

Thermal Management Market by Material, Device (Conduction Cooling Devices, Convection Cooling Devices), Service (Installation & Calibration, Optimization & Post-sales Support), End-user Industry and Region – Global Forecast to 2028

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Abstracts

The global thermal management market was valued at USD 10.7 billion in 2022 and is projected to reach USD 19.3 billion by 2028, registering a CAGR of 9.7% from 2023 to 2028. When temperatures get too high, it is necessary to wick the heat away from the components through heat-dissipating devices, such as a liquid cooling plate, chassis, or traditional heat sink. For instance, if a printed circuit board (PCB) does not have a way to transfer heat, the reliability and longevity of its components will be adversely affected. In extreme cases, they can even melt or get damaged. Owing to these factors, heat dissipation solutions are used as thermal management components.

“Material Type: Non-adhesive materials segment is expected to witness highest CAGR in thermal management market during forecast period“

The non-adhesive materials segment is expected to record the highest CAGR of 9.8% during the forecast period. This growth is attributed to the wide use of non-adhesive materials such as thermal pads, gap fillers, and grease in consumer electronics such as computers, laptops, and other handheld devices, including tablets. Non-adhesive materials are also very proficient in handling mechanical shocks and absorption, providing more security and reliability to users. Thermal pads or other applicants, such as gap fillers, can structure their physical characteristics according to the requirements of electronic devices. Thermal pads are easily compressible to accommodate different profile heights of multiple components and remain stress-free while offering outstanding mechanical shock absorption. Though the conduction of heat by thermal pads is lesser

effective than a minimal amount of thermal grease, these pads are widely used as they are clean and generally easy to install.

“Advanced cooling devices segment to register highest CAGR in thermal management market from 2023 to 2028”

The advanced cooling devices segment is anticipated to record the highest CAGR of 12.8% during the forecast period. Advanced cooling devices, such as cold plates, are used in several thermal management applications, including heating, ventilation, air conditioning (HVAC), temperature calibration, and control. Increasing R&D investments to carry out technical advancements in thermal management solutions and systems, including the development of thermal protection materials for space reentry vehicles and the incorporation of nanoscale heat transfer in next-generation electronic devices, are leading to the growth of the advanced cooling devices segment of the thermal management market across the world. Moreover, these advanced cooling devices are widely used in various types of computers, ranging from laptops to supercomputers and are embedded with heat pipes to prevent overheating. These factors are contributing to the growth of the thermal management market.

“Optimization & post-sales support service type segment is estimated to witness the highest CAGR of thermal management market between 2023 and 2028”

The optimization & post-sales support service type segment accounted for the largest market share of ~59% in 2022 and is expected to witness the highest CAGR of 10.5% during the forecast period. An effective post-sales process will ensure the client's satisfaction with the product and overall experience. Also, this will allow the manufacturer to understand where the process is thriving and needs improvement. These are some key factors contributing to the rising demand for optimization & post-sales support services.

“Automotive end-user industry segment is expected to record highest CAGR in thermal management market during forecast period”

The automotive end-user industry is expected to witness the highest CAGR of 11.1% during the forecast period. The increasing use of electric vehicles (EVs), which enable e-mobility and compliance with CO₂ emission regulations, is driving the growth of the automotive segment in the market. In the automotive industry, thermal management of HVAC systems, instrument panels, infotainment systems, satellite navigation systems, head-up displays, and engine and brake management systems is essential.

“North American market is estimated to grow at second-highest CAGR during forecast period”

The North American market is expected to grow at the second-highest CAGR of 8.1% during the forecast period. The growth in the region is attributed to the significant presence of numerous players in the ecosystem, such as Honeywell International Inc., Vertiv Co, Parker Chomerics, Boyd, LORD Corporation, API Heat Transfer, Advanced Cooling Technologies, Inc., Master Bond Inc., and ThermoTek.

Breakdown of Primaries

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

By Company Type - Tier 1 – 45%, Tier 2 – 30%, Tier 3 – 25%

By Designation— C-level Executives - 35%, Managers - 30%, Others - 35%

By Region—North America - 30%, Asia Pacific - 40%, Europe - 20%, RoW - 10%

The thermal management market is dominated by a few globally established players, such as Henkel (Germany), Honeywell International Inc. (US), Vertiv Co (US), Delta Electronics, Inc. (Taiwan), Parker Chomerics (US), TAT Technologies Ltd. (Israel), Autoneum Holding AG (Switzerland), Boyd (US), European Thermodynamics Ltd. (UK), and Laird Thermal Systems (US). The study includes an in-depth competitive analysis of these key players in the thermal management market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the thermal management market and forecasts its size based on segments, namely, material, device, service type, end-user industry, and region. Based on region (North America, Asia Pacific, Europe, and RoW), Material (Adhesive Materials, Non-Adhesive Materials), Device (Conduction Cooling Devices, Convection Cooling Devices, Advanced Cooling Devices, Hybrid Cooling Devices), Service Type (Installation & Calibration, Optimization & Post-sales Support), End-user Industry

(Consumer Electronics, Servers & Data Centers, Automotive, Aerospace & Defense, Enterprises, Healthcare, Other End-user Industries). The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the thermal management market.

Key Benefits of Buying the Report:

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the thermal management market and provides them with information on key market drivers, restraints, challenges, and opportunities.

