JULY, 2020 ISSN 2644-237X

CIO Review

The Navigator for Enterprise Solutions

CIOREVIEW.COM

Semiconductor
TECH EDITION

APPLIED SEALS N.A. (ASNA)

FOSTERING A PARADIGM SHIFT IN SEMICONDUCTOR SEALING

Dalia Vernikovsky
CEO

$ 15US

CIO Review 20 MOST PROMISING SEMICONDUCTOR TECHNOLOGY SOLUTION PROVIDERS - 2020

APPLIED SEALS N.A. (ASNA)

FOSTERING A PARADIGM SHIFT IN SEMICONDUCTOR SEALING

By Justin Smith

Dalia Vernikovsky
CEO

Entrepreneurial personalities could be segregated into three categories. First are business people who understand only profits; second are the change- makers who dream of extending novel solutions; third are the visionary—a personality who is not only characterized by the aforementioned qualities, but, most importantly, is passionate about transforming the industry altogether. One of them is Dalia Vernikovsky, CEO of Applied Seals N.A (ASNA), which deals with smart sealing solutions to power the Goliaths of sectors—such as, pharmaceutical, biotechnology, aerospace and solar industries, which are increasingly leveraging semiconductor-based applications. Semiconductor industry—that powers the new technology age—is perhaps one of the most complex sectors, which certainly needs more visionaries than ever.

"I pride myself on developing ASNA as a technology leader, educator and differentiator that shifts the mindset of industry stakeholders when it comes to sealing. My goal for ASNA is to deliver advanced solutions and end-to-end services that come with it," said Dalia.

The reason ASNA lays great emphasis on education is that the semiconductor industry doesn't give due importance to seal defect reduction, which is crucial for driving efficiency in semiconductor wafer manufacturing.

SEALS, A QUALITY ASSURANCE FACTOR IN THE SEMICONDUCTOR INDUSTRY

The incredibly intricate process of semiconductor wafer manufacturing requires seals to be housed in areas of the processing system where they need to withstand highly corrosive liquids, gases and plasmas at high temperatures or in vacuum conditions. In case of a seal failure, the manufacturers often change the material. They don't realize that sealing issues are not always caused by defects or contamination in sealing materials. Changing sealing materials unnecessarily aggregates the cost and affects the timely manufacturing of semiconductor-based offerings. By the time manufacturers realize the real problem, lower yields and major manufacturing downtimes would've already done damage.

The answer to this problem lies in visualizing the seal as part of the entire wafer manufacturing process by analysing the equipment, housing or groove where the seal is to be fitted, analysing chemical and temperature compatibilities per the housing environment, and, finally, designing an optimal seal for prolonged performance.

"Not all seals are created equally. Thermal, chemical, and hardware considerations can greatly influence the type of seals needed for a specific application. Strong compounds and suitable profile designs are essentials of reliable sealing components," said Dalia.

In effect, it's all about designing the seal specific to the application after a complete analysis of the semiconductor equipment as opposed to just changing the materials. As Dalia highlights, this is the "hard and slow but right way" for the industry and customers. With ASNA, Dalia aims to achieve just that.

As a wholly-owned subsidiary of GMORS, ASNA began as their application and marketing arm, by offering superior semiconductor sealing solutions. Since its inception in 1981, GMORS' growth has been the result of its emphasis on customer service—a trait that ASNA continues to emulate. A relentless commitment to improving surface finishes, tight controls along the manufacturing path, and attention to detail enable ASNA to offer the highest-quality sealing solutions for today's semiconductor market.

OFFERING APPLICATION-SPECIFIC SOLUTIONS

ASNA's proprietary semiconductor-grade PERFREZ® perfluoroelastomer compounds offer attributes that semiconductor customers require.

"Our compounds meet the highest quality standards. In addition to PERFREZ elastomers, ASNA provides smart engineering solutions and designs specific for our customers' needs and application," said Debra Rafferty, director of business development at ASNA.

The company enables high-yielding sealing that can provide optimal performance and integrity for plasma or thermal processes in manufacturing and wet applications, such as etching, ashing, diffusion and more. These solutions help customers achieve flawless semiconductor manufacturing.

Being close to the customers and understanding what they truly require instead of merely delivering mediocre product or service are crucial differentiators of ASNA. This involves ASNA devoting time to understand the uniqueness of the clients' semiconductor applications and to provide education about the materials properties and attributes. To this end, the ASNA Calculated Engineering (ACE®) tool identifies the optimal manufacturing conditions for sealing materials. The functions available in this tool allow engineers to ensure that dimensions, grooves and manufacturing environments are correct and in tune to clients' semiconductor-hardware configurations. ASNA also features design validation that essentially helps them check any and all sealing considerations. Further, ASNA offers the Best-Known Method Guide (BKM) guide for NW/ISO fittings and clamps in SubFab applications.

ENSURING HIGH-GRADE, PROLONGED PERFORMANCE

Evidently, ASNA embraces a value-oriented delivery methodology for its wide customer base—end consumers, component manufacturers, and OEMs. The crux of their value proposition lies in first examining the housing equipment—size and shape of grooves carefully. Once the measurements are in place, ASNA's engineering Team experts experiments with different sealing materials to realize possible failure points—thermal degradation, mechanical issues, plasma and chemical compatibility and equipment or hardware design flaws—that are performed via Finite Element Analysis (FEA) and Failure Analysis (FA). Post this, the customized sealing solution is developed and accurately installed to ensure high-grade, prolonged performance.

