CLOSED-LOOP CYCLE 108

8.3.1 REDUCED VIBRATION, LOWER MAINTENANCE, AND HIGHER RELIABILITY THAN OPEN-LOOP SYSTEMS TO ACCELERATE ADOPTION 108

9 CRYOCOOLER MARKET, BY CRYOCOOLER TYPE 111

9.1 INTRODUCTION 112

9.2 GIFFORD-MCMAHON CRYOCOOLERS 113

9.2.1 SUITABILITY FOR APPLICATIONS REQUIRING CONTINUOUS AND STABLE COOLING TO BOOST DEMAND 113

9.3 PULSE TUBE CRYOCOOLERS 117

9.3.1 ABILITY TO DELIVER VIBRATION-FREE, MAINTENANCE-FREE, AND SPACE-COMPATIBLE COOLING SOLUTIONS TO INCREASE DEMAND 117

9.4 STIRLING CRYOCOOLERS 122

9.4.1 RISING USE IN SPACE APPLICATIONS TO DRIVE MARKET 122

9.5 JOULE-THOMSON CRYOCOOLERS 127

9.5.1 WIDESPREAD USE IN GAS LIQUEFACTION, CRYOGENIC RESEARCH, AND MEDICAL IMAGING TO PROPEL MARKET 127

9.6 BRAYTON CRYOCOOLERS 131

9.6.1 INCREASING DEMAND IN AEROSPACE, DEFENSE, AND HIGH-POWER INDUSTRIAL APPLICATIONS TO FOSTER MARKET

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

GROWTH	131
10 CRYOCOOLER MARKET, BY TEMPERATURE RANGE	136
10.1 INTRODUCTION	137
10.2 1-50 K	138
10.2.1 RISING USE IN ULTRA-LOW-NOISE DETECTION AND QUANTUM COMPUTING APPLICATIONS TO FACILITATE SEGMENTAL GROWTH	138
10.3 >50-150 K	139
10.3.1 ELEVATING DEMAND FOR FIELD-DEPLOYABLE DEFENSE SYSTEMS TO ACCELERATE SEGMENTAL GROWTH	139
10.4 ABOVE 150 K	139
10.4.1 ESCALATING USE IN INDUSTRIAL LIQUEFACTION AND HIGH-TEMPERATURE SUPERCONDUCTING APPLICATIONS TO BOOST SEGMENTAL GROWTH	139
11 CRYOCOOLER MARKET, BY APPLICATION	140
11.1 INTRODUCTION	141
11.2 MILITARY	143
11.2.1 ESCALATING USE OF UAVS AND DRONES IN BATTLEFIELD SURVEILLANCE TO DRIVE MARKET	143
11.2.2 IR SENSORS FOR MISSILE GUIDANCE	143
11.2.3 IR SENSORS FOR SATELLITE-BASED SURVEILLANCE	144
11.3 MEDICAL	145
11.3.1 PRESSING NEED TO REDUCE DOWNTIME IN CRITICAL HEALTHCARE INFRASTRUCTURE TO CONTRIBUTE TO MARKET GROWTH	145
11.3.2 MRI SYSTEMS	146
11.3.3 LIQUEFACTION OF OXYGEN FOR STORAGE	146
11.3.4 CRYOSURGERY AND PROTON THERAPY	146
11.4 COMMERCIAL	147
11.4.1 EXPANSION OF INDUSTRIAL-SCALE GAS LIQUEFACTION PLANTS TO FACILITATE DEMAND	147
11.4.2 SEMICONDUCTOR FABRICATION	147
11.4.3 HIGH-TEMPERATURE SUPERCONDUCTORS FOR CELL PHONE BASE STATIONS	148
11.4.4 IR SENSORS FOR NDE AND PROCESS MONITORING	148
11.5 ENVIRONMENTAL	149
11.5.1 RISING FOCUS ON TRACKING POLLUTION SOURCES AND IMPROVING URBAN AIR QUALITY TO SUPPORT MARKET GROWTH	149
11.5.2 IR SENSORS FOR ATMOSPHERIC STUDIES ON OZONE HOLE AND GREENHOUSE EFFECT	150
11.5.3 IR SENSORS FOR POLLUTION MONITORING	150
11.6 ENERGY	151
11.6.1 GREATER EMPHASIS ON REDUCING ENERGY LOSSES DURING TRANSMISSION TO FOSTER MARKET GROWTH	151
11.6.2 IR SENSORS FOR THERMAL LOSS MEASUREMENTS	151
11.6.3 SUPERCONDUCTING MAGNETIC ENERGY STORAGE FOR PEAK SHAVING	151
11.7 TRANSPORT	152
11.7.1 ELEVATING DEMAND FOR HYDROGEN-POWERED SHIPS AND SUBMARINES TO CREATE GROWTH OPPORTUNITIES	152
11.7.2 SUPERCONDUCTING MAGNETS IN MAGLEV TRAINS	153
11.7.3 LNG FOR FLEET VEHICLES	153
11.8 RESEARCH & DEVELOPMENT	154
11.8.1 RAPID INNOVATIONS IN SENSORS, NANOTECHNOLOGY, AND SUPERCONDUCTING ELECTRONICS TO PROMOTE MARKET GROWTH	154
11.8.2 NUCLEAR MAGNETIC RESONANCE	154
11.8.3 ELECTRON PARAMAGNETIC RESONANCE	154

