

Evaporative Cooling Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented, By Cooling Type (Direct Evaporative Cooling, Indirect Evaporative Cooling, and Two-Stage Evaporative Cooling), By Application (Residential, Commercial, Industrial, and Confinement Farming), By Distribution Channel (Big Box Retailers, HVAC Contractors & Distributors), By Region & Competition, 2020-2030F

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Abstracts

Market Overview

Global Evaporative Cooling Market was valued at USD 7.91 Billion in 2024 and is expected to reach USD 14.78 Billion by 2030 with a CAGR of 10.81%. The evaporative cooling market encompasses a range of technologies and systems designed to lower air temperature through the natural process of water evaporation. Unlike traditional refrigeration-based cooling methods, evaporative cooling leverages the principle of heat absorption during water evaporation to provide energy-efficient and environmentally friendly temperature regulation. This market includes direct, indirect, and hybrid systems, which are used across residential, commercial, industrial, and agricultural applications.

Direct evaporative cooling involves passing air through water-saturated pads, where the air absorbs moisture and cools down, making it ideal for dry and arid regions. Indirect systems, on the other hand, cool the air using a heat exchanger, preventing moisture addition and making them suitable for more humid climates or where moisture-sensitive environments are required. Hybrid systems combine both methods to deliver enhanced

cooling efficiency and flexibility. The evaporative cooling market is driven by the growing demand for energy-efficient and sustainable HVAC solutions, especially amid rising concerns over carbon emissions, escalating energy costs, and global warming. As the construction industry expands and modern building codes increasingly prioritize green technologies, the adoption of evaporative cooling systems is gaining momentum.

Key Market Drivers

Intensifying Global Cooling Demand Due to Climate Change and Urban Heat

The escalating global temperatures and frequent heat waves driven by climate change are significantly amplifying the demand for efficient, cost-effective cooling solutions, propelling the evaporative cooling market. Regions across the world, especially in arid and semi-arid climates, are experiencing unprecedented thermal stress, with metropolitan hotspots becoming especially susceptible. As urbanization accelerates and cities become denser, traditional air-conditioning systems face limitations due to high energy consumption, peak electrical loads, and the urban heat island effect—factors that strain existing power grids. Against this backdrop, evaporative cooling emerges as an energy-efficient alternative.

By leveraging the natural process of water evaporation to lower air temperature, this system provides sustainable cooling with significantly lower power usage than conventional compressors, aligning with global objectives for reducing greenhouse gas emissions. Furthermore, contemporary evaporative solutions are being designed with modular scalability and digitized control systems, making them suitable for both residential and commercial infrastructures—from high-rise buildings to industrial facilities. Cities and utilities are increasingly recognizing the need for resilient cooling strategies as climate change intensifies, and evaporative cooling systems offer climate-adaptive performance with reduced energy intensity and lower operational costs.

This is compelling end users—facilities managers, developers, and public sector agencies—to integrate these systems into new construction and retrofit projects. The overall result is an expanding market ecosystem: manufacturers are innovating to maximize efficiency, policymakers are incentivizing eco friendly cooling technologies, and consumers are actively choosing systems that deliver performance, resilience, and sustainability in the face of worsening heat stress. Global cooling demand is projected to triple by 2050 due to rising global temperatures. Over 2 billion air conditioning units are expected to be in use globally by 2030. Cities can experience temperatures up to 7°C higher than surrounding rural areas due to the urban heat island effect. Cooling

accounts for nearly 10% of global electricity consumption today. An estimated 1.6 billion people globally lack access to adequate cooling, highlighting growing unmet demand. Residential cooling demand could increase by 50% in developing countries over the next decade. By 2040, cooling demand is expected to contribute to a 30% rise in peak electricity loads worldwide.

Key Market Challenges

Water Consumption and Sustainability Concerns

One of the primary challenges facing the evaporative cooling market is the high water consumption associated with its operation, which raises sustainability concerns—particularly in regions facing water scarcity or drought conditions. Evaporative cooling systems rely heavily on the evaporation of water to cool air, which inherently leads to water loss. While the process is energy-efficient and environmentally friendly compared to traditional refrigerant-based air conditioning systems, the amount of water required to maintain effective cooling performance can be substantial, especially in large-scale industrial or commercial applications.