Contents

1 INTRODUCTION

1.1 STUDY OBJECTIVES

1.2 MARKET DEFINITION

1.2.1 INCLUSIONS AND EXCLUSIONS

1.3 STUDY SCOPE

1.3.1 MARKETS COVERED

FIGURE 1 THERMAL MANAGEMENT MARKET SEGMENTATION

1.3.2 GEOGRAPHIC SCOPE

1.3.3 YEARS CONSIDERED

1.4 CURRENCY CONSIDERED

1.5 UNITS CONSIDERED

1.6 STAKEHOLDERS

1.7 SUMMARY OF CHANGES

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 THERMAL MANAGEMENT MARKET: RESEARCH DESIGN

2.1.1 SECONDARY AND PRIMARY RESEARCH

2.1.2 SECONDARY DATA

2.1.2.1 Key secondary sources

2.1.2.2 Key data from secondary sources

2.1.3 PRIMARY DATA

2.1.3.1 Key primary interview participants

2.1.3.2 Breakdown of primaries

FIGURE 3 BREAKDOWN OF PRIMARIES

2.1.3.3 Key data from primary sources

2.1.3.4 Key industry insights

2.2 FACTOR ANALYSIS

2.2.1 SUPPLY-SIDE ANALYSIS

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 1 (SUPPLY-SIDE ANALYSIS) – REVENUES GENERATED BY COMPANIES FROM SALES OF PRODUCTS OFFERED IN THERMAL MANAGEMENT MARKET

FIGURE 5 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 1 (TOP-DOWN, SUPPLY-SIDE) – ILLUSTRATION OF REVENUE ESTIMATION FOR ONE COMPANY IN THERMAL MANAGEMENT MARKET

2.3 MARKET SIZE ESTIMATION

FIGURE 6 MARKET SIZE ESTIMATION METHODOLOGY: SUPPLY-SIDE ANALYSIS

2.3.1 BOTTOM-UP APPROACH

2.3.1.1 Approach to obtain market share using bottom-up analysis (demand side)

FIGURE 7 MARKET SIZE ESTIMATION METHODOLOGY: BOTTOM-UP APPROACH

2.3.2 TOP-DOWN APPROACH

2.3.2.1 Approach to obtain market share using top-down analysis (supply side)

FIGURE 8 MARKET SIZE ESTIMATION METHODOLOGY: TOP-DOWN APPROACH

2.3.3 GROWTH PROJECTION AND FORECASTING ASSUMPTIONS

TABLE 1 MARKET GROWTH ASSUMPTIONS

2.4 DATA TRIANGULATION

FIGURE 9 THERMAL MANAGEMENT MARKET: DATA TRIANGULATION

2.5 ASSUMPTIONS

TABLE 2 KEY ASSUMPTIONS: MACRO AND MICRO-ECONOMIC ENVIRONMENT

2.6 LIMITATIONS

2.7 RISK ASSESSMENT

TABLE 3 RISK ASSESSMENT: THERMAL MANAGEMENT MARKET

3 EXECUTIVE SUMMARY

FIGURE 10 AUTOMOTIVE SEGMENT TO EXPERIENCE HIGHEST CAGR DURING FORECAST PERIOD

FIGURE 11 ADVANCED COOLING DEVICES TO WITNESS HIGHEST CAGR DURING FORECAST PERIOD

FIGURE 12 ASIA PACIFIC TO LEAD THERMAL MANAGEMENT MARKET FROM 2023 TO 2028

3.1 IMPACT OF RECESSION ON THERMAL MANAGEMENT MARKET

FIGURE 13 PRE- AND POST-RECESSION IMPACT ON THERMAL MANAGEMENT MARKET

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE GROWTH OPPORTUNITIES FOR THERMAL MANAGEMENT MARKET PLAYERS

FIGURE 14 GROWING ADOPTION OF THERMAL MANAGEMENT TO REDUCE VEHICLE EMISSIONS TO DRIVE MARKET

4.2 THERMAL MANAGEMENT MARKET, BY SERVICE TYPE

FIGURE 15 OPTIMIZATION & POST-SALES SUPPORT SEGMENT IS PROJECTED TO WITNESS HIGHER CAGR DURING FORECAST PERIOD

4.3 THERMAL MANAGEMENT MARKET, BY REGION

FIGURE 16 ASIA PACIFIC TO HOLD LARGEST SHARE OF THERMAL MANAGEMENT MARKET IN 2028

4.4 THERMAL MANAGEMENT MARKET, BY COUNTRY

FIGURE 17 CHINA TO RECORD HIGHEST CAGR IN OVERALL THERMAL MANAGEMENT MARKET DURING FORECAST PERIOD

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 18 THERMAL MANAGEMENT MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

5.2.1 DRIVERS

5.2.1.1 Increasing need for advanced heat dissipation solutions

5.2.1.2 Growing adoption of thermal management components in consumer electronics

5.2.1.3 Ongoing radical miniaturization of electronic devices

FIGURE 19 DRIVERS AND THEIR IMPACT ON THERMAL MANAGEMENT MARKET

5.2.2 RESTRAINTS

5.2.2.1 Design complexities of components used in cooling systems

FIGURE 20 RESTRAINTS AND THEIR IMPACT ON THERMAL MANAGEMENT MARKET

5.2.3 OPPORTUNITIES

5.2.3.1 Rising demand for thermal management solutions in EVs

FIGURE 21 GROWTH IN SALES OF EV (2018–2028)

