

# CIO Bulletin

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Dalia Vernikovsky  
CEO

Pioneering Smart Sealing Excellence in the Semiconductor Industry through Cutting-Edge Technology, Unparalleled Expertise, and a Commitment to Sustainable Innovation:

**Applied Seals N.A. Inc. (ASNA)**

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**A**ppplied Seals N.A. Inc. (ASNA) has positioned itself as a leading provider of semiconductor-grade seals, embodying a commitment to "Smart Sealing Excellence" that serves as inspiration for industries worldwide. Dedicated to meeting and surpassing the stringent requirements of these industries, Applied Seals has honed its expertise by fully immersing itself in the intricacies of each market niche. Through meticulous research and development, the company has crafted a range of materials designed to not only

match but exceed the demanding specifications of these dynamic sectors.

ASNA's expertise extends across diverse industries, catering to the exacting standards of sectors such as semiconductor, pharmaceutical, biotechnology, aerospace, and solar. ASNA's unwavering dedication to understanding these market niches has resulted in the development of a portfolio of specialty materials, including the proprietary semiconductor-grade PERFREZ® perfluoroelastomeric compounds (FFKM). These cutting-edge compounds represent the

pinnacle of sealing technology globally, continually evolving to maintain leadership in these dynamic and unique sectors. ASNA's story is one of continual progress, pushing boundaries, and setting new standards in the world of advanced sealing solutions.

Dalia Vernikovsky, CEO of Applied Seals N.A. Inc., spoke exclusively to CIO Bulletin about how her company is delivering the most reliable sealing solutions at the best possible cost of ownership (COO) and with short lead times.

### **Interview Highlights**

***What was the motivation behind starting Applied Seals N.A? How has the company evolved since its founding?***

Applied Seals N.A (ASNA) is a leading technical company founded in 2009 with the



## The Visionary Leader Upfront

**Dalia Vernikovsky** serves as the CEO of Applied Seals N.A. Inc (ASNA), where she envisions ASNA as more than just a technical company but one with a heart. The commitment to social responsibility forms the foundation of ASNA's values. Furthermore, her passion for disseminating education and awareness has established a platform challenging the industry to scrutinize every facet of manufacturing steps.

vision of providing high-quality sealing solutions to industries worldwide. The company was established by me along with a dedicated team of experienced and technical professionals who recognized the need for reliable and efficient sealing products in the semiconductor market. ASNA is motivated by its extensive industry experience and a passion for innovation. We aimed to create a company that not only meets current demands for sealing solutions but also anticipates future needs and develops cutting-edge

products to address them. Since its inception, ASNA has evolved into a trusted and reputable company known for its exceptional technical expertise and unparalleled commitment to customer satisfaction. The company has continuously invested in research and development to enhance its product offerings and is a leader in sealing and component education and standards.

In addition to its high-quality products, ASNA prides itself on strong customer relationships

and excellent service levels. With an emphasis on collaboration, the company closely partners with its customers to understand their unique needs and provide customized solutions that surpass their requirements. As a result of its dedication to quality and innovation, ASNA has established itself as a leader in the semiconductor industry. The company's commitment to excellence has earned it a loyal customer base, solidifying its position as a top sealing solution provider in the market.

***Could you describe the range of products and services offered by Applied Seals N.A in the semiconductor industry?***

ASNA SMART Sealing® delivers custom-engineered solutions for your most demanding applications. Our proprietary next-generation FEA analysis-aided seal designs help minimize surface exposure to heat and chemical environments, significantly extending the lifetime of your seals. Our world-class engineering team also analyzes strain and stress points for seals in your particular application, recommending compounds and custom geometries to maximize your seals' integrity, lifetime, and overall performance.

ASNA has extensive experience manufacturing high-performance sealing components with a full range of standard O-ring sizes, including AS-568A, JIS series, and Metric sizes. Our in-house tool makers possess extensive experience fabricating high-precision standard and custom molds to meet the most demanding applications with a short response time. ASNA's highly integrated design and manufacturing processes are dedicated to providing our customers with standard products or custom made-to-order seals and rubber components to the highest quality standards.

At ASNA, we deliver total sealing solutions with cost efficiency and exceptional lead times. We are committed to being your seal

experts while providing impactful solutions.

***What materials are used in the manufacturing of your semiconductor grade seals, and how do these materials ensure compatibility with various chemicals and extreme temperatures common in semiconductor manufacturing processes?***

ASNA offers a portfolio of specialty materials to meet the stringent requirements of the most sophisticated industries globally, including the formidable semiconductor, pharmaceutical, biotechnology, and solar sectors. To ensure manufacturing meets these exacting standards, Applied Seals has mastered a comprehensive understanding of these market niches and developed lines of materials that are vigilant in matching and exceeding those requirements. The list of these materials includes our proprietary semiconductor-grade PERFREZ® perfluoroelastomer compounds, produced to achieve the most advanced sealing compounds in the global market and continually evolving to maintain leadership in these unique technologies.

