

F R O S T & S U L L I V A N

2024

# ENTREPRENEURIAL COMPANY OF THE YEAR

*IN THE EUROPEAN  
SUSTAINABLE CLIMATE  
CONTROL SYSTEMS  
INDUSTRY*

F R O S T & S U L L I V A N

BEST  
2024 PRACTICES  
AWARD



## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each Award category before determining the final Award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Heliostorage excels in many of the criteria in the sustainable climate control systems space.

AWARD CRITERIA	
<i>Entrepreneurial Innovation</i>	<i>Customer Impact</i>
Market Disruption	Price/Performance Value
Competitive Differentiation	Customer Purchase Experience
Market Gaps	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Passionate Persistence	Brand Equity

### Shifting Paradigms: The Role of Sustainable Heating in Climate Control Solutions

The urgent need to address the objectives outlined in the Paris Agreement, including aiming for net-zero emissions by 2050, significantly drives the sustainable climate control systems market. Heating and cooling constitute a substantial portion of Europe’s energy consumption, with fossil fuels accounting for over 60% of heating needs.<sup>1</sup> As such, transitioning to renewable sources becomes imperative to achieve climate goals.

While many existing heating systems are modern and durable, shifting away from fossil fuel dependency requires strong incentives. Although hydrogen-based systems show promise for the future, they remain in the developmental phase. In contrast, heat pumps present a readily available and effective electrification option, positioning them as a preferred alternative.

However, Frost & Sullivan’s ongoing research confirms that clear challenges persist. The intermittent nature of renewable energy sources strains electrical grids, potentially exacerbated by full electrification. Integrated sustainable climate control systems combining solar thermal, seasonal thermal energy storage and heat pumps offer a solution to significantly reduce electricity consumption. The critical challenge lies in convincing customers to adopt this integrated technology, especially when thermal storage lacks specific mention in government financial incentives.

<sup>1</sup> International Energy Agency, “Heating,” IEA, 2024, <https://www.iea.org/energy-system/buildings/heating>.

Despite these challenges, Frost & Sullivan analysts believe that the market presents exciting opportunities for innovation and growth. Collaborative efforts among stakeholders and a steadfast commitment to sustainability are quite essential in driving the industry toward a more efficient and eco-friendly future.

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**- Anirudh Bhaskaran**  
**Industry Principal, Energy & Environment**

Resilience and innovation are critical in overcoming obstacles and seizing opportunities in the sustainable climate control systems space.

Frost & Sullivan’s research finds that sustainable and cost-efficient heating technologies, like seasonal thermal energy storage, currently experience a low adoption rate due to the high upfront installation costs and limited consumer awareness of their long-term cost benefits.<sup>2</sup> However, partnering with heat investors and implementing a heat-as-a-service (HaaS) model can mitigate initial capital costs for customers, making sustainable heating solutions more accessible and appealing, thus fostering higher adoption rates.<sup>3</sup>

Heliostorage recognizes these issues and uniquely leverages its expertise to meet unmet market and client needs. The company is well-positioned to capitalize on new growth opportunities, cementing its position in the

sustainable climate control systems market.

### **Elevating Energy Efficiency: Heliostorage’s Integrated Climate Control Solutions**

Founded in 2019 and headquartered in Kokkola, Finland, Heliostorage specializes in integrated climate control solutions, harnessing solar thermal and seasonal thermal energy storage technologies alongside heat pumps to provide efficient heating solutions with reduced electricity consumption. The company aims to overcome challenges in the sustainable climate control systems market by delivering innovative and efficient solutions that promote a greener future.

### **Addressing Market Gaps to Disrupt the Industry**

Heliostorage disrupts the sustainable energy market with its innovative seasonal thermal energy storage system, offering unparalleled flexibility in decarbonizing heating systems. The cornerstone of the company’s disruption lies in its Borehole Thermal Energy Storage (BTES) system, which is distinguished by its innovative segmented hexagonal ring structure. This unique design facilitates scalability from 300-megawatt-hours to 5-gigawatt hours (GWh) in a single storage system and allows for the parallel installation of multiple BTES units, enabling capacities exceeding 5 GWh.

<sup>2</sup> *Global Homes and Buildings Industry Outlook 2024*, (Frost & Sullivan, March 2024).