5.2.3.2 Growing strictness regarding emission regulation

FIGURE 22 OPPORTUNITIES AND THEIR IMPACT ON THERMAL MANAGEMENT MARKET

5.2.4 CHALLENGES

5.2.4.1 High development costs of customized thermal management solutions and systems

FIGURE 23 CHALLENGES AND THEIR IMPACT ON THERMAL MANAGEMENT MARKET

5.3 SUPPLY CHAIN ANALYSIS

FIGURE 24 SUPPLY CHAIN OF THERMAL MANAGEMENT MARKET

TABLE 4 THERMAL MANAGEMENT MARKET: ECOSYSTEM

5.4 REVENUE SHIFT AND NEW REVENUE POCKETS FOR PLAYERS IN THERMAL MANAGEMENT MARKET

FIGURE 25 REVENUE SHIFT IN THERMAL MANAGEMENT MARKET

5.5 THERMAL MANAGEMENT MARKET ECOSYSTEM

FIGURE 26 ECOSYSTEM OF THERMAL MANAGEMENT

5.6 AVERAGE SELLING PRICE ANALYSIS

5.6.1 AVERAGE SELLING PRICE OF THERMAL MANAGEMENT SOLUTIONS
OFFERED BY KEY PLAYERS

FIGURE 27 AVERAGE SELLING PRICE OF THERMAL MANAGEMENT SOLUTIONS
OFFERED BY KEY PLAYERS

TABLE 5 AVERAGE SELLING PRICE: NON-ADHESIVE MATERIALS OFFERED BY
KEY PLAYERS, BY TYPE (USD)

5.6.2 AVERAGE SELLING PRICE TREND

TABLE 6 AVERAGE SELLING PRICE: ADHESIVE MATERIALS, BY TYPE (USD)

TABLE 7 AVERAGE SELLING PRICE: NON-ADHESIVE MATERIALS, BY TYPE (USD)

FIGURE 28 AVERAGE SELLING PRICE: NON-ADHESIVE MATERIALS, BY TYPE
(USD)

5.7 KEY STAKEHOLDERS AND BUYING CRITERIA

5.7.1 KEY STAKEHOLDERS IN BUYING PROCESS

FIGURE 29 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP
SERVICE TYPES

TABLE 8 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP
SERVICE TYPES (%)

5.7.2 BUYING CRITERIA

FIGURE 30 KEY BUYING CRITERIA FOR TOP THREE END-USE INDUSTRIES

TABLE 9 KEY BUYING CRITERIA FOR TOP THREE END-USE INDUSTRIES

5.8 TECHNOLOGY TRENDS

5.8.1 COMPLEMENTARY TECHNOLOGIES

5.8.2 COMBAT SYSTEMS IN VEHICLES

5.8.3 HIGH POWER LEVELS AND POWER DENSITY

5.8.4 5G TELECOMMUNICATIONS

5.8.5 WIRELESS THERMAL MAPPING OF DATA CENTERS

5.8.6 THERMAL MANAGEMENT SOFTWARE

5.9 PORTER'S FIVE FORCES ANALYSIS

TABLE 10 THERMAL MANAGEMENT MARKET: PORTER'S FIVE FORCES
ANALYSIS

FIGURE 31 PORTER'S FIVE FORCES ANALYSIS

5.9.1 THREAT OF NEW ENTRANTS

5.9.2 THREAT OF SUBSTITUTES

5.9.3 BARGAINING POWER OF SUPPLIERS

5.9.4 BARGAINING POWER OF BUYERS

5.9.5 INTENSITY OF COMPETITIVE RIVALRY

5.10 CASE STUDIES

5.10.1 COLOVORE DEPLOYS LIQUID-COOLING SOLUTIONS TO OFFER CUSTOMERS RACK CAPACITIES OF UP TO 50 KILOWATTS

5.10.2 LOCTITE STRUCTURAL ADHESIVE ENABLES RELIABLE MOTOR PERFORMANCE IN CHALLENGING ENVIRONMENTS

5.10.3 FORTUNE 500 ICT PROVIDER IMPROVES DATA CENTER COOLING TO ADD COMPUTING CAPACITY WITHOUT PHYSICAL EXPANSION

5.10.4 AUTOMOTIVE COMPONENT MANUFACTURER REQUIRES HEAT DISSIPATION FOR EV/HYBRID VEHICLE DC/DC CONVERTERS

5.11 TRADE ANALYSIS

5.11.1 IMPORT SCENARIO

TABLE 11 IMPORT DATA, BY COUNTRY, 2017–2021 (USD MILLION)

5.11.2 EXPORT SCENARIO

TABLE 12 EXPORT DATA, BY COUNTRY, 2017–2021 (USD MILLION)

5.12 PATENT ANALYSIS, 2012–2022

FIGURE 32 NUMBER OF PATENTS GRANTED FOR THERMAL MANAGEMENT, 2012–2022

FIGURE 33 REGIONAL ANALYSIS OF PATENTS GRANTED FOR THERMAL MANAGEMENT SOLUTIONS, 2022

TABLE 13 PATENTS PERTAINING TO THERMAL MANAGEMENT, 2021–2022

5.13 KEY CONFERENCES AND EVENTS, 2023–2024

TABLE 14 THERMAL MANAGEMENT MARKET: DETAILED CONFERENCES AND EVENTS

5.14 STANDARDS AND REGULATORY LANDSCAPE

5.14.1 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 15 NORTH AMERICA: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 16 EUROPE: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 17 ASIA PACIFIC: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 18 ROW: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

5.14.2 REGULATORY STANDARDS

5.15 TARIFF ANALYSIS

TABLE 19 TARIFF FOR HS CODE 392690 EXPORTED BY CHINA (2021)

TABLE 20 TARIFF FOR HS CODE 392690 EXPORTED BY US (2021)

6 THERMAL MANAGEMENT MARKET, BY MATERIAL TYPE

6.1 INTRODUCTION

FIGURE 34 NON-ADHESIVE MATERIALS TO CONTINUE TO HOLD LARGER SHARE IN THERMAL MANAGEMENT MARKET DURING FORECAST PERIOD

TABLE 21 THERMAL MANAGEMENT MARKET, BY MATERIAL TYPE, 2019–2022 (USD MILLION)

TABLE 22 THERMAL MANAGEMENT MARKET, BY MATERIAL TYPE, 2023–2028 (USD MILLION)

TABLE 23 MATERIAL TYPE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 24 MATERIAL TYPE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

