



TEADIT: Leading R&D for

As a worldwide development and manufacturing leader of critical process sealing solutions, Teadit continues to exceed customer expectations by providing high-quality service, impressive testing capabilities, and a full line of award-winning products that are guaranteed to meet the demands of the most stringent environment. Serving the refining, petrochemical and power generation industries, amongst others, Teadit's extensive research and development (R&D) group has continuously developed new products, helping many end users achieve facility emission goals.

Fugitive Emissions Journal was thrilled to speak with Chris Day, President of Teadit North America, about the company's recent product innovations, expanding R&D capabilities and improved in-house testing of products designed to achieve low emissions.

By Stephanie Matas & Sarah Bradley

Since establishment in 1958, Teadit has expanded its production and distribution network across 52 countries. The company has experienced significant growth in recent years, with dedicated locations spanning from the USA (Texas), to Brazil (Campinas, Rio de Janeiro), Argentina (Buenos Aires, Bahia Blanca), India (Vadodara), Austria (Kufstein), Germany (Köln), and China (Shanghai). Teadit's innovative fluid sealing products have helped many industries across the world achieve their fugitive emission reduction goals.

Award-Winning Products

Origin™ RC 510 Gasket Seal

Teadit Origin™ RC510 gasket is specifically designed for railcar manway lids. It is a new type of gasket technology developed by Teadit's team of engineers utilizing restructured PTFE tape. Gaskets manufactured using this patented technology provide higher performing and eliminate polymer waste. Extensive testing of this gasket has shown an increase in torque retention and a decrease in emission levels. The gasket is able to be reused multiple times while maintaining its high performance characteristics making it much more econom-



ical than standard sheet gaskets or even elastomeric molded nozzle gaskets. "The use of this technology, to make gaskets from a tape, eliminates waste almost completely. In the past, if you cut a round gasket of this size from a square sheet, you would generate a tremendous amount of excess material. This excess material is rarely used and creates a very high material scrap rate. By winding the gasket from tape, we now are able to provide a better sealing product and we eliminate the problematic scrap situation," said Day.

Chemours, the manufacturer of Teflon®, gives out the Plunkett Award every year, recognizing advancements in products and applications across their fluoropolymer portfolio. Chemours recently presented Teadit with the first place Plunkett Award for the Origin™ RC510 gasket. The Origin™ technology utilizes Chemours Teflon® fluoropolymers, as a part of the Tealon™ family of restructured PTFE products under the Chemours license. The Origin™ RC510 also won the Product of the Year Award by Plant Engineering in the category of Fluid Handling. The Plant Engineering awards honor the best innovations of the year, across a vast range of technologies





Critical Process Sealing Solutions



that includes everything from the mobile applications for smart devices to motors, automation, and maintenance. Impressively, Teadit received the patent for this award-winning technology only two and half years ago.

The Teadit team is excited about the product's achievements for reliability. Rigorous evaluations have revealed that the RC510's design allows for a longer service life and more positive results than any other railcar gasket in the market today. "We're really proud that our new manufacturing process is keeping with our company slogan of 'Sealing for a Greener and Safer Tomorrow'. While it eliminates waste, it also provides a very environmentally friendly seal," said Day.

Eco-Seal Sealing System

Another highly regarded technology that Teadit offers is the Eco-Seal Sealing System, which offers a unique way to reduce pressure and lessen particulate abrasion to the packing set in most pumps. The Eco-Seal is placed in the bottom of the stuffing box with the packing set placed on top of it. As it reduces the flow and pressure of the media, it is able to achieve a substantially longer lifecycle in most cases, if not all. "We have an application going on

right now in Mexico where we have turned flush water off completely at the facility, and we learned the existing packing they were using would last only for a week or more, on average. Since installing six weeks ago, the pumps have run dry, and the company has saved a lot of flush water. The system helps cut down on water consumption, extends the life of the packing and we see less equipment damage on the shafts." Teadit has recently witnessed much interest in the Eco-Seal Sealing System in the pulp and paper, and sugar markets, with production ramping up.