<sup>3</sup> *Ibid.*

## Addressing Market Gaps to Distinguish Itself in the Industry

In addition to scalability, Heliostorage's system stands out for its ability to store heat from various sources and temperatures within a single storage unit, providing clients with unmatched flexibility. This versatility extends to accommodating diverse heat sources - including solar thermal, industrial process heat, waste heat from data centers, ambient building heat, and surplus heat from district heating networks.

Furthermore, Heliostorage integrates smart control software that optimizes energy efficiency by matching demand with the most energy-efficient supply, resulting in substantial cost savings. Compared to conventional systems, the company's solution can achieve up to an 89% cost reduction versus oil-based heating and requires 75% less electricity than traditional heat pump systems.<sup>4</sup>

Heliostorage's approach ensures that the ground above its storage sites remains usable, distinguishing it from other seasonal storage solutions. Additionally, for district heating applications, the company offers the flexibility to distribute storage units throughout the network, contributing to network balance and stability. Frost & Sullivan analysis suggests that Heliostorage's fundamental value proposition ultimately lies in its ability to deliver shorter payback times and significant carbon emission reductions.

Frost & Sullivan applauds the company's innovative seasonal thermal energy storage system, which disrupts the market by providing flexible and scalable solutions for decarbonizing heating systems. Moreover, Heliostorage's capacity to integrate multiple heat sources and temperatures within a single storage unit, coupled with smart control software that optimizes energy efficiency, results in substantial cost savings and reduced carbon emissions, setting it apart in the industry.

## Pioneering Sustainability: Heliostorage's Entrepreneurial Journey

Heliostorage embodies an entrepreneurial ethos in its mission to revolutionize the heating industry, driven by a strategic vision to combat reliance on fossil fuels. Despite facing a dual challenge of industry complacency and policy inertia, the company passionately advocates for its seasonal thermal energy storage system, emphasizing its environmental benefits and economic advantages amidst volatile energy markets. Heliostorage's persistent efforts extend beyond conventional startup hurdles as it navigates the complex policy advocacy landscape, fueled by a steadfast commitment to reshaping Europe's approach to heating decarbonization.

## Retaining Competitive Edge and Market Position

Heliostorage maintains its competitive edge by strategically emphasizing innovation, flexibility, and sustainability. The company addresses the growing demand for affordable and scalable energy storage solutions for retrofitting existing heating systems and integrating them into new builds by prioritizing cost-efficiency and adaptability in system design. By leveraging the decarbonization trend, Heliostorage's offerings align with regulatory objectives for net-zero emissions and provide economic benefits, ensuring rapid returns for customers. The company continues to broaden its impact on emission reductions through initiatives like the HaaS model, solidifying its position as a forward-thinking leader in sustainable energy storage solutions.

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<sup>4</sup> Frost & Sullivan Interview with Heliostorage, (February 20, 2024).



Furthermore, the company has a unique market position due to its first-mover advantage in offering a solution for seasonal storage (solar thermal-powered BTES) and making it commercially viable. While it faces a challenge in educating potential customers about this concept, Frost & Sullivan points out that efforts to communicate its benefits have been met with enthusiasm, resulting in growing demand. This

*“Frost & Sullivan commends the company for its unwavering commitment to innovation and decarbonization. Heliostorage’s commitment to customer satisfaction is exemplary and its strategic financing and international expansion efforts will amplify its growth potential further. The company’s pioneering efforts are reshaping the heating sector and paving the way for a greener, more sustainable future.”*

**- Ojaswi Rana**  
**Best Practices Research Analyst**

educational initiative positions Heliostorage as a leader in a market ripe for innovation, with no similar competitive response yet evident.

Frost & Sullivan is impressed by the company’s entrepreneurial spirit and passionate persistence, which is quite evident in its strategic vision to combat reliance on fossil fuels and its unwavering commitment to revolutionizing the heating industry with innovative solutions.

### **Maximizing Customer Satisfaction: Heliostorage’s Path to Success**

Heliostorage strongly emphasizes customer satisfaction, which is evident in the positive feedback regarding the system’s flexibility, scalability, and improved energy efficiency. The company ensures its solutions seamlessly

integrate with existing setups by being system-agnostic and partnering with local experts for installation while prioritizing customer trust and comfort. Furthermore, Heliostorage’s smart control systems offer peace of mind through cloud-based remote monitoring and alerts with an additional security layer, fostering lasting relationships built on trust and satisfaction with a commitment to long-term system efficiency.