TABLE 25 MATERIAL TYPE: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 26 MATERIAL TYPE: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

6.2 ADHESIVE MATERIALS

TABLE 27 ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY TYPE, 2019–2022 (USD MILLION)

TABLE 28 ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY TYPE, 2023–2028 (USD MILLION)

TABLE 29 ADHESIVE TAPES: THERMAL MANAGEMENT MARKET, 2019–2022 (THOUSAND UNITS)

TABLE 30 ADHESIVE TAPES: THERMAL MANAGEMENT MARKET, 2023–2028 (THOUSAND UNITS)

TABLE 31 ADHESIVE FILMS: THERMAL MANAGEMENT MARKET, 2019–2022 (MILLION UNITS)

TABLE 32 ADHESIVE FILMS: THERMAL MANAGEMENT MARKET, 2023–2028 (MILLION UNITS)

FIGURE 35 AUTOMOTIVE END-USE INDUSTRY TO HOLD LARGEST SHARE OF MARKET FOR ADHESIVE MATERIALS DURING FORECAST PERIOD

TABLE 33 ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 34 ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.2.1 TAPES

6.2.1.1 Ability to provide preferential heat transfer path between heat-generating

components and heat sinks to boost market growth

TABLE 35 TAPES: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 36 TAPES: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.2.2 FILMS

6.2.2.1 Excellent permanent adhesive strength of films with very high thermal conductivity to drive market

TABLE 37 FILMS: THERMAL MANAGEMENT MARKET, BY TYPE, 2019–2022 (USD MILLION)

TABLE 38 FILMS: THERMAL MANAGEMENT MARKET, BY TYPE, 2023–2028 (USD MILLION)

TABLE 39 FILMS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 40 FILMS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.2.2.1.1 Thermally conductive films

6.2.2.1.2 Electrically conductive films

6.2.3 ADHESIVE LIQUIDS

6.2.3.1 Ability to reduce size of devices and overall weight of assemblies to propel market growth

TABLE 41 ADHESIVE LIQUIDS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 42 ADHESIVE LIQUIDS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.2.3.1.1 Heat cure liquids

6.2.3.1.2 Room temperature cure liquids

6.3 NON-ADHESIVE MATERIALS

TABLE 43 NON-ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY TYPE, 2019–2022 (USD MILLION)

TABLE 44 NON-ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY TYPE, 2023–2028 (USD MILLION)

FIGURE 36 SERVERS & DATA CENTERS TO ACCOUNT FOR LARGEST SHARE OF MARKET FOR NON-ADHESIVE MATERIALS DURING FORECAST PERIOD

TABLE 45 NON-ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 46 NON-ADHESIVE MATERIALS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.3.1 THERMAL PADS

6.3.1.1 Advantages such as outstanding mechanical shock absorption to drive market
TABLE 47 THERMAL PADS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 48 THERMAL PADS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.3.2 GAP FILLERS

6.3.2.1 Ability to cover junctions or components for improved shock absorption to boost market growth

TABLE 49 GAP FILLERS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 50 GAP FILLERS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.3.3 PHASE-CHANGE MATERIALS

6.3.3.1 Advantages including economical passive cooling to propel market growth

TABLE 51 PHASE-CHANGE MATERIALS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 52 PHASE-CHANGE MATERIALS: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

6.3.4 GREASE

6.3.4.1 Increasing use in automotive, servers & data centers, and consumer electronics industries to boost market growth

TABLE 53 GREASE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 54 GREASE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

7 THERMAL MANAGEMENT MARKET, BY DEVICE TYPE

7.1 INTRODUCTION

FIGURE 37 CONVECTION COOLING DEVICES TO OCCUPY LARGEST MARKET SHARE IN 2028

TABLE 55 THERMAL MANAGEMENT MARKET, BY DEVICE TYPE, 2019–2022 (USD MILLION)

TABLE 56 THERMAL MANAGEMENT MARKET, BY DEVICE TYPE, 2023–2028 (USD MILLION)

TABLE 57 DEVICE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 58 DEVICE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

TABLE 59 DEVICE: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022
(USD MILLION)

TABLE 60 DEVICE: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028
(USD MILLION)

7.2 CONDUCTION COOLING DEVICES

7.2.1 WEDGE LOCKS

7.2.1.1 Capability to transfer heat from heat sources to nearest composite layers to drive market

7.2.2 POTTING MATERIALS

7.2.2.1 Ability to protect sensitive components from heat and humidity to boost market growth

7.3 CONVECTION COOLING DEVICES

7.3.1 HEAT SINKS

7.3.1.1 Growing adoption of heat sinks to absorb heat from different systems to drive market

7.3.2 HEAT SPREADERS

7.3.2.1 Increasing use of heat spreaders as primary heat exchangers to boost market growth

7.3.3 FORCED AIR AND NATURAL COOLING DEVICES

7.3.3.1 Ability of forced air cooling to provide effective cooling, improved lifecycle, and enhanced performance of electronic components to drive market

7.3.4 HEAT PUMPS

7.3.4.1 Rising adoption of heat pumps in automotive industry to accelerate market growth

7.4 ADVANCED COOLING DEVICES

7.4.1 DIRECT IMMERSION COOLING DEVICES

7.4.1.1 Rising computing powers leading to increased temperatures within data centers to propel adoption of thermal management

7.4.2 MICROCHANNEL COOLING

7.4.2.1 Advantages of microchannel heat sinks such as compact design and light weight to boost market

7.4.3 COLD PLATES

7.4.3.1 Adoption of cold plates in advanced cooling devices to drive market

7.4.4 OTHERS

7.5 HYBRID COOLING DEVICES

7.5.1 ELECTROWETTING DEVICES

7.5.1.1 Growing adoption of electronic devices at large scale to manipulate tiny amounts of liquids on surfaces to drive market

