FROST & SULLIVAN

2015

GreenSpense™

2015 European Sustainable Packaging New Product Innovation Award

FROST & SULLIVAN

50 Years of Growth, Innovation & Leadership

Contents

Background and Company Performance

Industry Challenges

Aerosols are extremely popular because they provide a great user experience by way of continuous dispensing, ease of use, convenience and excellent target reach with minimal mess. However, there are various drawbacks to using aerosols. The key challenges are outlined below.

Aerosol containers generally use hydrofluorocarbons (HFCs) to dispense liquids. HFCs belong to a group of materials called short lived climate enforcers (SLCFs), which are highly flammable, greatly increasing the risk of explosion. In case of combustion in enclosed or small spaces, carbon monoxide formation is a possibility, which is very toxic to human life.

HFCs, even though possessing a relatively short atmospheric life, possess the ability to contribute greatly to global warming. According to the US Environmental Protection Agency (EPA), the GWP (global warming potential) of HFCs range between 140 and 11,700. According to the Center for Climate and Energy Solutions, about 40% of human-induced climate change is due to the use of SLCFs, and making a conscious effort to curb their usage would positively affect the future of the planet.

Regulatory mandates of the eventual phase-down of the use of HFCs are also being discussed currently under the Montreal Protocol on Substances that Deplete the Ozone Layer. The European Union (EU) is leading in regulating the use of fluorinated greenhouse gases (F-gases). The Climate and Clean Air Coalition (CCAC) is also actively monitoring the issue of short-term pollutants and strategies to mitigate them.

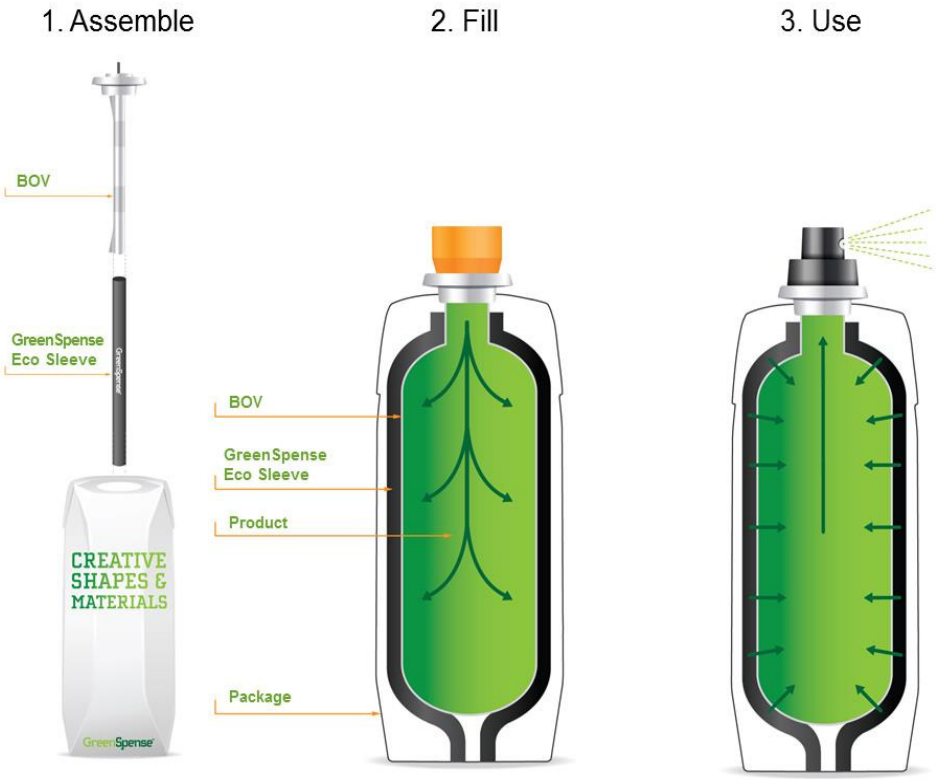
Conventional aerosols require packaging in cylindrical containers, leaving little room for versatility in design. The design and high flammability of aerosols also require special considerations in production, warehousing and logistics, as there is a potential for rapid fire escalation. Due to their explosive nature, there are significant limitations on shipping..

Manufacturers are increasingly looking for environmentally friendly packaging to satisfy the new global, socially-conscious consumer as well as meet regulatory requirements. GreenSpense has addressed these drawbacks of conventional aerosol packaging through its propellant-free, continuous dispensing aerosol product, the Eco-sleeve ™.

