



**2013 European Oil-Free Screw Compressors
Product Leadership Award**



FROST & SULLIVAN



50 Years of Growth, Innovation & Leadership

Product Leadership Award Oil-Free Screw Compressors Europe, 2013

Frost & Sullivan's Global Research Platform

Frost & Sullivan is in its 50th year in business with a global research organization of 1,800 analysts and consultants who monitor more than 300 industries and 250,000 companies. The company's research philosophy originates with the CEO's 360-Degree Perspective™, which serves as the foundation of its TEAM Research™ methodology. This unique approach enables us to determine how best-in-class companies worldwide manage growth, innovation and leadership. Based on the findings of this Best Practices research, Frost & Sullivan is proud to present the 2013 European Product Leadership Award in Oil-free Screw Compressors to CompAir.

Key Industry Challenges

A key requirement of the end-users in the food and beverage, pharmaceutical and electronics industries is the need for clean and high-quality air. The challenge is to identify screw compressor manufacturers that produce a compressor which meets the most stringent air purity standards and eliminates the risk of contamination of the product or equipment. Incorporating a closed loop oil system in the air end is a way to eliminate the risk of oil and dust escaping into the environment, thereby ensuring conformity to air purity standards, such as ISO 8573-1 Class Zero.

Frost & Sullivan notes that designing and creating screw compressors that exhibit optimal energy consumption is an important challenge faced by screw compressor manufacturers across a variety of industry verticals. Screw compressor manufacturers strive to achieve energy optimization with the incorporation of components, such as high efficiency electric motors and controllers with a high degree of monitoring that would enable the end-users to regulate the energy usage, depending upon the application. Energy efficiency is an important factor, especially in Europe, that is sought by end-users to reduce their carbon footprint. This has a direct impact on the compressor market, because energy consumption of compressors is higher when compared to most of the other equipment installed in the clients' facilities.

A reduction in the lifecycle cost of the compressor is a major requirement of end-users across different industries. Consequently, screw compressor manufacturers need to make compressors that exhibit a reduction in the total cost of ownership. This can be achieved by looking for ways to reduce the downtime of the compressor and the associated maintenance costs, which has a direct impact on the total cost of ownership of the compressor. In addition, the integration of auxiliary devices, such as controllers and sensors that can monitor the key operating parameters with the compressors, is also a key challenge faced by compressor manufacturers.

Packaging of a compressor is another challenge faced by compressor manufacturers who develop a range of compressors of different sizes and power ranges. Frost & Sullivan analysis indicates that the ability to have a single package for compressors across different power ranges will enable compressor manufactures to gain a competitive advantage in the market by addressing the challenges among end-users who have constraints regarding the availability of space in their facilities.

Key Benchmarking Criteria for Product Leadership Award

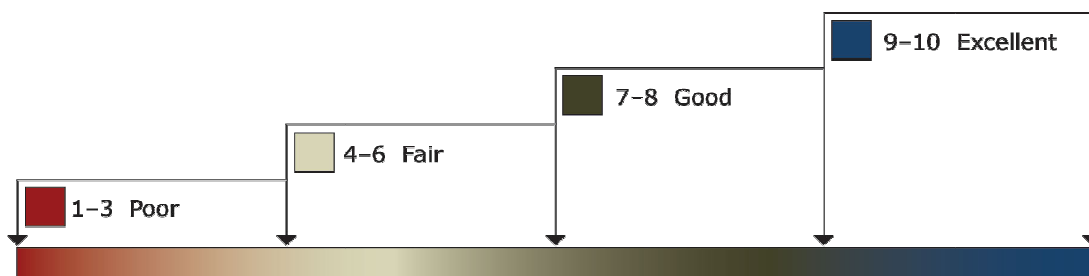
For the Product Leadership Award, the following criteria were used to benchmark CompAir's performance against key competitors:

- Product Features / Functionality
- Innovative Element of the Product
- Product Acceptance in the Marketplace
- Provides Customer Value Enhancements
- Product Quality

Decision Support Matrix and Measurement Criteria

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Matrix (DSM). The DSM is an analytical tool that compares companies' performance relative to each other with an integration of quantitative and qualitative metrics. The DSM features criteria unique to each Award category and ranks importance by assigning weights to each criterion. The relative weighting reflects current market conditions and illustrates the associated importance of each criterion according to Frost & Sullivan. Fundamentally, each DSM is distinct for each market and Award category. The DSM allows our research and consulting teams to objectively analyze each company's performance on each criterion relative to its top competitors and assign performance ratings on that basis. The DSM follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are shown in Chart 1.

Chart 1: Performance-Based Ratings for Decision Support Matrix



This exercise encompasses all criteria, leading to a weighted average ranking of each company. Researchers can then easily identify the company with the highest ranking. As a final step, the research team confirms the veracity of the model by ensuring that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

Chart 2: Frost & Sullivan’s 10-Step Process for Identifying Award Recipients



Best Practice Award Analysis for CompAir

The Decision Support Matrix, shown in Figure 3, illustrates the relative importance of each criterion for the Product Leadership of the Year Award and the ratings for each company under evaluation. To protect the interests of the award recipient’s competitors, we have chosen to refer to them as Competitor 1 and Competitor 2.

