

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

# 2024 COMPETITIVE STRATEGY LEADER

*IN THE GLOBAL  
INDUSTRIAL AIR  
COMPRESSOR 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. Kaishan Group Co., Ltd. excels in many of the criteria in the industrial air compressor space.

AWARD CRITERIA	
<i>Strategy Innovation</i>	<i>Customer Impact</i>
Strategy Effectiveness	Price/Performance Value
Strategy Execution	Customer Purchase Experience
Competitive Differentiation	Customer Ownership Experience
Executive Team Alignment	Customer Service Experience
Stakeholder Integration	Brand Equity

### A Market Snapshot

The continued expansion of key industries heavily reliant on compressed air, such as oil and gas, petrochemicals, and automotive manufacturing, drive the adoption of industrial air compressor solutions globally. The demand for these solutions is especially high in emerging economies witnessing rapid industrialization and infrastructure development. Furthermore, as industries increasingly embrace automation by integrating advanced robotics and automated machinery into their manufacturing facilities, the need for reliable compressed air to power pneumatic tools also grows. In addition, the declining costs and growing uptake of renewable energy across industries further support the adoption of compressed air solutions for renewable energy generation. Within this context, Frost & Sullivan’s research estimates the global industrial air compressor market will reach \$16.8 billion in 2026, with a compound annual growth rate of about 3.1% from 2021 to 2026.<sup>1</sup>

Despite this growing demand for industrial air compressors, several factors, such as stringent environmental regulations and raw material price volatility, pose significant restraints to market growth. For instance, air compression remains a highly energy-intensive and carbon-emissive part of industrial operations, with compressed air accounting for up to 40% of total energy costs in European plants (equivalent to almost 10 terawatt-hours of electricity and 4.3 million tons of carbon dioxide emissions

<sup>1</sup> “Global Air Compressors Market”, (Frost & Sullivan, October 2022).

annually).<sup>2</sup> As a result, existing air compression systems cannot sufficiently address the progressively strict emission regulations and industries' growing focus on eco-friendly technologies.

Hence, manufacturers that proactively invest in the design and production of technologically advanced, energy-efficient, and cost-effective compressed air systems that meet changing customer needs will witness robust growth in the global industrial air compressor market. Frost & Sullivan's research finds that Kaishan Group Co., Ltd. (Kaishan) is a torchbearer in this regard.

### ***Kaishan: Serving Industries' Complete Air Compression Needs***

Founded in 1956 and headquartered in Quzhou, Zhejiang Province, China, Kaishan is a leading global developer and manufacturer of air compressors and related equipment. The company leverages over 68 years of collective industry experience<sup>3</sup> to offer high-quality and expertly engineered products that comprehensively address industrial customers' compressed air needs across all major markets.

Kaishan differentiates itself against contemporaries in the global air compressor industry with one of the market's most exhaustive coverage of compressors and fluid machinery. To this end, the company offers a full solution spectrum with more than 400 individual products<sup>4</sup> to serve varying customer requirements across diverse industries, including aerospace, construction, agriculture, and food and beverage, among

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**- Nancy Wang**  
**Senior Consultant**

others. Overall, Kaishan's product portfolio broadly covers various air compressor technologies (reciprocating, screw, centrifugal, scroll, and dry-oil free) and applications (air, industrial gas, cooling media, steam, heat pump, screw vacuum pump, dry-pitch vacuum, screw blowers, centrifugal blowers, magnetic compressor/blower/vacuum, oxygenerator, nitrogenerator, post-processing, steam expander, and organic Rankine cycle [ORC] expander).

In addition to these products, Kaishan supplies related compressor equipment, parts, and services to meet its customers' complete air compression needs. For

instance, the company provides a wide range of pneumatic downstream and upstream accessories that remove inherent impurities, such as water, dirt, or lubricating oil, to ensure the compressed air is completely clean and dry, ultimately enhancing its compression systems' reliability and energy savings.

Frost & Sullivan believes Kaishan's unique positioning as a comprehensive compressor company empowers it with a competitive edge on cost-efficiency while unfolding new market opportunities.

<sup>2</sup> "Global Air Compressors Market", (Frost & Sullivan, October 2022).

<sup>3</sup> <https://kaishanusa.com/about-us/>, accessed June 2024.

<sup>4</sup> <https://kaishan-compressor.com/>, accessed June 2024.

### *Foresight with Insight: Developing Future-Proof Air Compression Systems*

Kaishan further strengthens its competitive differentiation by proactively adapting and expanding its expansive product portfolio through an ongoing focus on continual, market-led innovation. The company continues to develop core technologies and unique manufacturing techniques (incorporating enterprise-wide digitalization and production line automation), empowering it to produce future-proof air compressor systems that evolve along with the industries it serves. To this end, Kaishan leverages its ever-expanding distributor network's on-ground presence and customer-oriented lifecycle analyses to align its new product development with changing customer needs. As a result, the company has steadily grown into a significantly diversified engineering company, developing high-value equipment for industrial use worldwide over the last six decades.

