

# ACCELOVANT RECEIVES THE 2023 NEW PRODUCT INNOVATION AWARD

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*Identified as best in class in the North American  
fiber-optic temperature measurement solutions industry*



## 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. Accelovant excels in many of the criteria in the fiber-optic temperature measurement solutions space.

AWARD CRITERIA	
<i>New Product Attributes</i>	<i>Customer Impact</i>
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

### *Wafer Temperature Requirements Challenging Original Equipment Manufacturers*

Semiconductor manufacturers and other high-tech companies continue to deliver cutting-edge chips and devices for some of the most advanced technologies in the world. Despite that fact, the industry is experiencing difficulties on many fronts, including the residual supply chain problems produced by the COVID-19 pandemic. The ever-increasing complexity of employing advanced chip making technologies is resulting in increased cost pressures in production. Specifically, physical defects decrease production yields, long processing times and product failures increase cost. Many of these defects occur when the semiconductor wafer fails to maintain a specific temperature.

Traditionally, wafer manufacturers leveraged infrared thermometers, which measured the surface’s temperature by detecting the wafer’s thermal radiation. However, the wafer’s surface characteristics, such as emissivity (i.e., the measure of an object’s thermal radiation emission efficiency at given temperatures), can affect the thermometer; wafer emissivity varies depending on many factors (e.g., surface finish, material type, and more).

Moreover, the thermometer might experience challenges with the radio frequency energy generated within the process, more extreme process temperature conditions, or demands for greater accuracy. For example, in some applications, the surrounding environment can be significantly hot or cold, affecting the measurement; additionally, some thermometers merely break down past a certain temperature.

Fiber-optic sensors’ use has grown recently due to their immunity to RF; however, innovation and quality have not kept up with the rapidly changing demands for solutions with higher performance and cheaper

costs. Limitations in the accessibility and choice of newer, better-performance electro-optic materials and solutions are at the forefront of these innovation gaps.

### ***Innovative Technology with an Old-school Mentality: Accelovant Technologies***

Founded in 2017 and headquartered in British Columbia, Canada, Accelovant Technologies (Accelovant) produces vertically integrated fiber-optic measurement solutions, combining material science mastery and design expertise. The company's vision is to redefine the fiber-optic sensor's performance, cost, and reliability while simultaneously transforming the industry as a whole. Accelovant aims to improve the materials and technologies underpinning sensor thermal performance and yield new opportunities in fiber-optic science. Overall, the company's products show increased reliability and performance while decreasing inventory and measurement channel costs.

### ***Setting New Standards***

Temperature uniformity on the wafer is critical when it comes to wafer yield and chip cost. Traditional temperature measurement solutions, such as thermocouples and RTDs, measure wafer surface temperature electronically. While lower in cost, they also suffer from electrical and RF noise vulnerability, inaccuracy, inconsistency (repeatability probe-to-probe), and measurement lag (slower response). Two decades ago, fiber optic thermometers took hold due to their RF/Noise immunity and repeatability. But these devices could not keep pace with the rapidly increasing performance and cost demands of the chip makers; specifically extreme measurement range, unit-to-unit-repeatability, measurement accuracy, and cost.

Today a temperature measurement solutions vendor must alleviate these challenges to meet the

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***- Samantha Fisher  
Best Practices Research Analyst***

industry's needs, enabling organizations to increase their wafer yields reliably and accurately. Accelovant offers game-changing technology that allows clients to create highly accurate, multipoint sensors--which help address temperature variations across the surface of a single wafer-- at an appropriate price point. The company provides the most robust and advanced proprietary technology portfolio backed by patents (awarded and pending) in the United States, Canada, Japan, Korea, China, Europe, and more.

Accelovant developed a proprietary, fiber-optic solid-state contact and non-contact temperature sensor technology that operates through light rather than electrical energy, opening a massive opportunity for sensors to work under harsh temperatures. It developed its own patented photo-luminescent ceramic material technology “Kristonium™,” which has unique technical attributes relating to reliability, durability, and performance. The company's Kristonium™ allows clients to achieve both high-precision and extreme range temperature measurements that are unique in the market. The patented system enables Kristonium™ to withstand 800° Celsius (C),



and extreme cryogenic temperatures, while increasing accuracy from  $\pm 0.50^{\circ}\text{C}$  to  $\pm 0.10^{\circ}\text{C}$ .<sup>1</sup> Moreover, in applications where long service life and mechanical robustness are crucial, Kristonium outperforms the

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**- Issac Premsingh  
Senior Consultant**

competition because of its exceptional stability at temperature extremes ( $-100^{\circ}\text{C}$  to  $450^{\circ}\text{C}$ ;  $\pm 0.10^{\circ}\text{C}$  [v.  $250^{\circ}\text{C}$  to  $\pm 0.50^{\circ}\text{C}$ ]).<sup>2</sup> Kristonium™ also replaces delicate phosphor materials that require considerable adhesive in sensors. Its Lego-like, modular system delivers critical benefits, including lower cost per channel capability, fewer parts, lower original equipment manufacturer inventory, and easier and lower-cost field service.<sup>3</sup>

Overall, Accelovant integrates high reliability and quality in its products, from developing robust, user-friendly solutions to working closely with clients and partners to guide its product roadmap and enhance features. The company’s extensive in-house testing and validation ensures consistent performance. Using fault-tolerant controls, with built-in redundancy, dramatically

decreases the possibility of critical component failure. Finally, Accelovant’s sensors meet the demand of their use cases by leveraging cutting-edge materials that are mechanically and chemically immune to the impacts of certain harsh process chemistries such as free radicals.

