FROST & SULLIVAN

Perstorp

2018 European Bio-based Materials Product Leadership Award

2018
BEST PRACTICES
AWARDS

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Industry Challenges

The bio-based materials market continues to experience steady growth due to the favourable environmental profile of bio-based materials and technology advancements that enhance their functionality; additionally, concerns over the non-renewable nature of crude oil drive bio-based material adoption.

Unlike crude oil-based products, which remain the principal source of higher atmospheric pollution and threat to wildlife, the use of bio-based materials leads to a better environmental footprint and a more sustainable economy. Currently, authorities in North America and Europe make proactive efforts to encourage sustainable bio-based product usage through a range of regulatory and policy measures aimed at developing the bio-based materials industry. As prices of crude oil derivatives remain volatile and uncertain, there is a gradual shift away from dependency on crude oil and towards the development and more active usage of bio-based chemicals and materials. Also, crude oil is a quickly depleting resource and its non-renewability along with issues associated with identifying crude oil reserves stimulate material manufacturers to seek more sustainable and renewable sources of raw materials. Moreover, there are sustained efforts in the market to develop bio-based products with advanced performance and functionalities to address pressing customer concerns over performance and applicability. A growing number of partnership initiatives aimed at specific bio-based technologies drive the overall development of the bio-based materials industry.

Despite the increasing demand for bio-based materials across different sectors of the global economy, significant pitfalls and hurdles prevent many industry participants from increasing their market share.

Higher prices of bio-based material hinder the more active development of the bio-based materials market. Today, bio-based chemicals and materials are priced much higher than the corresponding crude oil derivatives. As a result, although many customers prefer environmentally sustainable products, the willingness to pay a premium remains limited, thereby precluding effective bio-based material adoption.

Supply chain issues in the bio-based value chain present another crucial challenge impeding the growth of the bio-based materials market. The lack of investor confidence, more extended return on investment, and costly demonstration scale-up activities hamper the bio-based materials market's development, manufacturing and marketing activities. Raw material sourcing frequently remains problematic as some raw materials are specific to certain geographies and there are existing concerns regarding their quality and availability of raw materials.

Product Family Attributes and Business Impact

Perstorp, established in 1881 and maintaining its reputable brand as a leading global partner for centuries, develops specialty chemical solutions for markets ranging from plastic materials and adhesives to bio-products and resins. By leveraging its hands-on experience in science-driven innovations, Perstorp excels at providing practical and innovative solutions in renewable products, which meet the varied needs of its customers. Notwithstanding fierce competition and economic challenges that precluded the growth perspectives for many companies, Perstorp stepped up its performance and market-driven research to develop more environmentally friendly products that can meet customer needs while minimizing its carbon footprint.

Excelling in the Bio-based Materials Industry

Over the past decade, Perstorp strengthened its capabilities by acquiring several sites for producing caprolactones in the United Kingdom, feed additives in the Netherlands, and basis polyols in China. In 2015, the company inaugurated a new OXO plant in Sweden, Stenungsund which was the single largest investment in the company's history.

The company's strong financial performance—with an EBITDA exceeding two billion SEK (Swedish kronas)—allows ambitious plans to accelerate continuous growth through its business units such as Penta, TMP, Neo, Oxo, Capa, and Feed & Food. Perstorp's favorable product mix supports its efforts to leverage its unique market position. Underpinned by its commitment to the environment, the company offers eco-friendly products to meet customers' varied demands.

Ensuring Adherence to High Sustainability Standards

At the heart of Perstorp's success is its strong commitment to sustainability practices while developing next-generation specialty chemicals solutions. The company strives to lower its carbon footprint significantly. More specifically, Perstorp aims to switch to alternative renewable resources and recycling and reusing finite sources. In 2017, the company invested in the modernization of its Penta plant in Toledo, Ohio (United States), to utilize and purify the waste liquid from production and use it as a raw material.

Most importantly, Perstorp works relentlessly to foster sustainable innovation and drive environmental efforts through partnerships with government and private research organizations. For example, last year Perstorp participated in the STEPS (Sustainable Plastics and Transition Pathways) project coordinated by Lund University, Sweden, and financed by MISTRA—a research organization with an environmental focus. The project focuses on developing carbon-neutral polyesters with diverse applications and properties.