To drive these innovation efforts, Kaishan consistently invests in research and development (R&D) activities, maintaining a world-class team of engineers and researchers across five global R&D centers (located in Seattle, Shanghai, Vienna, Loxley, and Reno). Notably, Kaishan owns the entire intellectual property rights to its core technologies holding over 303 patents globally. All in all, the company's competitors cannot match its R&D capabilities, either due to financial limitations or performance constraints, setting it apart in the global air compressor market.

Among other innovations, Kaishan's differentiated R&D capability enables it to develop energy-efficient air compressor systems, in line with its industrial customers' growing focus on environmental sustainability. For instance, in the past decade, the company has significantly improved its screw compressor's energy efficiency levels, boasting of best-in-line design capability in screw compressor technology. Moreover, among the first to promote two-stage compression engines on a large scale, Kaishan's recently launched patent-protected, two-stage compressor host improves energy efficiencies further, bolstering its technology leadership.

Similarly, Kaishan's screw ORC and axial flow ORC expansion generators, which utilize waste heat to produce electricity, offer significant power generation efficiency advantages over competing products. In addition to these improvements, the company's renewable energy generation offsets a considerable percentage of its compressors' energy consumption. Kaishan also rigorously recycles unused waste materials at every stage of its manufacturing processes to optimize raw material usage.

Overall, Kaishan empowers its industrial customers with improved energy efficiencies and lower operating costs, delivering up to 35% energy cost savings.<sup>5</sup> At the same time, the company strengthens its image as an eco-friendly enterprise, an increasingly crucial differentiator in the global air compressor space.

Frost & Sullivan believes Kaishan is uniquely prepared for today's demands and exceptionally positioned for tomorrow's needs. The company's market-led innovation efforts underpin its partner of choice status and drive sustainable growth for years to come.

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<sup>5</sup> <https://kaishanusa.com/>, accessed June 2024.

### **Strategic Leadership: Globally Growing Air Compressor Manufacturer**

Adhering to the principle of "Engineering The Future", Kaishan steadily works toward its long-term vision of becoming the world's leading compressor manufacturer.<sup>6</sup> The company's robust manufacturing footprint includes 11 factories spread across four Chinese facilities (Shanghai, Quzhou, Shunde, and Chongqing), and two international production bases (Loxley, Alabama, the United States [US] and Leobersdorfer, Austria). Kaishan leverages these specialized manufacturing facilities to produce over 70,000 air compressor units annually.<sup>7</sup> Moreover, the company maintains operation hubs in Melbourne, Taichung, Mumbai, Dubai, Loxley, Warsaw, Shanghai, Quzhou, and Leobersdorfer, with sales channels covering major markets worldwide.

Furthermore, unlike its contemporaries, Kaishan maintains a fully vertical manufacturing capacity, designing and producing 85% of its compressor components in-house. This unique capability allows the company complete control over the material supply chain, component costs, and product quality. As a result, Kaishan can respond rapidly to changing market demands, enabling it to launch new products quickly and cost-effectively. Moreover, the company combines its low-cost manufacturing capabilities with highly skilled engineering expertise to produce high-quality and affordable air compression solutions

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**- Sama Suwal**  
**Best Practices Research Analyst**

that meet the required global certifications, including Conformité Européenne, Underwriter Laboratories, and the American Society of Mechanical Engineers.

In addition to augmenting its Chinese market leadership, Kaishan continues to grow its geographic footprint aggressively across Southeast Asia, the US, and Europe as part of its long-term growth vision. The company implements customized strategies to expedite expansion into these new geographies.

For instance, in the US market, Kaishan leverages its wholly-owned manufacturing and R&D base in Loxley to offer locally developed and produced compressed air systems for its regional customers. The company further builds customer trust in its products by

providing extended five-year warranties on major components, including an unmatched lifetime airend warranty on its KRSP and KRSP2 rotary screw compressors.<sup>8</sup>

The success of Kaishan's US-based strategy is evidenced in the exponentially growing regional demand for its products, leading the company to outgrow its current manufacturing base. As a result, in April 2024, the company announced an 18-month, \$11 million capacity expansion at its Loxley facility.

<sup>6</sup> <http://en.kaishangroup.com/>, accessed June 2024.

<sup>7</sup> <https://kaishanusa.com/>, accessed June 2024.

<sup>8</sup> <https://kaishanusa.com/warranty/>, accessed June 2024.

Kaishan strives to double the facility's current employee base by 2029, intending to employ this expertise to drive global exports into new markets.<sup>9</sup>

Similarly, Kaishan continues to carry acquired brands from the reputed, Austria-based Leobersdorfer Maschinenfabrik company within its brand umbrella. The company recommends these products in markets where customers are skeptical of its core portfolio's 'Made-in-China' brand identity. Collectively, Kaishan's strategic initiatives empower it to develop and manufacture best-in-class, cost-efficient compressors that satisfy the unique requirements of each regional market, enabling a sustainable growth pattern and paving the road to global market leadership.