Ever-Evolving R&D

Teadit considers themselves a market-driven R&D company, "This means that the market is going to dictate to us what we develop. We do not want to sit in our labs and come up with something, then see if we can sell it. If a product holds no value in the customer's eyes, there really is no reason to bring it to them. Market-driven sounds like a buzzword, but we live by it," commented Day.

When searching for materials, Teadit is very integrated with the end user either directly or through their distribution partners. "A lot of plant employees in the Houston area communicate with us directly, especially in the Houston industrial region" explained Day. "Outside of Houston, we still strive to maintain direct contact, but much of it is with and through the distributors. We will accompany our distributor partners into different facilities to talk to the engineers, reliability, and maintenance personnel to find out what their needs are and any challenges they face." If any consent decrees have been issued by the Environmental Protection Agency (EPA), the Teadit team invests time into each facility by recommending tailored technology and providing feedback on any existing proactive measures. "We want to find out if they are trying to be proactive and avoid EPA consent decrees. We want to know if they are looking for best available technology, which might have a high initial cost, but will ultimately be the most cost-effective solution. It is always a collaborative effort between our team and our end users to improve efficiency," said Day.

Teadit's research facilities receive feedback from all over the world. "We want to be the primary reference and prime choice for fluid sealing advice," said Day. "We talk to different customers all over the globe, get their feedback then organize that information to help us make a matrix of priorities in order to see what would be the easiest to develop, with the quickest success potential rate."

What Day finds in the U.S. right now is that low-emission products are taking on a much more visible role. "Maybe it is the publicity being led by some politicians or environmental groups, but emissions are in the crosshairs, so we try to be a bit more cutting edge when it comes to emission elimination," said Day. The company holds



quarterly meetings, bringing together directors and technical experts to share and exchange information, in an effort to maintain consistency amongst their worldwide locations. “We always look for opportunities to use what could have been developed elsewhere,” commented Day. He explained that the US is leading the push for emissions elimination. “Due to the technical nature of the products and the stringent EPA standards in the U.S., American companies are often seen as leaders in environmental technology, and Teadit wants to continue to help them meet the environmental demands.”

Leaders in Technological Innovation

It is important for Teadit to set the benchmark for the industry, rather than playing catch-up with their competitors. “For a long time, the U.S. market never really knew who Teadit was. Everyone seemed to think we were only in Brazil, as we were the dominant market share player down there, taking very good care of our customers, helping them meet whatever challenges they encountered,” said Day. “We knew we had to do something differently in the U.S., to allow us to be accepted here, too.” Teadit quickly realized the market was not just focused on lower pricing, but lower total cost of ownership. “If we can provide a better, longer lasting solution with quality service, it outweighs product price,” said Day. He believes there are ample opportunities for Teadit to further evolve themselves into a North American low-emission product leader. “We are always looking to elevate Teadit in the eyes of our customers.” Teadit is also recognized as one of the leading manufacturers of standard pipe size and pressure class spiral wound gaskets. “To my knowledge, we are the only global manufacturer that does the level of product evaluation and testing that we do for the standard size and class range. This allows us to ensure that all the standards that we put forth meet or exceed the new performance specifications mandated,” said Day.

When it comes to emissions, the new standards that have been developed for metal gaskets and packing, Day finds Teadit products to be exactly what is needed for the environ-

ment for today, tomorrow and the future. “The performance of our products affects the environment, and this impacts my kids, your kids and the future,” Day commented.

Teadit’s flagship packing product, 2236, was born from the desire to create a better product for the market. “We saw an opportunity to make things simpler for our customers - a single material making up a complete packing set providing the best emissions results at that time. The simplest solution for the best results,” said Day. “Our customers are the driving force behind our advanced testing capabilities and market-driven R&D initiatives.”