7.5.2 SPOT COOLERS

7.5.2.1 Increasing use as alternative to precision cooling and mini-split systems in data centers to boost market

7.5.3 VAPOR CHAMBERS

7.5.3.1 Rising traction in servers & data centers for thermal management of blade server CPUs to propel market

7.5.4 COMPACT HEAT EXCHANGERS

7.5.4.1 Increasing adoption of compact heat exchangers to improve heat transfer to drive market

7.5.5 THERMOELECTRIC COOLING

7.5.5.1 Growing use of thermoelectric cooling to reduce temperature of hot spots on chips to drive market

7.5.6 OTHERS

8 THERMAL MANAGEMENT MARKET, BY SERVICE TYPE

8.1 INTRODUCTION

FIGURE 38 OPTIMIZATION & POST-SALES SUPPORT SERVICE TYPE TO OCCUPY LARGER MARKET SHARE IN 2028

TABLE 61 THERMAL MANAGEMENT MARKET, BY SERVICE TYPE, 2019–2022 (USD MILLION)

TABLE 62 THERMAL MANAGEMENT MARKET, BY SERVICE TYPE, 2023–2028 (USD MILLION)

8.2 INSTALLATION & CALIBRATION

8.2.1 GROWING POLLUTION TO DRIVE NEED FOR INSTALLATION AND CALIBRATION

8.3 OPTIMIZATION & POST-SALES SUPPORT

8.3.1 INCREASING COMPETITION IN THERMAL MANAGEMENT ECOSYSTEM TO BOOST ADOPTION

9 THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY

9.1 INTRODUCTION

FIGURE 39 THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY

FIGURE 40 AUTOMOTIVE END-USE INDUSTRY TO CONTINUE TO HOLD LARGEST SHARE IN THERMAL MANAGEMENT MARKET DURING FORECAST PERIOD

TABLE 63 THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 64 THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY,

2023–2028 (USD MILLION)

9.2 CONSUMER ELECTRONICS

9.2.1 LAPTOPS AND COMPUTERS

9.2.1.1 Increased complexity of computing systems to drive use of thermal management systems in laptops and computers

9.2.2 AUDIO AMPLIFIER COMPONENTS

9.2.2.1 Growing adoption of class D amplifiers for amplification applications to drive market

9.2.3 POWER SUPPLY UNITS

9.2.3.1 Increased installation of heat sinks and heat spreaders in power supply units to enhance market growth

9.2.4 GAMING DEVICES

9.2.4.1 Significant generation of heat by gaming devices with high-specification hardware to drive adoption of thermal management solutions and systems

9.2.5 SMARTPHONES

9.2.5.1 Miniaturization of components and their high computing capabilities to boost adoption of thermal management solutions and systems in smartphones

9.2.6 HOME APPLIANCES

9.2.6.1 Growing use of smart home appliances to propel demand for thermal management solutions and systems

TABLE 65 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 66 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 67 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 68 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 69 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 70 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 71 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 72 CONSUMER ELECTRONICS: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2023–2028 (USD MILLION)

9.3 SERVERS AND DATA CENTERS

9.3.1 SINGLE RACKS

9.3.1.1 Requirement for single-rack data centers to manage heat dissipation from

power supplies and servers to drive market

9.3.2 MULTI RACKS

9.3.2.1 Increased use of network cabinets and high-density cabinets in multi-rack data centers to boost market

FIGURE 41 MULTI RACKS SEGMENT TO WITNESS LARGER SHARE OF MARKET FOR SERVERS AND DATA CENTERS DURING FORECAST PERIOD

TABLE 73 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET, BY TYPE, 2019–2022 (USD MILLION)

TABLE 74 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET, BY TYPE, 2023–2028 (USD MILLION)

TABLE 75 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 76 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 77 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 78 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 79 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 80 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 81 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 82 SERVERS & DATA CENTERS: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2023–2028 (USD MILLION)

9.4 AUTOMOTIVE

9.4.1 BATTERY THERMAL MANAGEMENT SYSTEMS

9.4.1.1 Increased use of batteries in electric vehicles to contribute to demand for thermal management solutions and systems

9.4.2 ENGINE CONTROL THERMAL MANAGEMENT SYSTEMS

9.4.2.1 Increased use of engine control thermal management systems in vehicles to drive market

9.4.3 WASTE HEAT RECOVERY AND EMISSION REDUCTION SYSTEMS

9.4.3.1 Rise in use of thermal management solutions and systems for heat recovery and emission reduction in vehicles to fuel market

9.4.4 BRAKE AND SUSPENSION COOLING SYSTEMS

9.4.4.1 Growing adoption of brake and suspension cooling systems to boost market

9.4.5 SEAT HEATING AND COOLING SYSTEMS

9.4.5.1 Innovations in personalized seat comfort systems to fuel adoption of thermal management solutions and systems in vehicles

9.4.6 AUTOMOTIVE LIGHTING SYSTEMS

9.4.6.1 Development of stylish 3D LED daytime running lights, turn signal lights, and high/low beam lights to drive market

TABLE 83 AUTOMOTIVE: THERMAL MANAGEMENT MARKET, BY SYSTEM TYPE, 2019–2022 (USD MILLION)

TABLE 84 AUTOMOTIVE: THERMAL MANAGEMENT MARKET, BY SYSTEM TYPE, 2023–2028 (USD MILLION)