Figure 3: Decision Support Matrix for Product Leadership Award

Measurement of 1-10 (1 = lowest; 10 = highest)	Award Criteria					Weighted Rating
	Features/Functionality	Innovative Element of the Product	Product Acceptance in the Marketplace	Provides Customer Value Enhancements	Product Quality	
Relative Weight (%)	20%	20%	20%	20%	20%	100%
CompAir	10	9	9	10	8	9.2
Competitor 1	9	9	9	9	8	8.8
Competitor 2	9	8	9	8	8	8.4

Criterion 1: Product Features / Functionality

CompAir is one of the leading manufacturer of oil-free screw compressors on a global scale and is among the Tier 1 companies in Europe. CompAir's D-Series 2-stage oil-free screw compressor, launched in April 2013, is designed to be used in applications within industries, such as food and beverage and pharmaceutical, where air purity is critical. A key feature of this compressor is that it has an advanced packaging design. This allows the same package to be used for every variant of the compressor, such as the fixed speed, speed regulation, or air or water cooled compressor. The D-Series 2-stage oil-free screw compressor is available in ranges between 75 kW – 160 kW. Irrespective of the range, the size of the package remains the same, which results in reduced footprints of this range of compressors. Also, Frost & Sullivan analysis indicates that in the higher ranges, the D-Series 2-stage oil-free screw compressor is more convenient for customers who prefer smaller packages due to limitations pertaining to the availability of space in the compressor room.

Energy efficiency and optimal energy consumption are key requirements of customers across different industry verticals, and to address this requirement CompAir has developed the regulated speed models of the D-Series 2-stage oil-free screw compressors. The regulated speed models provide energy savings of around 25 percent over the fixed speed unit. This is achieved by operating the compressor at optimal power, depending upon the requirements of the customer. This speed regulated compressor is also incorporated with a WEG International Efficiency (IE3) electric motor, which provides advantages, in terms of energy efficiency and reliability.

The D-Series 2-stage oil-free screw compressor has an internal construction that is divided into two chambers, namely the loud and the silence chambers, which enables the control of the noise-level. The loud chamber is placed near the air end, and it is designed using sound absorption material. Such an internal construction is designed to improve the operating conditions of the client's facilities.

Criterion 2: Innovative Element of the Product

An innovative aspect of the D-Series 2-stage oil-free screw compressor is the Delcos XL touch screen control system that is incorporated in it to ensure the reliability of the compressor. This control system has a 5.7 inch touch display with different screens that the customers can use. The home screen offers a view of the key operating parameters, such as the flow, pressure in the air ends, temperature in the air ends, and the water temperature. There is a trend screen that captures information, such as volume of flow in a particular week, network pressure in the factory, and weekly profiles wherein energy consumption can be calculated. A settings page is present that contains regular options, such as language and time settings. The customer also has the option to check the fault history, wherein details of past service and maintenance requests are logged. The Delcos XL touch screen control system has a base load sequencing option that enables it to monitor the operations of four compressors simultaneously.

Oil is required for lubricating the bearings and the gearbox, which necessitates the presence of a closed-loop oil system in the air end. This results in the generation of oil dust due to the high speed revolutions within the air end. The D-Series 2-stage oil-free screw compressor is equipped with a system that controls the oil dust by generating a vacuum, thereby separating the oil dust from the air and sending the oil back into the oil system. Frost & Sullivan recognizes that this ensures that there is no oil wastage and no oil emissions into the atmosphere.

Criterion 3: Product Acceptance in the Marketplace

CompAir's D-Series 2-stage oil-free screw compressors are used in applications where the requirement of air quality is very high. The food and beverage, pharmaceutical, electronics, automotive, and textile industries are the key target end-user industries for these compressors. This provides a potentially large customer base for the company, driven by the adoption of the D-Series 2-stage oil-free screw compressors which Frost & Sullivan expects to augment CompAir's market position within Europe in the coming years.

In the food and beverage industry, this compressor is used in food filling machines where compressed air is required for packaging purposes. In the automotive industry, the key applications include air tools and paint guns. The compressor can also be used for breathing purposes within paint shops. In the textile industry, this compressor is used in weaving machines that are used in the production of denim trousers. CompAir has received positive feedback from its customers since the launch of the compressor in April 2013. Frost & Sullivan research reveals that the demand for its oil-free compressor range has increased by around 40 percent in 2013, primarily due to the introduction of the D-Series 2-stage oil-free screw compressor. Increased customer awareness was facilitated by CompAir highlighting the product at major tradeshow, such as the Hannover Messe in April 2013 and also by working extensively with the company's distributors. Frost & Sullivan anticipates that this increase in customer awareness will result in further demand for the D-Series 2-stage oil-free screw compressors in the second half of 2013.