In areas where water resources are limited or tightly regulated, this can create tension between environmental policy objectives and the operational needs of facilities relying on evaporative cooling. As governments worldwide are placing increasing emphasis on water conservation and sustainable resource management, the adoption of such systems could be hindered unless alternative water-efficient technologies or systems are developed. Moreover, as climate change exacerbates water scarcity in several global regions, industries may face stricter compliance measures and additional costs associated with sourcing, recycling, or treating water used in these systems.

Additionally, end-users in water-stressed regions may opt for less water-intensive cooling methods, even if those options are more energy-consuming, in order to align with water usage restrictions or corporate sustainability goals. This creates a paradox where energy-efficient technologies are bypassed due to their high water demand, affecting market penetration and growth potential. Furthermore, public awareness and sensitivity to environmental issues have grown significantly, and companies are increasingly held accountable for their resource usage. Stakeholders, especially in sectors such as data centers, agriculture, and manufacturing, are being scrutinized for their impact on local ecosystems and natural resources.

The lack of standardized regulatory frameworks and certification systems for water

usage in evaporative cooling further complicates the market's ability to position itself as an environmentally balanced solution. Innovation in water recycling systems, low-water-consumption designs, and hybrid solutions combining evaporative cooling with other techniques are emerging, but these often come at higher initial costs, delaying mass adoption. As a result, overcoming the water usage challenge is crucial for the long-term scalability and environmental credibility of the evaporative cooling market.

Key Market Trends

Rising Demand for Energy-Efficient and Environmentally Friendly Cooling Solutions

The global push toward sustainable development and reducing carbon emissions has significantly influenced the adoption of energy-efficient cooling systems, with evaporative cooling emerging as a leading solution. As industries, commercial spaces, and residential buildings face increasing scrutiny regarding energy consumption, evaporative cooling systems offer a compelling value proposition. These systems utilize the natural process of water evaporation to cool air, significantly reducing electricity usage compared to traditional refrigerant-based air conditioning.

The trend toward green building certifications and eco-friendly infrastructure further boosts market acceptance, as evaporative cooling systems help meet energy performance standards and reduce operational costs. Governments and regulatory bodies worldwide are increasingly promoting energy-efficient technologies through incentives and policy frameworks, creating a favorable environment for market growth. Furthermore, companies and institutions are becoming more conscious of their environmental impact, prompting them to adopt sustainable HVAC systems. This shift is particularly evident in regions with hot and dry climates, where evaporative coolers are highly effective and can operate at a fraction of the energy cost of traditional systems.

The low installation and maintenance costs of evaporative coolers also make them highly attractive to small and medium-sized businesses. Additionally, as electricity prices rise globally, especially in energy-intensive regions, organizations are actively seeking alternatives that provide cost savings without compromising cooling efficiency. Manufacturers are responding to this demand by developing hybrid systems that combine evaporative cooling with mechanical ventilation to enhance performance across varied climate conditions. These innovations are allowing evaporative cooling solutions to expand beyond traditionally suitable regions into more humid environments through two-stage and indirect evaporative cooling technologies.

At the same time, advancements in sensor-based automation and digital controls are enhancing user experience, allowing for real-time monitoring of humidity, airflow, and energy consumption. This digital integration makes evaporative cooling systems not only environmentally sustainable but also highly controllable and data-driven. The growing popularity of smart buildings is another key driver, as building automation systems increasingly incorporate energy-efficient cooling components. Moreover, heightened awareness around climate change and the environmental impact of synthetic refrigerants like HFCs and HCFCs is propelling the shift toward natural air-based solutions such as evaporative coolers.

With the global cooling demand projected to increase substantially over the next two decades, especially in emerging economies, the market for sustainable, low-energy cooling technologies is set to witness strong momentum. As a result, the trend of adopting evaporative cooling as a mainstream cooling solution continues to gain traction across various sectors including manufacturing, data centers, agriculture, and institutional facilities, making energy efficiency one of the most transformative trends shaping the evaporative cooling market today.

Key Market Players

Baltimore Aircoil Company, Inc.

SPX Cooling Technologies, Inc.

Delta Cooling Towers, Inc.

Ebac Group Ltd.

Phoenix Manufacturing Inc.

Colt Group Limited

Portacool, LLC

Honeywell International Inc.

Condair Group AG

Celcius Design Ltd.