FIGURE 42 ASIA PACIFIC TO HOLD LARGEST SHARE OF MARKET FOR AUTOMOTIVE END-USE INDUSTRY DURING FORECAST PERIOD

TABLE 85 AUTOMOTIVE: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 86 AUTOMOTIVE: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 87 AUTOMOTIVE: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 88 AUTOMOTIVE: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 89 AUTOMOTIVE: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 90 AUTOMOTIVE: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 91 AUTOMOTIVE: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 92 AUTOMOTIVE: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2023–2028 (USD MILLION)

9.5 AEROSPACE & DEFENSE

9.5.1 INCREASED INVESTMENTS IN DEFENSE SECTOR FOR DEVELOPMENT OF NEW SYSTEMS TO FUEL MARKET GROWTH

TABLE 93 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 94 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 95 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 96 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 97 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET IN

EUROPE, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 98 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 99 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 100 AEROSPACE & DEFENSE: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2023–2028 (USD MILLION)

9.6 ENTERPRISES

9.6.1 FLOURISHING IT INDUSTRY TO LEAD TO INCREASED ADOPTION OF COMPUTING DEVICES EQUIPPED WITH THERMAL MANAGEMENT SYSTEMS AND SOLUTIONS

TABLE 101 ENTERPRISES: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 102 ENTERPRISES: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 103 ENTERPRISES: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 104 ENTERPRISES: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 105 ENTERPRISES: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 106 ENTERPRISES: THERMAL MANAGEMENT MARKET IN EUROPE, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 107 ENTERPRISES: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 108 ENTERPRISES: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY COUNTRY, 2023–2028 (USD MILLION)

9.7 HEALTHCARE

9.7.1 LARGE INFRASTRUCTURE EQUIPMENT

9.7.1.1 Increasing use of thermal management solutions and systems in large infrastructure equipment to boost market

9.7.2 PORTABLE EQUIPMENT

9.7.2.1 Growing adoption of portable equipment for effective thermal energy transfer to propel market

TABLE 109 HEALTHCARE: THERMAL MANAGEMENT MARKET, BY EQUIPMENT TYPE, 2019–2022 (USD MILLION)

TABLE 110 HEALTHCARE: THERMAL MANAGEMENT MARKET, BY EQUIPMENT TYPE, 2023–2028 (USD MILLION)

TABLE 111 HEALTHCARE: THERMAL MANAGEMENT MARKET, BY REGION,

2019–2022 (USD MILLION)

TABLE 112 HEALTHCARE: THERMAL MANAGEMENT MARKET, BY REGION,
2023–2028 (USD MILLION)

TABLE 113 HEALTHCARE: THERMAL MANAGEMENT MARKET IN NORTH
AMERICA, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 114 HEALTHCARE: THERMAL MANAGEMENT MARKET IN NORTH
AMERICA, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 115 HEALTHCARE: THERMAL MANAGEMENT MARKET IN EUROPE, BY
COUNTRY, 2019–2022 (USD MILLION)

TABLE 116 HEALTHCARE: THERMAL MANAGEMENT MARKET IN EUROPE, BY
COUNTRY, 2023–2028 (USD MILLION)

TABLE 117 HEALTHCARE: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC,
BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 118 HEALTHCARE: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC,
BY COUNTRY, 2023–2028 (USD MILLION)

9.8 OTHERS

TABLE 119 OTHERS: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022
(USD MILLION)

TABLE 120 OTHERS: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028
(USD MILLION)

TABLE 121 OTHERS: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY
COUNTRY, 2019–2022 (USD MILLION)

TABLE 122 OTHERS: THERMAL MANAGEMENT MARKET IN NORTH AMERICA, BY
COUNTRY, 2023–2028 (USD MILLION)

TABLE 123 OTHERS: THERMAL MANAGEMENT MARKET IN EUROPE, BY
COUNTRY, 2019–2022 (USD MILLION)

TABLE 124 OTHERS: THERMAL MANAGEMENT MARKET IN EUROPE, BY
COUNTRY, 2023–2028 (USD MILLION)

TABLE 125 OTHERS: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY
COUNTRY, 2019–2022 (USD MILLION)

TABLE 126 OTHERS: THERMAL MANAGEMENT MARKET IN ASIA PACIFIC, BY
COUNTRY, 2023–2028 (USD MILLION)

10 THERMAL MANAGEMENT MARKET, BY REGION

10.1 INTRODUCTION

FIGURE 43 ASIA PACIFIC TO OCCUPY LARGEST MARKET SHARE IN 2028

TABLE 127 THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD
MILLION)

TABLE 128 THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

10.2 NORTH AMERICA

FIGURE 44 NORTH AMERICA: SNAPSHOT OF THERMAL MANAGEMENT MARKET

TABLE 129 NORTH AMERICA: THERMAL MANAGEMENT MARKET, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 130 NORTH AMERICA: THERMAL MANAGEMENT MARKET, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 131 NORTH AMERICA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 132 NORTH AMERICA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.2.1 US

10.2.1.1 Increasing demand for heat management in electric cars and smart cars to fuel market growth

TABLE 133 US: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 134 US: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.2.2 CANADA

10.2.2.1 Rising consumption of consumer electronics in Canada to contribute to market growth

TABLE 135 CANADA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 136 CANADA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.2.3 MEXICO

10.2.3.1 Improving economic conditions and increasing spending capacity of population to boost demand for consumer electronics

TABLE 137 MEXICO: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 138 MEXICO: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.3 EUROPE

FIGURE 45 EUROPE: SNAPSHOT OF THERMAL MANAGEMENT MARKET

TABLE 139 EUROPE: THERMAL MANAGEMENT MARKET, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 140 EUROPE: THERMAL MANAGEMENT MARKET, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 141 EUROPE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 142 EUROPE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.3.1 UK

10.3.1.1 Flourishing automotive, servers & data centers, and consumer electronics industries to fuel growth

TABLE 143 UK: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 144 UK: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.3.2 GERMANY