New Product Attributes and Customer Impact

Match to Needs

The Eco-sleeve product is mounted over a unique bag-on-valve technology. It stretches when the inner bag is filled with the packaged product (usually liquids) and generates working pressure on the bag to dispense the packaged liquids. Figure 1 showcases the use of Eco-sleeve for packaging.



Source:GreenSpense

One of the main advantages of the product is that it can be used over traditional bag-on-valve dispensing technology. It also empties 99% of packaged contents, enables a longer shelf life without the addition of preservatives while providing controlled and even dispensing of packaged contents.

The technology also enables manufacturing of a sleeve that can exert high pressure of 6 bars or higher, necessary to dispense the product adequately and create quality spray, while competing products that do not use gases exert a pressure of only 3 bars. The Eco-sleeve therefore provides consumers with a quality product that does not compromise on functionality, while eliminating the use of hundreds of thousands of tons of volatile organic compounds (VOC's).

Design

The Eco-sleeve is designed so that it can be used within a variety of external packaging materials including cardboard, plastics, flexible materials and metals. Further, unlike the traditional aerosol packaging, the Eco-sleeve is not limited to a cylindrical design. This versatility enables brands and manufacturing companies to provide a much broader array of packaging designs and more usage of eco-friendly materials. Comparable technologies, which do not use propellants, usually come with their specific packaging, limiting the

flexibility of design options. The company has patented 5 patents to ensure the protection of the unique technology.

Reliability

The Eco-sleeve can be combined with the sustainable bag-on-valve technology,. without the need to use highly flammable gases such as HFC and is safer both from end-user and manufacturing standpoints.

The Eco-sleeve provides a high barrier, which prevents the oxidation and contamination of the formulation inside, while comparable products, which do not use propellants, provide only medium-barrier capabilities.

Quality

GreenSpense has developed its Eco-sleeve from its own proprietary nanomaterial-based technology. This technology enables the manufacture of a thin sleeve, that expand 400% to 500% while generating high pressure on the the inner bag for quality operation.. The Eco-sleeve provides a shelf life of about 24 months due to its low-relaxation properties and a maximum pressure drop of 15% during the whole period. Competing propellant-free technologies do not provide the necessary pressure required for a comparable user experience.

Positioning

The worldwide aerosol market is estimated to be a 15 billion unit market, generating over $40 billion in end-product sales, according to the 2014 Annual Report of the European Aerosol Federation.

According to statistics provided by AEROBAL, the International Association of Aluminium Aerosol Container Manufacturers, about 47% of Aluminium cans were supplied to EU in 2014, 33% to North and South America, followed by over 14% in the Asia-Pacific (APAC) region. The APAC region showed marked growth in aerosol use, attributed to growing economies, a rise in the number of consumers and increasing prosperity.

With the increasing regulatory push towards elimination of harmful propellants, the Eco-sleeve is positioned to target the aerosol packaging market. The European Parliament in 2014 adopted a compromise agreement to phase-down the use of HFC, placing a cap on the amount of HFC allowed in the European market. The phase-down bans the use of technical aerosols that contain HFC with a GWP of 150 or greater, except when used in medical applications or to meet national safety standards, starting from 2018. These regulatory mandates are providing the push towards more eco-friendly packaging, and the Eco-sleeve is positioned to target this market as it is made of an upcyclable polymeric material.

The Eco-sleeve would be positioned to target the Personal care and household care, which constitutes about 80% of EU's production. GreenSpense believes that other packaging methods will shift to GreenSpense due to its ease of use and environmentally advantages including single compartment aerosols, trigger pumps, collapsible tubes, and airless dispensers, enabling their positioning in varied application areas.

Competing products, which do not use propellants, are generally designed to a specific application area and are not transferable across all applications.

The primary regional market for the Eco-sleeve would be the European region, initially at least, with subsequent expansion to the Americas and APAC. GreenSpense's manufacturing unit is currently located in Israel, enabling successful product positioning of its Sustainable Packaging solution towards an increasingly regulated European market.

Price/Performance Value

The Eco-sleeve allows for the elimination of Aluminium or Tinplate containers used in traditional aerosols, permitting the option for much lower cost of external packaging.

The elimination of pressurized gas reduces the associated manufacturing and storage costs and enables ease of integration in filling lines. Supply chain costs are also reduced as the Eco-sleeve can be shipped in any manner as it eliminates hazardous gas and does not require special shipping arrangements and methods.