Report Scope:

In this report, the Global Evaporative Cooling Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Evaporative Cooling Market, By Cooling Type:

Direct Evaporative Cooling

Indirect Evaporative Cooling

Two-Stage Evaporative Cooling

Evaporative Cooling Market, By Application:

Residential

Commercial

Industrial

Confinement Farming

Evaporative Cooling Market, By Distribution Channel:

Big Box Retailers

HVAC Contractors & Distributors

Evaporative Cooling Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Kuwait

Turkey

Competitive Landscape

Company Profiles: Detailed analysis of the major companies presents in the Global Evaporative Cooling Market.

Available Customizations:

Global Evaporative Cooling Market report with the given Market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional Market players (up to five).

Contents

1. PRODUCT OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
 - 1.2.1. Markets Covered
 - 1.2.2. Years Considered for Study
- 1.3. Key Market Segmentations

2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Formulation of the Scope
- 2.4. Assumptions and Limitations
- 2.5. Sources of Research
 - 2.5.1. Secondary Research
 - 2.5.2. Primary Research
- 2.6. Approach for the Market Study
 - 2.6.1. The Bottom-Up Approach
 - 2.6.2. The Top-Down Approach
- 2.7. Methodology Followed for Calculation of Market Size & Market Shares
- 2.8. Forecasting Methodology
 - 2.8.1. Data Triangulation & Validation

3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, and Trends

4. VOICE OF CUSTOMER

5. GLOBAL EVAPORATIVE COOLING MARKET OUTLOOK

- 5.1. Market Size & Forecast

- 5.1.1. By Value
- 5.2. Market Share & Forecast
 - 5.2.1. By Cooling Type (Direct Evaporative Cooling, Indirect Evaporative Cooling, and Two-Stage Evaporative Cooling)
 - 5.2.2. By Application (Residential, Commercial, Industrial, and Confinement Farming)
 - 5.2.3. By Distribution Channel (Big Box Retailers, HVAC Contractors, & Distributors)
 - 5.2.4. By Region
- 5.3. By Company (2024)
- 5.4. Market Map

6. NORTH AMERICA EVAPORATIVE COOLING MARKET OUTLOOK

- 6.1. Market Size & Forecast
 - 6.1.1. By Value
- 6.2. Market Share & Forecast
 - 6.2.1. By Cooling Type
 - 6.2.2. By Application
 - 6.2.3. By Distribution Channel
 - 6.2.4. By Country
- 6.3. North America: Country Analysis
 - 6.3.1. United States Evaporative Cooling Market Outlook
 - 6.3.1.1. Market Size & Forecast
 - 6.3.1.1.1. By Value
 - 6.3.1.2. Market Share & Forecast
 - 6.3.1.2.1. By Cooling Type
 - 6.3.1.2.2. By Application
 - 6.3.1.2.3. By Distribution Channel
 - 6.3.2. Canada Evaporative Cooling Market Outlook
 - 6.3.2.1. Market Size & Forecast
 - 6.3.2.1.1. By Value
 - 6.3.2.2. Market Share & Forecast
 - 6.3.2.2.1. By Cooling Type
 - 6.3.2.2.2. By Application
 - 6.3.2.2.3. By Distribution Channel
 - 6.3.3. Mexico Evaporative Cooling Market Outlook
 - 6.3.3.1. Market Size & Forecast
 - 6.3.3.1.1. By Value
 - 6.3.3.2. Market Share & Forecast
 - 6.3.3.2.1. By Cooling Type