10.3.2.1 Growing automotive industry to boost market growth

TABLE 145 GERMANY: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 146 GERMANY: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.3.3 FRANCE

10.3.3.1 Increasing demand for thermal management solutions and systems from servers & data centers and automotive industries to drive market

TABLE 147 FRANCE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 148 FRANCE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.3.4 REST OF EUROPE

TABLE 149 REST OF EUROPE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 150 REST OF EUROPE: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.4 ASIA PACIFIC

FIGURE 46 ASIA PACIFIC: SNAPSHOT OF THERMAL MANAGEMENT MARKET

TABLE 151 ASIA PACIFIC: THERMAL MANAGEMENT MARKET, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 152 ASIA PACIFIC: THERMAL MANAGEMENT MARKET, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 153 ASIA PACIFIC: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 154 ASIA PACIFIC: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.4.1 JAPAN

10.4.1.1 Growing consumer electronics and automotive industries to contribute to market growth

TABLE 155 JAPAN: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 156 JAPAN: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.4.2 CHINA

10.4.2.1 Rising demand for thermal management solutions and systems from automotive and consumer electronics industries to drive market

TABLE 157 CHINA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 158 CHINA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.4.3 SOUTH KOREA

10.4.3.1 Growing consumer electronics industry to boost market growth

TABLE 159 SOUTH KOREA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 160 SOUTH KOREA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.4.4 INDIA

10.4.4.1 Increasing demand for thermal management solutions and systems from automotive, servers & data centers, and consumer electronics industries to propel market growth

TABLE 161 INDIA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 162 INDIA: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.4.5 REST OF ASIA PACIFIC

TABLE 163 REST OF ASIA PACIFIC: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2019–2022 (USD MILLION)

TABLE 164 REST OF ASIA PACIFIC: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.5 ROW

TABLE 165 ROW: THERMAL MANAGEMENT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 166 ROW: THERMAL MANAGEMENT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 167 ROW: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY,

2019–2022 (USD MILLION)

TABLE 168 ROW: THERMAL MANAGEMENT MARKET, BY END-USE INDUSTRY, 2023–2028 (USD MILLION)

10.5.1 MIDDLE EAST & AFRICA

10.5.1.1 Growing government initiatives to boost adoption of EVs

10.5.2 SOUTH AMERICA

10.5.2.1 Increasing middle-class population and improving standards of living to create opportunities for market players

11 COMPETITIVE LANDSCAPE

11.1 OVERVIEW

11.2 MARKET EVALUATION FRAMEWORK

TABLE 169 OVERVIEW OF STRATEGIES DEPLOYED BY KEY THERMAL MANAGEMENT SOLUTION PROVIDERS

11.2.1 PRODUCT PORTFOLIO

11.2.2 REGIONAL FOCUS

11.2.3 MANUFACTURING FOOTPRINT

11.2.4 ORGANIC/INORGANIC STRATEGIES

11.3 MARKET SHARE ANALYSIS, 2021

TABLE 170 THERMAL MANAGEMENT MARKET: MARKET SHARE ANALYSIS (2021)

11.4 5-YEAR COMPANY REVENUE ANALYSIS

FIGURE 47 5-YEAR REVENUE ANALYSIS OF TOP 5 PLAYERS IN THERMAL MANAGEMENT MARKET, 2017 TO 2021

11.5 COMPANY EVALUATION QUADRANT

11.5.1 STARS

11.5.2 EMERGING LEADERS

11.5.3 PERVASIVE PLAYERS

11.5.4 PARTICIPANTS

FIGURE 48 THERMAL MANAGEMENT MARKET: COMPANY EVALUATION QUADRANT, 2022

11.6 STARTUP/SMALL AND MEDIUM-SIZED ENTERPRISES (SME) EVALUATION MATRIX

TABLE 171 THERMAL MANAGEMENT MARKET: DETAILED LIST OF KEY STARTUPS/SMES

TABLE 172 STARTUP/SMALL AND MEDIUM-SIZED ENTERPRISES (SME) IN THERMAL MANAGEMENT MARKET

TABLE 173 THERMAL MANAGEMENT MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/ SMES (END-USE INDUSTRY FOOTPRINT)

TABLE 174 THERMAL MANAGEMENT MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/ SMES (DEVICE TYPE FOOTPRINT)

TABLE 175 THERMAL MANAGEMENT MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/ SMES (REGION FOOTPRINT)

11.6.1 PROGRESSIVE COMPANIES

11.6.2 RESPONSIVE COMPANIES

11.6.3 DYNAMIC COMPANIES

11.6.4 STARTING BLOCKS

FIGURE 49 STARTUP/SME EVALUATION MATRIX

11.7 COMPANY FOOTPRINT

TABLE 176 COMPANY FOOTPRINT

TABLE 177 COMPANY-WISE DEVICE TYPE FOOTPRINT

TABLE 178 COMPANY-WISE END-USE INDUSTRY FOOTPRINT

TABLE 179 COMPANY-WISE REGION FOOTPRINT

11.8 COMPETITIVE SITUATIONS AND TRENDS

11.8.1 PRODUCT LAUNCHES

TABLE 180 PRODUCT LAUNCHES, APRIL 2019–OCTOBER 2022

11.8.2 DEALS

TABLE 181 DEALS, APRIL 2019–OCTOBER 2022

11.8.3 OTHERS

TABLE 182 OTHERS, APRIL 2019–OCTOBER 2022

12 COMPANY PROFILES

12.1 KEY PLAYERS

(Business Overview, Products/Solutions/Services offered, Recent Developments, MnM View)*