### ***Building Trust through a Customer-centric Approach***

Accelovant’s customer experience approach goes beyond its extensive expertise and best-in-class capabilities, with customer value as a strategic imperative. Through the years, the company has earned a sterling reputation supporting its customers’ path toward fool-proof semiconductor manufacturing. Unlike many competitors, Accelovant builds its technology by collaborating closely with a range of stakeholders and partners to evolve alongside market needs and trends. The company takes a hands-on approach with potential clients, which includes sending its experienced engineers to become part of their design team. Over time, Accelovant works with the client to create a prototype and demonstrate its technology’s efficacy.

With Kristonium™, Accelovant addresses an unmet market need in a way that competitors cannot easily replicate. Due to its expertise and intellectual property in thermographic materials, sensor design, integrating sensing, and distributed sensing, the company offers an unparalleled track record through its advanced portfolio. Accelovant reports that its current product portfolio provides up to 10x higher performance than any competitive product with a higher gross margin.<sup>4</sup>

Moreover, Accelovant differs from the competition by maintaining an “Old School” approach: “you go

<sup>1</sup> “High Performance RF-Immune Temperature Solutions.” Accelovant. Press release. PDF. Accessed 11 March 2023.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> “High Performance RF-Immune Temperature Solutions.” Accelovant. Press release. PDF. Accessed 11 March 2023.

when a customer needs you.” Thus, the company’s engineering team is on-call and available 24/7 to respond to customer requests for support and troubleshooting, including on-site visits, regardless of the time. For example, since September 2022, Accelovant has worked with a client to alleviate a problem, which included the company working through the holidays; the client responded with high praise for Accelovant’s commitment to customer service. Most importantly, this high level of service is complementary. For example, the company is presently working on a project that began in 2020, uniquely putting in over 1,000 hours extra without charging the client.

Frost & Sullivan finds this do-what-it-takes approach continues to build on Accelovant’s loyalty and expand its already iron-clad reputation, positioning the company as a leader in the industry.

### ***A Promising Outlook for 2023 and Beyond***

Since its inception, Accelovant’s sterling reputation and customer-centric framework have led to its coveted preferred partner status. Over the years, it added a range of new partnerships to its established base.

#### ***KLV***

In November 2022, Accelovant partnered with KLV, a leading optical product value-added distributor specializing in fiber-optic sensors for Japanese semiconductor equipment suppliers. Through this relationship, KLV will provide Accelovant’s advanced fiber-optic temperature sensor solutions to Japanese semiconductor equipment makers.

*“Accelovant offers unique fiber-optic sensing technology that addresses these concerns, enabling higher yields per wafer and precision temperature controllability at a competitive price. We are pleased to offer these solutions to our semiconductor fabrication equipment customers, who will enjoy greater performance and reliability.”*

- Sdayuki Machida, Senior Manager for Fiber-optic Sensors, KLV

#### ***Quantum Solutions Provider***

In October 2022, Accelovant announced its distribution partnership with Quantum Solutions Provider (QSP), a leading precision measurement, sensing, and diagnostic systems supplier. As a part of the agreement, QSP will provide Accelovant’s fiber-optic temperature sensor solutions to semiconductor manufacturers in South Korea.

*“Accelovant is demonstrating to our customers a level of advanced performance and cost advantage previously unavailable from any supplier. We are seeing that the unmatched capabilities of the Accelovant products will be in high demand throughout the industry.”*

- WM Lee, Chief Executive Officer, QSP

Moreover, in November 2022, Accelovant announced it received over \$1.1 million from the Canadian Government to position the country as a global leader in the semiconductor industry. This funding, provided through PacifiCan’s Jobs and Growth Fund, will help the company enhance its capacity to develop and export sensors needed by the semiconductor industry by increasing staff, purchasing new equipment, expanding its facility, and growing its business.

*“Today, the Government of Canada is supporting an important innovator in the superconductor space. The work that Accelovant is doing is not only driving innovation and helping to supply the world with the technology it needs, but it is also creating good jobs right here in North Vancouver. I look forward to following Accelovant’s continued success.”*

- Jonathan Wilkinson, Canadian Minister of Natural Resources

Accelovant received this prestigious award at the opening of its new mass production facility in North Vancouver, Canada. The new facility complies with the International Standards Organization (ISO) New Class 1000 Clean Room with a \$50,000,000 capacity. This location is where Accelovant creates its next-generation technologies and joins the company’s Seattle, Washington-based plant that handles electronics.

Frost & Sullivan believes the company is well-positioned to drive the fiber-optic temperature measurement solutions space into its next growth phase, capturing market share and sustaining its leadership in the coming years.

## Conclusion

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To create a new solution, a company must understand the market’s needs and deliver a solid solution designed and embedded with high-quality and reliable performance. Frost & Sullivan finds that Accelovant embodies this concept. The company differentiates from the competition via Kristonium™, Accelovant’s proprietary approach to wafer temperature measurement. The solution facilitates temperature uniformity, increasing its customers’ wafer reliability, quality, and yield. Furthermore, Accelovant integrates a customer-centric approach to ensure that its offering addresses the wants and needs of users.

For its strong overall performance, Accelovant earns Frost & Sullivan’s 2023 North American New Product Innovation Award in the fiber-optic temperature measurement solutions industry.

## What You Need to Know about the New Product Innovation Recognition

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Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

### Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *New Product Attributes*

**Match to Needs:** Customer needs directly influence and inspire product design and positioning

**Reliability:** Product consistently meets or exceeds customer performance expectations

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

**Positioning:** Product serves a unique, unmet need that competitors cannot easily replicate

**Design:** Product features an innovative design that enhances both visual appeal and ease of use

#### *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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### Key Impacts:

- **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)**