- 6.3.3.2.2. By Application
- 6.3.3.2.3. By Distribution Channel

7. EUROPE EVAPORATIVE COOLING MARKET OUTLOOK

- 7.1. Market Size & Forecast
 - 7.1.1. By Value
- 7.2. Market Share & Forecast
 - 7.2.1. By Cooling Type
 - 7.2.2. By Application
 - 7.2.3. By Distribution Channel
 - 7.2.4. By Country
- 7.3. Europe: Country Analysis
 - 7.3.1. Germany Evaporative Cooling Market Outlook
 - 7.3.1.1. Market Size & Forecast
 - 7.3.1.1.1. By Value
 - 7.3.1.2. Market Share & Forecast
 - 7.3.1.2.1. By Cooling Type
 - 7.3.1.2.2. By Application
 - 7.3.1.2.3. By Distribution Channel
 - 7.3.2. United Kingdom Evaporative Cooling Market Outlook
 - 7.3.2.1. Market Size & Forecast
 - 7.3.2.1.1. By Value
 - 7.3.2.2. Market Share & Forecast
 - 7.3.2.2.1. By Cooling Type
 - 7.3.2.2.2. By Application
 - 7.3.2.2.3. By Distribution Channel
 - 7.3.3. Italy Evaporative Cooling Market Outlook
 - 7.3.3.1. Market Size & Forecast
 - 7.3.3.1.1. By Value
 - 7.3.3.2. Market Share & Forecast
 - 7.3.3.2.1. By Cooling Type
 - 7.3.3.2.2. By Application
 - 7.3.3.2.3. By Distribution Channel
 - 7.3.4. France Evaporative Cooling Market Outlook
 - 7.3.4.1. Market Size & Forecast
 - 7.3.4.1.1. By Value
 - 7.3.4.2. Market Share & Forecast
 - 7.3.4.2.1. By Cooling Type

- 7.3.4.2.2. By Application
- 7.3.4.2.3. By Distribution Channel
- 7.3.5. Spain Evaporative Cooling Market Outlook
 - 7.3.5.1. Market Size & Forecast
 - 7.3.5.1.1. By Value
 - 7.3.5.2. Market Share & Forecast
 - 7.3.5.2.1. By Cooling Type
 - 7.3.5.2.2. By Application
 - 7.3.5.2.3. By Distribution Channel

8. ASIA-PACIFIC EVAPORATIVE COOLING MARKET OUTLOOK

- 8.1. Market Size & Forecast
 - 8.1.1. By Value
- 8.2. Market Share & Forecast
 - 8.2.1. By Cooling Type
 - 8.2.2. By Application
 - 8.2.3. By Distribution Channel
 - 8.2.4. By Country
- 8.3. Asia-Pacific: Country Analysis
 - 8.3.1. China Evaporative Cooling Market Outlook
 - 8.3.1.1. Market Size & Forecast
 - 8.3.1.1.1. By Value
 - 8.3.1.2. Market Share & Forecast
 - 8.3.1.2.1. By Cooling Type
 - 8.3.1.2.2. By Application
 - 8.3.1.2.3. By Distribution Channel
 - 8.3.2. India Evaporative Cooling Market Outlook
 - 8.3.2.1. Market Size & Forecast
 - 8.3.2.1.1. By Value
 - 8.3.2.2. Market Share & Forecast
 - 8.3.2.2.1. By Cooling Type
 - 8.3.2.2.2. By Application
 - 8.3.2.2.3. By Distribution Channel
 - 8.3.3. Japan Evaporative Cooling Market Outlook
 - 8.3.3.1. Market Size & Forecast
 - 8.3.3.1.1. By Value
 - 8.3.3.2. Market Share & Forecast
 - 8.3.3.2.1. By Cooling Type

- 8.3.3.2.2. By Application
- 8.3.3.2.3. By Distribution Channel
- 8.3.4. South Korea Evaporative Cooling Market Outlook
 - 8.3.4.1. Market Size & Forecast
 - 8.3.4.1.1. By Value
 - 8.3.4.2. Market Share & Forecast
 - 8.3.4.2.1. By Cooling Type
 - 8.3.4.2.2. By Application
 - 8.3.4.2.3. By Distribution Channel
- 8.3.5. Australia Evaporative Cooling Market Outlook
 - 8.3.5.1. Market Size & Forecast
 - 8.3.5.1.1. By Value
 - 8.3.5.2. Market Share & Forecast
 - 8.3.5.2.1. By Cooling Type
 - 8.3.5.2.2. By Application
 - 8.3.5.2.3. By Distribution Channel

9. SOUTH AMERICA EVAPORATIVE COOLING MARKET OUTLOOK

- 9.1. Market Size & Forecast
 - 9.1.1. By Value
- 9.2. Market Share & Forecast
 - 9.2.1. By Cooling Type
 - 9.2.2. By Application
 - 9.2.3. By Distribution Channel
 - 9.2.4. By Country
- 9.3. South America: Country Analysis
 - 9.3.1. Brazil Evaporative Cooling Market Outlook
 - 9.3.1.1. Market Size & Forecast
 - 9.3.1.1.1. By Value
 - 9.3.1.2. Market Share & Forecast
 - 9.3.1.2.1. By Cooling Type
 - 9.3.1.2.2. By Application
 - 9.3.1.2.3. By Distribution Channel
 - 9.3.2. Argentina Evaporative Cooling Market Outlook
 - 9.3.2.1. Market Size & Forecast
 - 9.3.2.1.1. By Value
 - 9.3.2.2. Market Share & Forecast
 - 9.3.2.2.1. By Cooling Type