According to the company, the Eco-sleeve allows for an overall cost savings of up to 25% while still allowing consumers the same user experience and convenience of traditional aerosols, and far superior performance to competing propellant free solutions..

Conclusion

The Eco-sleeve offers a safe, sustainable, low-cost packaging that eliminates VOC's, is biodowngradeable, enables versatility and attractiveness in the appearance of the product, that is easy to ship and store, and does not compromise on end-user experience and performance.

GreenSpense's Eco-sleeve is the only propellant-free technology that is currently available that can generate the pressure required to actuate today's gas-filled continuous dispensers as well as be easily implemented in production lines.

With its strong overall performance, GreenSpense has earned Frost & Sullivan's European 2015 New Product Innovation Award in Sustainable Packaging.

Significance of New Product Innovation

Ultimately, growth in any organization depends upon continually introducing new products to the market, and successfully commercializing those products. For these dual goals to occur, a company must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding New Product Innovation

Innovation is about finding a productive outlet for creativity—for consistently translating ideas into high quality products that have a profound impact on the customer.

Key Benchmarking Criteria

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated two key factors— New Product Attributes and Customer Impact—according to the criteria identified below.

New Product Attributes

Criterion 1: Match to Needs
Criterion 2: Reliability
Criterion 3: Quality
Criterion 4: Positioning
Criterion 5: Design

Customer Impact

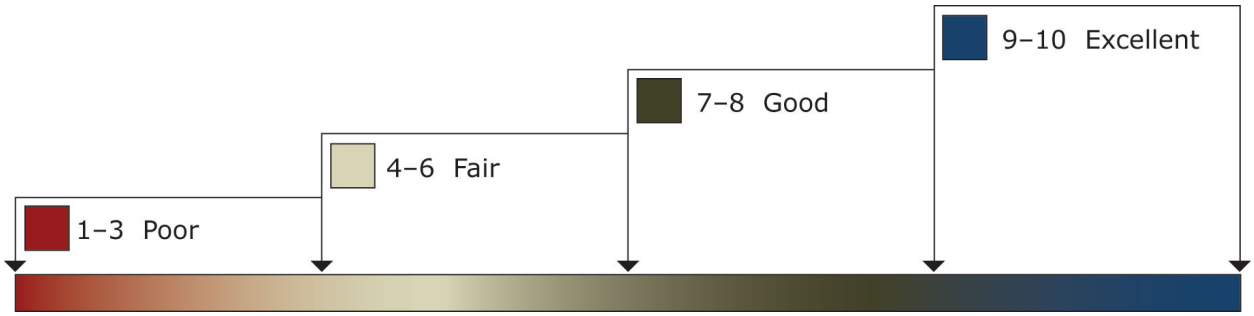
Criterion 1: Price/Performance Value
Criterion 2: Customer Purchase Experience
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Best Practice Award Analysis for GreenSpense

Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard is organized by New Product Attributes and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms 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.

The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key players as Competitor 2 and Competitor 3.

DECISION SUPPORT SCORECARD FOR NEW PRODUCT INNOVATION AWARD

Measurement of 1–10 (1 = poor; 10 = excellent)			
New Product Innovation	New Product Attributes	Customer Impact	**Average Rating**
GreenSpense	**9.7**	**9.4**	**9.55**
Competitor 2	8	8.5	8.25
Competitor 3	8.5	8.7	8.6

New Product Attributes

Criterion 1: Match to Needs

Requirement: Customer needs directly influence and inspire the product's design and positioning

Criterion 2: Reliability

Requirement: The product consistently meets or exceeds customer expectations for consistent performance during its entire life cycle

Criterion 3: Quality

Requirement: Product offers best-in-class quality, with a full complement of features and functionality

Criterion 4: Positioning

Requirement: The product serves a unique, unmet need that competitors cannot easily replicate

Criterion 5: Design

Requirement: The product features an innovative design, enhancing both visual appeal and ease of use

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market

Criterion 2: Customer Purchase Experience

Requirement: Customers feel like they are buying the most optimal solution that addresses both their unique needs and their unique constraints

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service, and have a positive experience throughout the life of the product or service