Today, Perstorp allocates over 80% of its research and development (R&D) resources to develop new sustainable solutions and switched its Swedish plants to using only renewable electricity From 1 January 2018.

Offering Innovative Renewable Polyols

In 2010, Perstorp was the first company to launch a renewable pentaerythritol (penta) called Voxtar™. In November 2017, the company announced the launch of two additional partially renewable products, Evyron™ and Neeture™, leading the way with all three polyols Voxtar™, Evyron™ and Neeture™ available in renewable or partly renewable grades. The principal objective of the company is to offer different grades of "renewable content," reducing costs as well as driving down customers' carbon footprint across different sectors of the economy. Its products come with an International Sustainability and Carbon Certification (ISCC) certificate, which guarantees their compliance with high environmental standards and requirements.

Voxtar™, Perstorp's primary product, is a partly renewable penta, which comes in six grades as M40, M100, D40, D100, E40, and E100, based on 40% and 100% renewable resources. All six grades are capable of lowering carbon footprint and supporting sustainable sourcing of renewable raw material. The applications of the Voxtar™ product range from alkyd and radiation curing resins to transformer oils and refrigeration lubricants.

Evyron™, another partly renewable trimethylolpropane product, comes in two grades (T20 and T50), based on 20% and 50% renewable resources. Its applications are also quite diverse and range from liquid polyesters and alkyd resins to aviation turbine oils and transformer oils.

Finally, Neeture™ is also a partly renewable neopentyl glycol (neo) product which comes in two grades (N20 and N40), based on 20% and 40% renewable sources. Its applications range from powder and liquid polyester resins to radiation curing resins and aviation turbine oils.

Maintaining Strong Customer-centric Approach

At the heart of company's success is a strategy that allows its customers to transition from fossil to renewable raw material gradually. The essence is combining fossil and renewable elements in production while keeping track of their quantities and allocating them to relevant products through a mass balance concept. Thus, by gradually incorporating renewable raw materials into the existing systems and using them when manufacturing new products, Perstorp helps to drive pro-environmental initiatives of its customers while maximizing their market success. Likewise, the company ensures the high quality and performance of its products, outperforming the current offerings (e.g., flame-retardants, biodegradable plastics)

Through strategic partnerships, Perstorp shares its insight and knowledge with its customers, promoting pro-environmental behavior in its value chain and reducing total expenditure where possible. Its innovation partnership scheme provides comprehensive technical support to help Perstorp's customers to produce a more sustainable product portfolio. Moreover, its supply partnership scheme enables prioritized supply and preferred delivery to its partners.

Conclusion

The bio-based materials market is very competitive. Concerns over continuous availability and consistent quality of bio-based raw materials, supply chain issues, and high price sensitivity impede market participants' growth. In an environment where companies experience regulatory and economic limitations, Perstorp excels in developing leading bio-based polyols solutions with high quality and transparency. With its strong commitment to innovation and a customer-centric approach, Perstorp earns Frost & Sullivan's 2018 European Product Leadership award in the bio-based materials market.

Significance of Product Leadership

Ultimately, growth in any organization depends upon customers purchasing from a company and then making the decision to return time and again. A comprehensive product line, filled with high-quality, value-driven options, is the key to building an engaged customer base. To achieve and maintain product excellence, an organization must strive to be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Product Leadership

Demand forecasting, branding, and differentiating all play a critical role in finding growth opportunities for your product line. This three-fold focus, however, must be complemented by an equally rigorous focus on pursuing those opportunities to a best-in-class standard. Customer communications, customer feedback, pricing, and competitor actions must all be managed and monitored for ongoing success. If an organization can successfully parlay product excellence into positive business impact, increased market share will inevitably follow over time.

Key Benchmarking Criteria

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

Product Family Attributes

Criterion 1: Match to Needs
Criterion 2: Reliability and Quality
Criterion 3: Product/Service Value
Criterion 4: Positioning
Criterion 5: Design

Business Impact

Criterion 1: Financial Performance
Criterion 2: Customer Acquisition
Criterion 3: Operational Efficiency
Criterion 4: Growth Potential
Criterion 5: Human Capital

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

Frost & Sullivan analysts 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 of 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 recipient	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 is able to 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

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 participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

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 more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.