12.1.1 HONEYWELL INTERNATIONAL INC.

TABLE 183 HONEYWELL INTERNATIONAL INC.: COMPANY SNAPSHOT

FIGURE 50 HONEYWELL INTERNATIONAL INC.: COMPANY SNAPSHOT

TABLE 184 HONEYWELL INTERNATIONAL INC.: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 185 HONEYWELL INTERNATIONAL INC.: PRODUCT LAUNCHES

TABLE 186 HONEYWELL INTERNATIONAL INC.: DEALS

12.1.2 HENKEL

TABLE 187 HENKEL: COMPANY SNAPSHOT

FIGURE 51 HENKEL: COMPANY SNAPSHOT

TABLE 188 HENKEL: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 189 HENKEL: PRODUCT LAUNCHES

TABLE 190 HENKEL: DEALS

12.1.3 VERTIV CO

TABLE 191 VERTIV CO: COMPANY SNAPSHOT

FIGURE 52 VERTIV CO: COMPANY SNAPSHOT

TABLE 192 VERTIV CO: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 193 VERTIV CO: PRODUCT LAUNCHES

12.1.4 PARKER CHOMERICS (PARKER HANNIFIN)

TABLE 194 PARKER CHOMERICS: COMPANY SNAPSHOT

FIGURE 53 PARKER CHOMERICS: COMPANY SNAPSHOT

TABLE 195 PARKER CHOMERICS: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 196 PARKER CHOMERICS: PRODUCT LAUNCHES

12.1.5 DELTA ELECTRONICS, INC.

TABLE 197 DELTA ELECTRONICS, INC.: COMPANY SNAPSHOT

FIGURE 54 DELTA ELECTRONICS, INC.: COMPANY SNAPSHOT

TABLE 198 DELTA ELECTRONICS, INC.: PRODUCT/SOLUTION/SERVICE OFFERINGS

12.1.6 TAT TECHNOLOGIES LTD.

TABLE 199 TAT TECHNOLOGIES LTD.: COMPANY SNAPSHOT

FIGURE 55 TAT TECHNOLOGIES LTD.: COMPANY SNAPSHOT

TABLE 200 TAT TECHNOLOGIES LTD.: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 201 TAT TECHNOLOGIES LTD.: DEALS

TABLE 202 TAT TECHNOLOGIES LTD.: OTHERS

12.1.7 BOYD

TABLE 203 BOYD: COMPANY SNAPSHOT

TABLE 204 BOYD: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 205 BOYD: DEALS

TABLE 206 BOYD: OTHERS

12.1.8 EUROPEAN THERMODYNAMICS LTD.

TABLE 207 EUROPEAN THERMODYNAMICS LTD.: COMPANY SNAPSHOT

TABLE 208 EUROPEAN THERMODYNAMICS LTD.: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 209 EUROPEAN THERMODYNAMICS LTD.: PRODUCT LAUNCHES

TABLE 210 EUROPEAN THERMODYNAMICS LTD.: DEALS

12.1.9 LAIRD THERMAL SYSTEMS (BREGAL UNTERNEHMERKAPITAL)

TABLE 211 LAIRD THERMAL SYSTEMS: COMPANY SNAPSHOT

TABLE 212 LAIRD THERMAL SYSTEMS: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 213 LAIRD THERMAL SYSTEMS: PRODUCT LAUNCHES

12.1.10 AUTONEUM HOLDING AG

TABLE 214 AUTONEUM HOLDING AG: COMPANY SNAPSHOT

FIGURE 56 AUTONEUM HOLDING AG: COMPANY SNAPSHOT

TABLE 215 AUTONEUM HOLDING AG.: PRODUCT/SOLUTION/SERVICE OFFERINGS

TABLE 216 AUTONEUM HOLDING AG: DEALS

* Business Overview, Products/Solutions/Services offered, Recent Developments, MnM View might not be captured in case of unlisted companies.

12.2 OTHER PLAYERS

12.2.1 DAU THERMAL SOLUTIONS INC. (MIBA AG)

TABLE 217 DAU THERMAL SOLUTIONS INC.: COMPANY SNAPSHOT

12.2.2 AI TECHNOLOGY, INC.

TABLE 218 AI TECHNOLOGY, INC.: COMPANY SNAPSHOT

12.2.3 HEATEX

TABLE 219 HEATEX: COMPANY SNAPSHOT

12.2.4 LORD CORPORATION

TABLE 220 LORD CORPORATION: COMPANY SNAPSHOT

12.2.5 API HEAT TRANSFER

TABLE 221 API HEAT TRANSFER: COMPANY SNAPSHOT

12.2.6 ADVANCED COOLING TECHNOLOGIES, INC. (ACT)

TABLE 222 AI.: COMPANY SNAPSHOT

12.2.7 MASTER BOND INC.

TABLE 223 MASTER BOND INC.: COMPANY SNAPSHOT

12.2.8 THERMOTEK

TABLE 224 THERMOTEK: COMPANY SNAPSHOT

12.2.9 JARO THERMAL

TABLE 225 JARO THERMAL: COMPANY SNAPSHOT

12.2.10 DANFOSS

TABLE 226 DANFOSS: COMPANY SNAPSHOT

12.2.11 KELVION

TABLE 227 KELVION: COMPANY SNAPSHOT

12.2.12 GENTHERM

TABLE 228 GENTHERM: COMPANY SNAPSHOT

12.2.13 OUTLAST TECHNOLOGIES LLC

TABLE 229 OUTLAST TECHNOLOGIES LLC: COMPANY SNAPSHOT

12.2.14 ALLCELL TECHNOLOGIES, LLC (BEAM GLOBAL)

TABLE 230 ALLCELL TECHNOLOGIES, LLC: COMPANY SNAPSHOT

12.2.15 COX & COMPANY, INC.

TABLE 231 COX & COMPANY, INC.: COMPANY SNAPSHOT

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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