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality

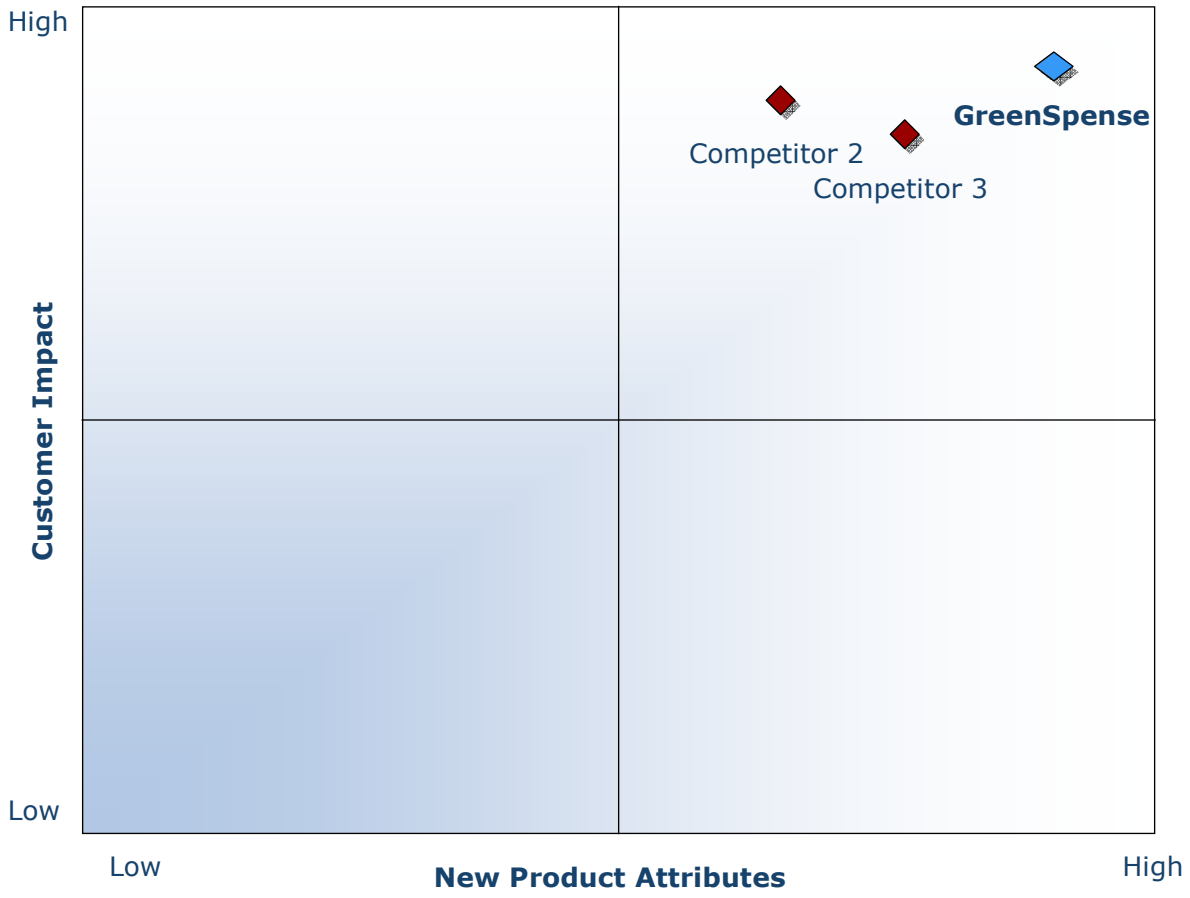
Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts can then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.

DECISION SUPPORT MATRIX FOR NEW PRODUCT INNOVATION AWARD



The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree 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 7 of Frost & Sullivan's research methodologies. Too often, companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry players and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan Awards follow a 10-step process to evaluate award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP		OBJECTIVE	KEY ACTIVITIES	OUTPUT
1	**Monitor, target, and screen**	Identify award recipient candidates from around the globe	• Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2	**Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates	Matrix positioning all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best-practice criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4	**Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5	**Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized award candidates
6	**Conduct global industry review**	Build consensus on award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible award candidates, representing success stories worldwide
7	**Perform quality check**	Develop official award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8	**Reconnect with panel of industry experts**	Finalize the selection of the best-practice award recipient	• Review analysis with panel • Build consensus • Select winner	Decision on which company performs best against all best-practice criteria
9	**Communicate recognition**	Inform award recipient of award recognition	• Present award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance	Announcement of award and plan for how recipient can use the award to enhance the brand
10	**Take strategic action**	Upon licensing, company may share award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess award's role in future strategic planning	Widespread awareness of recipient's award status among investors, media personnel, and employees

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 almost 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 31 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.