PERFREZ® industrial Seals and O-Rings are designed for applications in the chemical process industry and general industrial settings where the seals are exposed to high temperatures and aggressive chemicals for plasma, wet and dry, semi applications. PERFREZ® provides a full range of standard and custom

FFKM elastomer compounds. FFKM, containing fully fluorinated polymer chains, offers the ultimate performance of elastomers when considering heat and chemical resistance. Established and accredited quality systems, including AS-9100D, ISO 9001, and ISO 13485 certifications, guarantee the best quality.

***Brief us about ASNA Calculated Engineering (ACE®). How does this tool help you ensure the reliability of the sealing elements?***

ASNA Calculated Engineering (ACE®) is a tool created to ensure the optimal conditions for our materials, resulting in the most reliable sealing elements. The functions available in this tool enable engineering to verify dimensions, grooves, and environments, ensuring correctness and offering optimal hardware configurations. We also provide design validation and fill in the blanks for all areas of sealing considerations. Customization is available, supported by a talented team on standby for additional insights, approvals, and quotes for commercial values.

The utilization of this tool will result in more productive time, increased efficiency, and absolute seal reliability from the project's outset, enhancing the lifetime of the chosen materials and designs. Ongoing enhancements will continue to make our ACE® calculator the preferred design tool when working with the

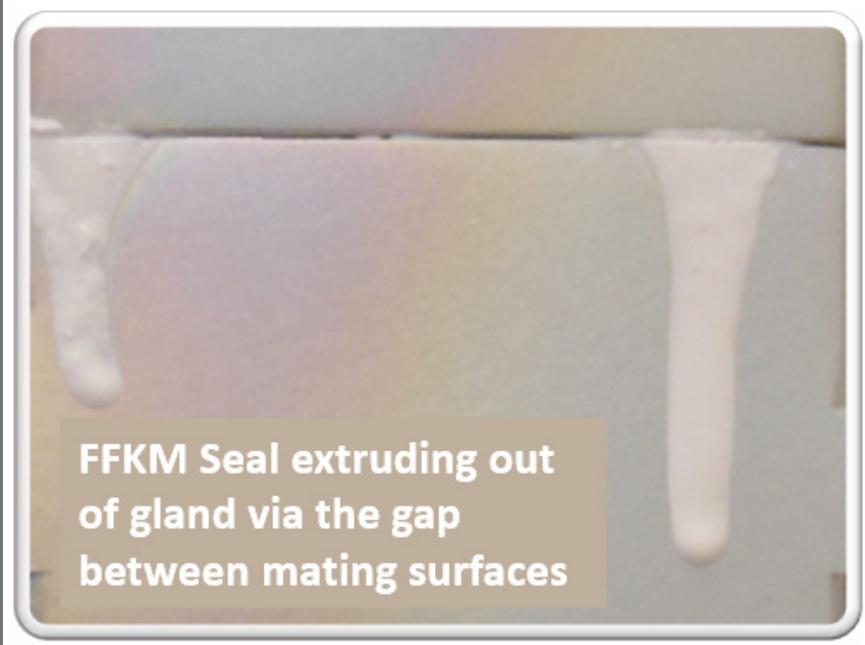
***“At ASNA, we deliver total sealing solutions with cost efficiency and exceptional lead times. We are committed to being your seal experts while providing impactful solutions.”***

latest, more customized versions of materials necessary for today's harsh and complicated semiconductor manufacturing requirements.

***Can you share any case studies or success stories where your semiconductor grade seals have significantly contributed to improving the efficiency or reliability of semiconductor manufacturing processes?***

ASNA has often been called in to address either leak-rate issues or particles long after the tools' design has been finalized. This occurs due to changes in processes or evolving nodes that often overlook alterations in hardware or upgrades that haven't been considered. This isn't a new phenomenon, as the focus is typically on chemistry, RF energy, cleaning gases, etc. Only now, with ASNA's efforts in elevating attention to this cause, has hardware received due consideration. One such case was addressed, and an article was created in collaboration with a leading fab. It observed what seemed to be an overflow of material when changing a seal type, without considering the differences in Coefficient of Thermal Expansion (CTE) between the materials and the lack of consideration for the initial seal sizing when tougher conditions were introduced (refer to the included photo).

Even today, many seals and gaskets are considered 'commodities,' and ASNA continues to emphasize training and education. This mission aims to support the industry in mitigating defects and improving yields.



### **Problem Statement / History:**

POR FFKM was replaced by a new FFKM but due to changes in the process. This new FFKM material, however, failed prematurely and caused unplanned downtime and a loss in yields. Extreme extrusion of the material out of the gland made it look as if the seal was melted.