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

11.9	SPACE	155
11.9.1	EARTH OBSERVATION, ASTROPHYSICS, AND DEEP-SPACE EXPLORATION MISSIONS TO SPUR DEMAND	155
11.9.2	SPACE ASTRONOMY	156
11.9.3	PLANETARY SCIENCE	156
11.10	AGRICULTURE & BIOLOGY	157
11.10.1	REQUIREMENT TO PRESERVE SEEDS, GENETIC MATERIALS, AND BIOLOGICAL SAMPLES TO ENCOURAGE ADOPTION	157
11.10.2	STORAGE OF BIOLOGICAL CELLS AND SPECIMENS	158
11.11	MINING & METAL	158
11.11.1	LEVERAGING CRYOCOOLERS TO ENHANCE CORROSION RESISTANCE AND WEAR PERFORMANCE	158
11.11.2	METAL TEMPERING	159
11.11.3	SHRINK FITTING	159
11.12	OTHER APPLICATIONS	160
	?	
12	CRYOCOOLER MARKET, BY REGION	161
12.1	INTRODUCTION	162
12.2	NORTH AMERICA	163
12.2.1	MACROECONOMIC OUTLOOK FOR NORTH AMERICA	164
12.2.2	US	167
12.2.2.1	Well-established military industry and high expenditure on healthcare equipment to drive market	167
12.2.3	CANADA	168
12.2.3.1	Growing medical and healthcare expenditure to spur demand	168
12.2.4	MEXICO	169
12.2.4.1	Emerging industrial applications to drive demand	169
12.3	EUROPE	170
12.3.1	MACROECONOMIC OUTLOOK FOR EUROPE	171
12.3.2	GERMANY	174
12.3.2.1	Thriving healthcare sector and government support for cryogenic research to foster market growth	174
12.3.3	UK	175
12.3.3.1	Government efforts toward defense system enhancement to fuel market growth	175
12.3.4	FRANCE	176
12.3.4.1	Emphasis on innovation and technological advancement to facilitate market growth	176
12.3.5	ITALY	177
12.3.5.1	Rising use of cryogenic technology in MRI and cancer treatment applications to support market growth	177
12.3.6	NETHERLANDS	178
12.3.6.1	Partnerships between cryogenic technology providers and research institutions to expedite market growth	178
12.3.7	POLAND	179
12.3.7.1	Surging deployment of cooling systems in electronic devices and automotive systems to accelerate market growth	179
12.3.8	NORDICS	180
12.3.8.1	Significant focus on sustainability and cryogenic research synergies to propel market	180
12.3.9	REST OF EUROPE	181
12.4	ASIA PACIFIC	182
12.4.1	MACROECONOMIC OUTLOOK FOR ASIA PACIFIC	183
12.4.2	JAPAN	187