In-House Testing Capabilities

The Teadit Group has robust in-house testing capabilities in all the regions that it serves. This testing includes compression and leakage monitoring for metal gaskets, ranging from ½” to 18-inches in size, across multiple pressure classes. “This gives us the ability to not only measure how good our gaskets are, but measure the effectiveness of process improvements we develop,” said Day. “When we first started testing, we saw that we were, what I consider, in the middle of the road. We did things about as well as everybody else and in about the same way,” Day reflected. Teadit then started looking at incorporating improvements into different aspects of the gaskets based on a variety of variables that affected ultimate sealing ability. They found that those variables sometime fit together in different ways, to produce different results. “We finally got the right combination that would enable the parts to perform very well, but this testing dictated a lot of tweaking of our processes,” commented Day. “We’re testing up to 50 gaskets per week in our facilities to make sure that we are able to validate our performance, and continue to look for opportunities to improve performance. It gives us a very clear indicator of where we are and where we need to be.” Day stands behind the company’s testing procedures. “This evaluation process is something nobody else is doing, but everyone should be, and perhaps eventually will, because there is no reason not to. We have reached a critical point where



we want to continue to differentiate ourselves in the market. We are a high quality, high volume production manufacturer with the ability to really dictate the future of the sealing products industry."

In-house testing is critical to Teadit, because it is one of their major differentiators from competing manufacturers. "As long as we remain focused on the fact that it is all about quality, we will forge ahead. We must be able to test our product; go out into the shop, make it faster, and lower costs. It is all about performance, in everything that we do. In-house testing gives us the ability to experiment with production efficiencies, we put a lot of emphasis into and behind our testing, and we do it well," stated Day.

Gasket testing is conducted in two phases – destructive, and performance. The first phase involves conducting a destructive test. "What we do, is we take the gasket and measure and count everything that is mandated by specification, and there are many aspects within typical specs that are mandated. We do this by actually tearing the gasket apart to allow us access to measure or count everything we have to, even including the size of the markings. Performance testing is done in such a way that they measure the leakage through the windings with the latest emissions monitoring technology. They also conduct compression tests throughout the process to make sure the specification requirements are met. "The recent change in ASME B16.20 standard spells out that the seal is to be in the windings, and not on the guide ring, which means if you can press the gasket down to the guide ring, you've eliminated the sealing capabilities of the winding itself. That was one of the biggest issues we encountered, as the standard up until this point dictated that you could compress the gasket down to the guide ring," explained Day. The test lasts approximately four hours from start to finish. For the destructive testing, Teadit has logged data on these tests for the last three years, which gives operators a good backlog of case studies to extract information from if they do ever encounter a problem. The performance testing has been on going continuously for the last 18 months.

Day mentioned the group has two testing rigs in Teadit North America, two in Brazil, and one in India. "We can conduct twenty gasket tests per week here – and can do twenty in Brazil, and ten in India. What we are doing is making sure that we test a wide range of sizes to make sure there is consistency. We want to make sure that wherever we are producing a product, it holds the same caliber of performance regardless of the manufacturing site. Everyone is starting to demand this in the industry – quality control across the globe," said Day.

Conclusion

When asked about the future of the industry, Day is hopeful for future generations. He maintains that it is not difficult to produce great quality products over lower quality items. "With genuine and sincere effort, the price to produce and the price to procure can both be about the same, it is almost negligent to supply to the market without proven quality gaskets and packing these days,"

said Day. "If we stop emissions, we're stopping the loss of product, right? It's the product that's going in the air rather than going through the piping. We need refineries and industry to thrive, but I also want this world to be around for my grandkids to enjoy – so they don't have to worry about going outside without a face mask. A lot of us get too caught up in our day-to-day routine, me included, to really worry about this thing called a 'carbon footprint', but it's important," commented Day. "It's important for our future and I want to make a difference. That is what is cool about being part of a company like Teadit, they help me accomplish this!"



MEET THE EXPERT

Chris Day is a graduate Engineer from Michigan State University, with a minor in Finance. Day has 30+ years in the Fluid Sealing industry at all levels of Commercial and Field Support. The first eight years were spent in Distribution, working originally as a Technical Field Sales and Service for Fluid Sealing Products for four years, then elevating to Fluid Sealing Division Manager for last four.



Day transitioned to Manufactured Sales in 1995, becoming Regional Sales Manager for a European based Carbon and Graphitics company. This position brought him to Houston, where he was elevated to the position of National Sales Manager in 1998. In 2000, the opportunity to join the Teadit Group came about and there he assumed the position of Sales Manager for Teadit North America. In 2002 was promoted to GM and then President/CEO in 2005. Day is a current Member of ISD, API and ASTM.