- 9.3.2.2.2. By Application
- 9.3.2.2.3. By Distribution Channel
- 9.3.3. Colombia Evaporative Cooling Market Outlook
 - 9.3.3.1. Market Size & Forecast
 - 9.3.3.1.1. By Value
 - 9.3.3.2. Market Share & Forecast
 - 9.3.3.2.1. By Cooling Type
 - 9.3.3.2.2. By Application
 - 9.3.3.2.3. By Distribution Channel

10. MIDDLE EAST AND AFRICA EVAPORATIVE COOLING MARKET OUTLOOK

- 10.1. Market Size & Forecast
 - 10.1.1. By Value
- 10.2. Market Share & Forecast
 - 10.2.1. By Cooling Type
 - 10.2.2. By Application
 - 10.2.3. By Distribution Channel
 - 10.2.4. By Country
- 10.3. Middle East and Africa: Country Analysis
 - 10.3.1. South Africa Evaporative Cooling Market Outlook
 - 10.3.1.1. Market Size & Forecast
 - 10.3.1.1.1. By Value
 - 10.3.1.2. Market Share & Forecast
 - 10.3.1.2.1. By Cooling Type
 - 10.3.1.2.2. By Application
 - 10.3.1.2.3. By Distribution Channel
 - 10.3.2. Saudi Arabia Evaporative Cooling Market Outlook
 - 10.3.2.1. Market Size & Forecast
 - 10.3.2.1.1. By Value
 - 10.3.2.2. Market Share & Forecast
 - 10.3.2.2.1. By Cooling Type
 - 10.3.2.2.2. By Application
 - 10.3.2.2.3. By Distribution Channel
 - 10.3.3. UAE Evaporative Cooling Market Outlook
 - 10.3.3.1. Market Size & Forecast
 - 10.3.3.1.1. By Value
 - 10.3.3.2. Market Share & Forecast
 - 10.3.3.2.1. By Cooling Type

- 10.3.3.2.2. By Application
- 10.3.3.2.3. By Distribution Channel
- 10.3.4. Kuwait Evaporative Cooling Market Outlook
 - 10.3.4.1. Market Size & Forecast
 - 10.3.4.1.1. By Value
 - 10.3.4.2. Market Share & Forecast
 - 10.3.4.2.1. By Cooling Type
 - 10.3.4.2.2. By Application
 - 10.3.4.2.3. By Distribution Channel
- 10.3.5. Turkey Evaporative Cooling Market Outlook
 - 10.3.5.1. Market Size & Forecast
 - 10.3.5.1.1. By Value
 - 10.3.5.2. Market Share & Forecast
 - 10.3.5.2.1. By Cooling Type
 - 10.3.5.2.2. By Application
 - 10.3.5.2.3. By Distribution Channel

11. MARKET DYNAMICS

- 11.1. Drivers
- 11.2. Challenges

12. MARKET TRENDS & DEVELOPMENTS

- 12.1. Merger & Acquisition (If Any)
- 12.2. Product Launches (If Any)
- 12.3. Recent Developments

13. COMPANY PROFILES

- 13.1. Baltimore Aircoil Company, Inc.
 - 13.1.1. Business Overview
 - 13.1.2. Key Revenue and Financials
 - 13.1.3. Recent Developments
 - 13.1.4. Key Personnel/Key Contact Person
 - 13.1.5. Key Product/Services Offered
- 13.2. SPX Cooling Technologies, Inc.
- 13.3. Delta Cooling Towers, Inc.
- 13.4. Ebac Group Ltd.

13.5. Phoenix Manufacturing Inc.

13.6. Colt Group Limited

13.7. Portacool, LLC

13.8. Honeywell International Inc.

13.9. Condair Group AG

13.10. Celcius Design Ltd.

14. STRATEGIC RECOMMENDATIONS

15. ABOUT US & DISCLAIMER

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