Frost & Sullivan commends Kaishan for leveraging its robust R&D and strategic manufacturing capabilities to drive its ongoing transition from a local Chinese brand to a globally leading air compressor manufacturer. Its competitive edge lies in delivering a compelling combination of product quality and affordability, effectively meeting its broad customer base's diverse needs.

### ***Roadmap to Success: Proactive, Professional, and Personal***

With its customer-centric corporate philosophy, Kaishan operates on the central tenet that its success depends on customer satisfaction. This philosophy permeates the company's daily practices. Kaishan aims to establish and maintain long-lasting customer relationships by consistently offering high-quality, customized products and efficient services. The company passionately believes that ensuring optimal customer satisfaction is pivotal to its success. As a testament to this commitment, Kaishan tailors its products to meet specific customer requirements. For instance, recognizing the need for low-pressure air compressors in Zhejiang Province's textile industry, the company developed specialized equipment designed to operate at 1.5 to 3.5 bars. This solution not only catered to the textile market's unique needs but also expanded its application to industries with similar lower-pressure level demands, such as cement and glass.

Moreover, Kaishan meets with customers to assess their specific needs to develop these tailored solutions with roadmaps for seamless execution. For instance, the company organizes bi-annual or annual sales and distribution training classes and factory visits to gather market information and customer feedback. Additionally, Kaishan utilizes lead generation marketing tools and a "virtual exhibition hall" to attract and convert potential customers, understand their needs, and collect feedback on its pioneering solutions. The company also employs active and passive two-way customer feedback mechanisms, including proactive customer satisfaction surveys, various online/offline communication channels, and a transparent complaint-handling process. Together, these efforts empower Kaishan to continuously optimize and improve its product portfolio and service offerings based on customer input.

Furthermore, Kaishan's focus on building a "proactive, fast, professional, and intimate" service brand image garners significant recognition in the compressor market. The company cultivates a team combining operational management talent, technology experts, and service/sales personnel to ensure its service systems' efficient operation, swift problem-solving, and service business optimization.

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<sup>9</sup> <https://kaishanusa.com/kaishan-usa-holds-groundbreaking-for-expansion/>, accessed June 2024.

Kaishan serves its industrial customers through its growing network of after-sales centers and service offices in key sales areas. These institutions foster a positive, collaborative relationship between the company's service employees and the customers' operational teams. Kaishan's comprehensive, three-dimensional service network further strengthens its customer relationships with a forward-looking plan to establish 12 overseas offices, 30 agent service stations, and one major repair center by 2029.

Over and above, Kaishan's customer-centric efforts to drive the continual market-led innovation of its comprehensive product portfolio propel its progression from a leading player in its domestic, low-end market to a key player in the global, high-end industry. Frost & Sullivan believes the company is well-positioned to drive the industrial air compression space into its next growth phase, capturing market share and sustaining its leadership in the coming years.

## Conclusion

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Frost & Sullivan believes that innovation and growth opportunities drive future success; many factors contribute, yet having a competitive strategy is critical. Kaishan Group Co., Ltd. (Kaishan) understands this core concept and is leading the industrial air compressor market due to its focused strategies, helping it to outpace competitors.

Driven by a robust, market-led innovation process, Kaishan continually augments its comprehensive product portfolio with future-proof air compressor systems that evolve along with the industries it serves. Furthermore, the company maintains a fully vertical manufacturing capacity, allowing Kaishan to respond rapidly to changing market demands and launch new products quickly and cost-effectively. Equipped with these differentiated capabilities, the company continues to grow its geographic footprint beyond its domestic market into Southeast Asia, the US, and Europe, driving its ongoing transition from a local Chinese brand to a globally leading air compressor manufacturer. Overall, Kaishan develops and implements its strategies with its customers in mind, securing its position as a trusted partner and market leader.

With its strong overall performance, Kaishan earns Frost & Sullivan's 2024 Global Competitive Strategy Leadership Award in the industrial air compressor industry.

## What You Need to Know about the Competitive Strategy Leadership Recognition

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Frost & Sullivan's Competitive Strategy Leadership Award recognizes the company with a stand-out approach to achieving top-line growth and a superior customer experience.

### Best Practices Award Analysis

For the Competitive Strategy Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Strategy Innovation*

**Strategy Effectiveness:** Effective strategy balances short-term performance needs with long-term aspirations and overall company vision

**Strategy Execution:** Company strategy utilizes Best Practices to support consistent and efficient processes

**Competitive Differentiation:** Solutions or products articulate and display unique competitive advantages

**Executive Team Alignment:** Executive team focuses on staying ahead of key competitors via a unified execution of its organization's mission, vision, and strategy

**Stakeholder Integration:** Company strategy reflects the needs or circumstances of all industry stakeholders, including competitors, customers, investors, and employees

#### *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



## About Frost & Sullivan

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- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



## The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

### Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