### **Case Study**

Heliostorage took on a pivotal role by providing its BTES system to heat Finn Spring’s (Finland’s largest producer of bottled water) bottling plant during winter. The BTES system efficiently stores thermal energy from the compressors and two different types of solar thermal collectors, which Finn Spring then utilizes for heating. Moreover, Heliostorage’s installation and integration of the control software developed by Centria optimized the operation of three process compressors in the bottling plant. The successful implementation of Heliostorage’s solutions empowers Finn Spring to manage its heating needs while reducing the environmental impact efficiently.<sup>5</sup>

### **The Road Ahead**

In March 2024, Heliostorage unveiled its latest breakthrough at Vaasa Energy Week: an all-in-one battery system designed to transform energy management for small- to medium-sized enterprises.<sup>6</sup> This compact

<sup>5</sup> Heliostorage, “Industrial Waste Heat,” Heliostorage, March 21, 2024, <https://heliostorage.com/industrial-waste-heat/>.

<sup>6</sup> Heliostorage, “Heliostorage Launches Energy Storage Solution at Vaasa Energy Week,” Heliostorage, March 13, 2024, <https://heliostorage.com/2024/03/13/heliostorage-battery-launch/>.

system integrates battery cells, inverters, and the Heliostorage smart controller into a single unit, offering a streamlined solution for energy utilization. With a 70-kilowatt hour (kWh) capacity, the system captures and stores power from solar panels or the grid, enhancing energy independence and flexibility for businesses. Beyond storage, advanced control software proactively monitors demand and energy costs, allowing for significant cost savings by storing and using energy during low-price periods during peak hours.

In November 2023, Heliostorage secured financing from Nefco to fuel its international expansion endeavors, mainly targeting the European market where traditional heating and cooling systems rely heavily on natural gas and oil. With this funding, Heliostorage aims to accelerate its sales efforts and advance its mission of driving Europe towards net zero emissions.<sup>7</sup>

Frost & Sullivan commends the company for its unwavering commitment to innovation and decarbonization. Heliostorage's commitment to customer satisfaction is truly exemplary - and its strategic financing and international expansion efforts will amplify its growth potential even further. The company's pioneering efforts are reshaping the heating sector and paving the way for a greener, more sustainable future.

## Conclusion

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The sustainable climate control systems market faces a significant disparity between the demand for efficient, eco-friendly solutions and the limited availability of commercially viable options. Existing solutions lack flexibility, scalability, and integration capabilities, hindering their ability to meet diverse customer needs while ensuring cost-effectiveness and environmental sustainability.

Innovative companies such as Heliostorage fill this gap by offering comprehensive solutions that address these challenges and align with market demand. The company offers highly flexible solutions that integrate various heat sources and temperatures within a single storage unit, providing unmatched versatility. Its smart control software optimizes energy efficiency, delivering significant cost savings compared to conventional systems and solidifying its position in sustainable energy storage solutions. Furthermore, Heliostorage prioritizes client-centricity by ensuring its solutions seamlessly integrate with existing setups and partners with local experts for installation, reflecting its commitment to customer satisfaction and long-term system efficiency. Heliostorage navigates complex policy landscapes and advocates for the integration of innovative solar thermal and seasonal thermal storage solutions in legislative considerations, driven by its unwavering commitment to reshaping Europe's approach to heating decarbonization.

With its strong overall performance, Heliostorage earns the 2024 Frost & Sullivan Entrepreneurial Company of the Year Award.

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<sup>7</sup> Heliostorage, "Heliostorage Receives Financial Support from NEFCO to Expand Its Emission-Free Heating and Energy Storage Solution Across Europe," Heliostorage, July 11, 2023, <https://heliostorage.com/2023/07/11/heliostorage-receives-financial-support-from-nefco-to-expand-its-emission-free-heating-and-energy-storage-solution/>.

## What You Need to Know about the Entrepreneurial Company of the Year Recognition

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Frost & Sullivan's Entrepreneurial Company of the Year Award recognizes the best up-and-coming, potentially disruptive market participant.

### Best Practices Award Analysis

For the Entrepreneurial Company of the Year Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Entrepreneurial Innovation*

**Market Disruption:** Innovative new solutions have a genuine potential to disrupt the market, render current solutions obsolete, and shake up competition

**Competitive Differentiation:** Strong competitive market differentiators created through a deep understanding of current and emerging competition

**Market Gaps:** Solution satisfies the needs and opportunities that exist between customers' desired outcomes and their current market solutions

**Leadership Focus:** Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

**Passionate Persistence:** Tenacity enables the pursuit and achievement of seemingly insurmountable industry obstacles

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