That's precisely how ASNA assisted a leading manufacturer that had spent thousands of dollars on changing seal materials whenever they faced any issues. ASNA closely examined the equipment, explored the failure conditions and provided a custom-made seal that solved the problem and extensively lowered overall costs.

"The secret lies in identifying the problem's grassroots, finding the correct application, and delivering the best-suited sealing solution. Along with that, we leverage predictive maintenance and reliability that translates to risk mitigations in terms of contaminations and defects," said Dalia.

ASNA believes that the root cause of the semiconductor industry's challenges is the absence of comprehensive SEMI standards for the measurement of defects and exploration of the parameters that can improve both semiconductor and sealing material performance. To reroute around this shortcoming, ASNA has been driving a consortium of stakeholders, OEMs and component manufacturers called the Semiconductor Components Instruments and Subsystems that aims to bring down the entire industry expenses and ultimately deliver better yield and customer value. Dalia is an award-winner for this valiant initiative that, in turn, places ASNA in a position to lead industry growth and become the most-trusted global sealing materials provider.

LEADING WITH A VISION OF EDUCATION AND COMMITMENT

ASNA has always been laser-focused on innovation. The company's Engineering and Innovation Design Lab is the heart of its business model other than its great team, enabling ASNA to continue delivering the tools necessary to offer the best optimal sealing solutions. They have created confidence through data and education and have established themselves as torchbearers, throwing more light on seals' importance in the semiconductor landscape.

"ASNA has recently bought a new building to facilitate further expansion. We are excited about our new lab. This is where seal analysis, testing review and innovation will take place to solve the sealing solutions our customers need," said Debra.

UNWAVERING COMMITMENT EVEN AMIDST THE PANDEMIC

ASNA remains committed to customers and their responsibility to the industry amid the pandemic as well. The company is working daily with its customers—putting out the message that they are as committed as ever to solving customer problems and offering superior engineering and services.

"We are following up on outstanding projects and programs with the tenacity and dedication that has always defined us," said Dalia.

The company is also fine-tuning its education and training programs and tools. ASNA has also begun offering virtual trainings and will continue to improve its design center, which offers FA and FEAs to support its problem-solving methodology.

"Seal technology is in our DNA and ASNA has stepped up to be a leader in the industry, particularly during these unprecedented times. We also make sure that our response to customers is immediate while striving to help them out on a personal note and checking in with them to make sure they are well," said Debra.

Dalia comments that the future of ASNA will continue to innovate and expand their services. This will help the company offer solutions to highly specific semiconductor applications (which circles back to the real purpose of offering seals) and will enable it to provide solid evidence that would convince clients' management teams to support their solutions. ASNA will continue to work with suppliers to get ahead of the trends that ultimately challenge both the customers and themselves.

"That is indeed part of our roadmap, and we are well-prepared to lead as we learn more through the eyes of those that are affected by the smaller and small defects born of a complicated manufacturing process," said Dalia. CR

Debra Rafferty
Director of Business Development

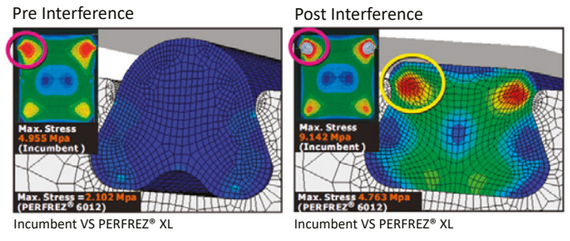
> **In addition to our PERFREZ elastomers, ASNA provides engineering solutions and designs that are specific to our customer's needs and application**

CASE STUDY: New Generation Gate Valve Door

Material: PERFREZ® XL

PERFREZ® XL Exhibits Exceptional Seal Force Retention

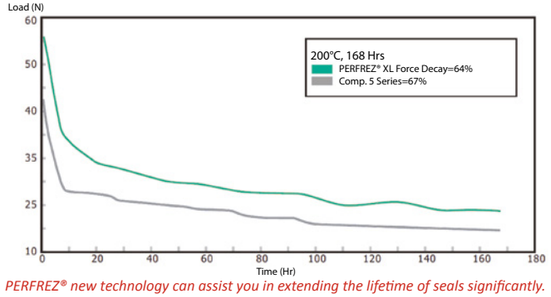
Finite Element Analysis (FEA)



Incumbent VS PERFREZ® XL | Incumbent VS PERFREZ® XL

PERFREZ® designs will reduce the seal surface area subject to plasma strike.
As the plasma strike surface is minimized the risk of particle generation can be significantly reduced.

ASTM D6147 Force Retention Decay Test



PERFREZ® new technology can assist you in extending the lifetime of seals significantly.

ISSN 2644-237X
CIOREVIEW.COM

CIOReview

JULY - 2020

The Navigator for Enterprise Solutions

Applied Seals N.A. (ASNA)

The annual listing of 20 companies that are at the forefront of providing Semiconductor Technology solutions and transforming businesses