***In the context of semiconductor industry trends like miniaturization and increased complexity, how is your company adapting its seal designs to meet the evolving needs of semiconductor manufacturers?***

Applied Seals is a company that has adapted and thrived in the ever-changing landscape of the semiconductor industry. One of the most significant challenges faced by the semiconductor sector is the trend towards miniaturization. As electronic devices become smaller and more complex, the need for precise and reliable sealing solutions becomes critical. In addition to miniaturization, the semiconductor industry is also

confronting increased complexity in its manufacturing processes. This has led to the creation and development of ultra-pure elastomers, offering the necessary physical robustness and the ability to withstand the harshest chemistries and temperatures found in semiconductor manufacturing.

ASNA boasts a team of experienced specialists who work closely with our customers to understand their specific needs and provide the solutions required for these demands. It is this collaboration and commitment to innovation that enables the company to stay on the cutting edge of the industry's demands. ASNA's seal designs take into account factors such as installation ease, size, shape, and material compatibility.

***What efforts is the company making towards sustainability and environmental responsibility in its future plans?***

ASNA believes that every business has a responsibility to protect the environment and contribute to a more sustainable future. Therefore, we are consistently researching, developing, and collaborating with our suppliers to create new materials. We explore cutting-edge technologies that reduce carbon emissions, minimize waste, and promote sustainable practices. At ASNA, we are driven by our passion to create a better world for future generations and will continue to innovate and lead the way towards a more sustainable future.

***What are the company's primary objectives and strategic goals for the next 5-10 years? Could you share any upcoming projects or initiatives that align with the company's future goals?***

In the next 5-10 years, ASNA will strive for responsible growth and expansion, emphasizing the ongoing need for education and awareness. Looking towards the future, we envision ASNA becoming an even more globally recognized brand, celebrated for our technical expertise, exceptional quality, and unique sealing solutions. Our dedicated team is committed to providing global support and being readily available whenever needed.

With a focus on technical support and a physical presence, we aim to build a commanding infrastructure and a formidable team.

***Is there anything else you want us to highlight that we might have missed?***

As the leader of ASNA and a responsible participant in this industry, I have spearheaded efforts to enhance our sector through initiatives like SCIS. SCIS, a special committee under the SEMI organization, stands for Semiconductor Components & Integrated Systems. Its mission is to unite all industry stakeholders—chip-makers, OEMs, components, and even competitors—to collaboratively define critical parameters for each tool and process component. This involves determining measurement methodologies and devising strategies to trace or mitigate these parameters. With Intel as our co-chair, alongside executives from leading companies, we have established new standards and guidelines. These innovations are crucial for the next generation of chip manufacturing, requiring standardization for successful yields and manufacturing.

Furthermore, I have secured our position in pivotal areas of investigation, such as climate control and emission reduction, which are rapidly becoming industry priorities. By continuing our role not only as educators but also as contributors to creating essential steps for ongoing improvements, we aim to be strong partners for those who recognize

our reputation and commitment to partnership and excellence. This commitment extends not only to our company but to the industry we serve.

***In brief about the CEO.***

Dalia Vernikovsky, CEO, believes that ASNA is more than just a technical company; it is a company with a heart.

The dedication to social responsibility sets the stage for ASNA's compass. In addition, her 'thirst' for spreading education and awareness has provided a platform that challenges the industry to scrutinize every aspect of the manufacturing steps—not just the process, which has been the focus of everyone's attention in 'next-gen' development, but also the hardware, such as valves in the subfab. Here, components like pumps and abatement systems are now becoming key elements, driving efforts to reduce emissions. This singular focus on materials meeting the requirements of reduced emissions alone has brought added attention to areas overlooked for years. To meet those demands, the industry must indeed collaborate, and to do that, education on all phases of these elements must be prioritized. As SCIS has outlined, this means first agreeing to critical parameters, followed by mitigation and traceability. As mentioned above, this is the key to the progress that ASNA, as a leader, has steadfastly pushed to create, offering solutions to emulate.



***"Our proprietary semiconductor-grade PERFREZ® perfluoroelastomeric compounds (FFKM) represent the pinnacle of sealing technology globally. Continually evolving, PERFREZ® ensures ASNA's leadership in dynamic and unique sectors by exceeding the most advanced sealing compound standards in the global market."***

**COVER STORY**

# SMARTSeal PRISM OneKit® and QuikVU® Clamp

Universal Vacuum Fitting Clamp with Torque Control  
Patent No.: US 11,187,358 B2

Clamp Optional



SMART Sealing®  
**ASNA**

Versatile, Fully Asembled,  
Color-coded SubFab Seal System

## SMARTSeal PRISM OneKit® Attributes

- Affordable without compromise
- Clean room assembled and stringently inspected
- Resilient to high temperatures
- Withstands amplified energies & aggressive gases
- Performs reliably, durably and consistently
- Eliminates common causes of premature failure
- Fully assembled kit reduces maintenance time
- Customizable color-coding system identifies seal assignment
- Minimized downtime

SMARTSeal  
**PRISM**  
ONEKit®

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