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 12.4.2.1 Surging demand from universities, national laboratories, and research centers to develop innovative products to drive market 187
- 12.4.3 CHINA 188
 - 12.4.3.1 Adoption of clean energy objectives to promote demand for cooling systems 188
 - ?
- 12.4.4 SOUTH KOREA 189
 - 12.4.4.1 Escalating demand for cryopumps from semiconductor manufacturers to fuel market growth 189
- 12.4.5 INDIA 190
 - 12.4.5.1 Booming healthcare industry to intensify demand 190
- 12.4.6 AUSTRALIA 191
 - 12.4.6.1 Healthcare, space, and defense verticals to contribute most to market growth 191
- 12.4.7 INDONESIA 191
 - 12.4.7.1 Introduction of I-NCAP plan to ensure sustainable cooling practices to stimulate demand 191
- 12.4.8 MALAYSIA 192
 - 12.4.8.1 Rising focus on adopting energy-efficient cooling and modernizing air conditioning standards to spike demand 192
- 12.4.9 THAILAND 193
 - 12.4.9.1 Heightened demand for high-performance cryogenic systems across industrial and healthcare sectors to propel market 193
- 12.4.10 VIETNAM 194
 - 12.4.10.1 Expansion of digital infrastructure due to rapid industrialization to create growth opportunities 194
- 12.4.11 REST OF ASIA PACIFIC 195
- 12.5 ROW 196
 - 12.5.1 MACROECONOMIC OUTLOOK FOR ROW 197
 - 12.5.2 MIDDLE EAST 200
 - 12.5.2.1 Bahrain 202
 - 12.5.2.1.1 Expanding industrial parks, energy facilities, and manufacturing hubs to support market growth 202
 - 12.5.2.2 Kuwait 202
 - 12.5.2.2.1 Government-supported research programs in energy and materials science to boost adoption 202
 - 12.5.2.3 Oman 203
 - 12.5.2.3.1 Strategic government programs aimed at infrastructure modernization to rise deployment 203
 - 12.5.2.4 Qatar 203
 - 12.5.2.4.1 Capitalize on defense and scientific infrastructure expansion 203
 - 12.5.2.5 Saudi Arabia 203
 - 12.5.2.5.1 Vision 2030 initiative to create opportunities 203
 - 12.5.2.6 UAE 204
 - 12.5.2.6.1 Investment to improve data center capabilities to contribute to market growth 204
 - 12.5.2.7 Rest of Middle East 204
 - 12.5.3 AFRICA 204
 - 12.5.3.1 South Africa 206
 - 12.5.3.1.1 Healthcare infrastructure modernization efforts to support market growth 206
 - 12.5.3.2 Other African countries 206
 - 12.5.4 SOUTH AMERICA 206
 - 12.5.4.1 Brazil 208
 - 12.5.4.1.1 Push toward renewable energy and industrial automation to spur demand 208
 - 12.5.4.2 Argentina 208
 - 12.5.4.2.1 Growing investments in healthcare, space research, and energy efficiency programs to drive market 208

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 12.5.4.3 Rest of South America 208
- 13 COMPETITIVE LANDSCAPE 209
 - 13.1 OVERVIEW 209
 - 13.2 KEY PLAYER STRATEGIES/RIGHT TO WIN, 2021-2025 209
 - 13.3 MARKET SHARE ANALYSIS, 2024 210
 - 13.4 REVENUE ANALYSIS, 2021-2024 212
 - 13.5 COMPANY VALUATION AND FINANCIAL METRICS 213
 - 13.6 BRAND COMPARISON 214
 - 13.7 COMPANY EVALUATION MATRIX: KEY PLAYERS, 2024 214
 - 13.7.1 STARS 214
 - 13.7.2 EMERGING LEADERS 214
 - 13.7.3 PERVASIVE PLAYERS 215
 - 13.7.4 PARTICIPANTS 215
 - 13.7.5 COMPANY FOOTPRINT: KEY PLAYERS, 2024 216
 - 13.7.5.1 Company footprint 216
 - 13.7.5.2 Region footprint 216
 - 13.7.5.3 Cryocooler type footprint 217
 - 13.7.5.4 Temperature range footprint 218
 - 13.7.5.5 Application footprint 219
 - 13.8 COMPANY EVALUATION MATRIX: STARTUPS/SMES, 2024 219
 - 13.8.1 PROGRESSIVE COMPANIES 219
 - 13.8.2 RESPONSIVE COMPANIES 220
 - 13.8.3 DYNAMIC COMPANIES 220
 - 13.8.4 STARTING BLOCKS 220
 - 13.8.5 COMPETITIVE BENCHMARKING: STARTUPS/SMES, 2024 221
 - 13.8.5.1 Detailed list of key startups/SMEs 221
 - 13.8.5.2 Competitive benchmarking of key startups/SMEs 221
 - 13.9 COMPETITIVE SCENARIO 222
 - 13.9.1 PRODUCT LAUNCHES 222
 - 13.9.2 DEALS 223
- 14 COMPANY PROFILES 224
 - 14.1 KEY PLAYERS 224
 - 14.1.1 SUMITOMO HEAVY INDUSTRIES, LTD. 224
 - 14.1.1.1 Business overview 224
 - 14.1.1.2 Products/Solutions/Services offered 225
 - 14.1.1.3 Recent developments 226
 - 14.1.1.3.1 Product launches 226
 - 14.1.1.4 MnM view 227
 - 14.1.1.4.1 Key strengths/Right to win 227
 - 14.1.1.4.2 Strategic choices 227
 - 14.1.1.4.3 Weaknesses/Competitive threats 228
 - 14.1.2 THALES 229
 - 14.1.2.1 Business overview 229
 - 14.1.2.2 Products/Solutions/Services offered 230
 - 14.1.2.3 MnM view 231
 - 14.1.2.3.1 Key strengths/Right to win 231