Criterion 4: Provides Customer Value Enhancements

Frost & Sullivan competitive benchmarking clearly shows that the need to develop oil-free screw compressors that provide high quality compressed air with reduced risk of contamination, along with smaller carbon footprint, has been addressed by CompAir with the introduction of its D-Series 2-stage oil-free screw compressor. Customers get the benefit of a longer life time due to the usage of closed water circuits to cool the air end, which results in less oil in the system when compared to compressors that use oil to cool down the air end. Maintenance costs are reduced, because the service interval is 8,000 hours for the compressor and its internal components, such as the air filters and oil filters. Ease of maintenance is also enhanced because of easy ducting, less number of parts, and greater service accessibility.

Customers also get the benefit of the “Assure” warranty program that covers the service and maintenance requirements of the compressors for a period of 44,000 hours or six years, whichever occurs first. Ease of installation is also ensured, because all of the connection parts, such as the power supply, and compressed air outlet and inlet are on the same side of the compressor. Besides, the compressor can also be used in Customer Engineered Product (CEP) applications, wherein it can be easily modified, depending on the special requirements of the customer.

Criterion 5: Product Quality

The D-Series 2-stage oil-free screw compressor is designed to meet the stringent hygienic standards in industries, such as food and beverage, pharmaceutical, and electronics, where air purity is of vital importance. This series of compressors have been certified ISO 8573-1 Class Zero (2010) to be silicone free. The two radial fans within the compressors are designed in accordance with the ErP (2015) efficiency legislation. Quality is reinforced with the incorporation of a WEG IE3 electric motor, which ensures reliable and safe operation. High quality of internal components, such as the air end used within the compressor, is ensured, as they are manufactured internally by Gardner Denver.

The D-Series 2-stage oil-free screw compressor is equipped with a water cyclone separator that facilitates removal of liquid contamination from the compressed air. As an optional feature, the compressor can also be equipped with an air filter series that is designed for water, dust, and particle removal. This compressor can also be equipped with energy-efficient refrigerant dryers and a nitrogen generator in order to achieve maximum efficiency, and ensure gas quality.

Conclusion

The D-Series 2-stage oil-free screw compressor has been designed by CompAir to offer the highest standards of air purity and non-contamination. This makes this series of compressors highly suitable for applications within the food and beverage, pharmaceutical, and electronics industries. The design of the compressor ensures high ease of installation and maintenance, while consequently reducing associated service costs. Frost & Sullivan independent analysis of the Oil-Free Screw Compressors Market clearly shows that the incorporation of a WEG IE3 motor ensures greater reliability and safety, while the Delcos XL touch screen controller enables the continuous monitoring of operating parameters. These features and benefits provided by the D-Series 2-stage oil-free screw compressor are expected to significantly enhance CompAir’s presence in the European screw compressors market in the near future.

Based on the aforementioned criteria, Frost & Sullivan is proud to present the 2013 European Product Leadership Award in Oil-free Screw Compressors to CompAir.

The CEO 360-Degree Perspective™ - Visionary Platform for Growth Strategies

The CEO 360-Degree Perspective™ model provides a clear illustration of the complex business universe in which CEOs and their management teams live today. It represents the foundation of Frost & Sullivan's global research organization and provides the basis on which companies can gain a visionary and strategic understanding of the market. The CEO 360-Degree Perspective™ is also a “must-have” requirement for the identification and analysis of best-practice performance by industry leaders.

The CEO 360-Degree Perspective™ model enables our clients to gain a comprehensive, action-oriented understanding of market evolution and its implications for their companies' growth strategies. As illustrated in Chart 4 below, the following six-step process outlines how our researchers and consultants embed the CEO 360-Degree Perspective™ into their analyses and recommendations.

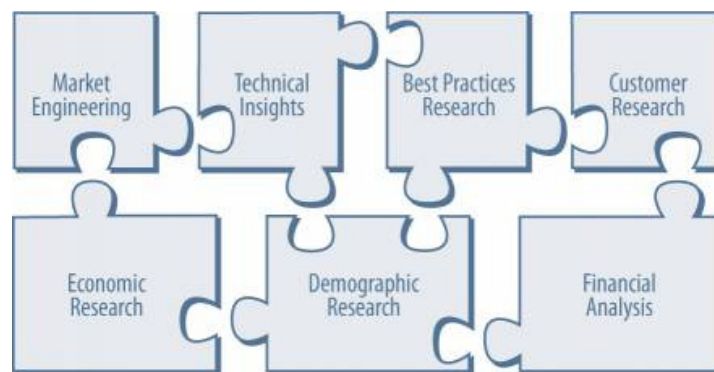
Chart 4: The CEO's 360-Degree Perspective™ Model



Critical Importance of TEAM Research

Frost & Sullivan's TEAM Research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all seven of Frost & Sullivan's research methodologies. Our experience has shown over the years that companies too often make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Frost & Sullivan contends that successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. In that vein, the letters T, E, A, and M reflect our core technical, economic, applied (financial and best practices) and market analyses. The integration of these research disciplines into the TEAM Research methodology provides an evaluation platform for benchmarking industry players and for creating high-potential growth strategies for our clients.

Chart 5: Benchmarking Performance with TEAM Research



About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best-practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from more than 40 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.