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 14.1.2.3.2 Strategic choices 231
- 14.1.2.3.3 Weaknesses/Competitive threats 232
- 14.1.3 EDWARDS VACUUM (ATLAS COPCO GROUP) 233
 - 14.1.3.1 Business overview 233
 - 14.1.3.2 Products/Solutions/Services offered 233
 - 14.1.3.3 MnM view 234
 - 14.1.3.3.1 Key strengths/Right to win 234
 - 14.1.3.3.2 Strategic choices 234
 - 14.1.3.3.3 Weaknesses/Competitive threats 234
- 14.1.4 AMETEK.INC. 235
 - 14.1.4.1 Business overview 235
 - 14.1.4.2 Products/Solutions/Services offered 236
 - 14.1.4.3 MnM view 237
 - 14.1.4.3.1 Key strengths/Right to win 237
 - 14.1.4.3.2 Strategic choices 237
 - 14.1.4.3.3 Weaknesses/Competitive threats 237
- 14.1.5 CHART INDUSTRIES, INC. 238
 - 14.1.5.1 Business overview 238
 - 14.1.5.2 Products/Solutions/Services offered 239
 - 14.1.5.3 MnM view 240
 - 14.1.5.3.1 Key strengths/Right to win 240
 - 14.1.5.3.2 Strategic choices 240
 - 14.1.5.3.3 Weaknesses/Competitive threats 240
- 14.1.6 BLUEFORS 241
 - 14.1.6.1 Business overview 241
 - 14.1.6.2 Products/Solutions/Services offered 241
 - 14.1.6.3 Recent developments 242
 - 14.1.6.3.1 Product launches 242
 - 14.1.6.3.2 Deals 242
 - 14.1.6.3.3 Expansions 243
- 14.1.7 NORTHROP GRUMMAN 244
 - 14.1.7.1 Business overview 244
 - 14.1.7.2 Products/Solutions/Services offered 245
 - 14.1.7.3 Recent developments 246
 - 14.1.7.3.1 Deals 246
- 14.1.8 ADVANCED RESEARCH SYSTEMS 247
 - 14.1.8.1 Business overview 247
 - 14.1.8.2 Products/Services/Solutions offered 247
- 14.1.9 RICOR 248
 - 14.1.9.1 Business overview 248
 - 14.1.9.2 Products/Solutions/Services offered 248
- 14.1.10 AIR LIQUIDE ADVANCED TECHNOLOGIES 249
 - 14.1.10.1 Business overview 249
 - 14.1.10.2 Products/Solutions/Services offered 249
- 14.2 OTHER PLAYERS 250
 - 14.2.1 LAKE SHORE CRYOTRONICS 250
 - 14.2.2 CREARE 250

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

14.2.3	LIHAN CRYOGENICS CO., LTD.	251
14.2.4	TRISTAN TECHNOLOGIES, INC.	251
14.2.5	VACREE TECHNOLOGIES CO., LTD.	252
14.2.6	HONEYWELL INTERNATIONAL INC.	252
14.2.7	BRIGHT INSTRUMENT CO. LTD.	253
14.2.8	ABSOLUT SYSTEM	253
14.2.9	FABRUM	254
14.2.10	CRYOSPECTRA GMBH	254
14.2.11	ULVAC CRYOGENICS INC.	255
14.2.12	OXFORD CRYOSYSTEMS LTD.	256
14.2.13	HYCON LTD.	256
14.2.14	RIX INDUSTRIES	257
14.2.15	AIM INFRAROT-MODULE GMBH	257
15	APPENDIX	258
15.1	INSIGHTS FROM INDUSTRY EXPERTS	258
15.2	DISCUSSION GUIDE	258
15.3	KNOWLEDGESTORE: MARKETSandMARKETS' SUBSCRIPTION PORTAL	262
15.4	CUSTOMIZATION OPTIONS	264
15.5	RELATED REPORTS	264
15.6	AUTHOR DETAILS	265

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

**Cryocooler Market by Recuperative Heat Exchanger, Regenerative Heat Exchanger,
Heat Dissipation Pipe, Preventive Maintenance Services, Gifford-McMahon
Cryocoolers, Stirling Cryocoolers, Joule Thomson Cryocoolers, Military, Space - Global
Forecast to 2030**

Market Report | 2025-09-16 | 266 pages | MarketsandMarkets

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User	\$4950.00
	Multi User	\$6650.00
	Corporate License	\$8150.00
	Enterprise Site License	\$10000.00
		VAT
		Total

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Zip Code*

Country*

Date

2026-03-08

Signature

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com