



SOLON MANUFACTURING:

For over 70 years, Solon Manufacturing has been a trusted supplier of Belleville springs and specialized pressure switches for the industrial sector. Founded in 1949 by four Case Western Reserve University engineering graduates, the company owes its success to: constant innovation, steadily improving its product lines and evolving into a valued, expert resource for companies and end users alike.

Fugitive Emissions Journal had the pleasure of speaking with Diane Popovich, President; George Davet, Executive Vice President; Scott Stirling, Director of Sales; and Brianne Norcini, Marketing & Brand Manager, about how Solon's management shift, its rebranding goals and its cultural revitalization translates for the future of the company. Solon's product offerings, from the first relief valve using Belleville springs to its latest range of electronic data calculators for in-field use, exemplify how, through opportunity and innovation, the company is able to change and adapt in order to best anticipate the needs of its customers.

By Stephanie Matas

Evolving with the Times

Solon's evolutionary approach and continued growth demonstrates that remaining stagnant in the marketplace is not an ideal practice in the ever-changing world of fugitive emission regulation and control. As a high-value supplier of Belleville springs, specialized pressure switches and other valve accessories, the company has increasingly focused on improving company culture.

Beginning as a turbulator manufacturer used for auto parts cleaning and conduit benders for Republic Steel's electromechanical tubing, Solon has expanded its production and manufacturing capabilities, as well as its product line several times. In the 1950s, Chief Engineer Eldon Ralston began designing Belleville spring washers for General Electric circuit breakers, which lead to the need for more manufacturing space. The 1960s were met with new products, including electro-mechanical and pneumatic pressure switches used to detect changes in



pressure of fluid and gas applications. Solon continued to expand its Chardon location over the decades, adding two additional facilities which amount to the firm's current 54,000 square feet of manufacturing space in Chardon, Ohio. In and amongst these changes, the company's products were used in several high-profile projects with globally recognized entities such as NASA, the Trans-Alaska Pipeline and the Lawrence Livermore National Laboratory (LLNL).



Diane Popovich, President.

TIMELINE

1949

- Solon Manufacturing Co. founded in Solon, Ohio, USA by four engineering graduates: Arnold Siedle, Eldon (Red) Ralston, Joel Carpenter & Bob Ramsdell.
- First products include auto parts cleaning machines & conduit benders for electromechanical tubing.



1950s

- Chief Engineer Eldon Ralston designs Belleville spring washers for General Electric circuit breakers.

1960s

- Solon relocates to Chardon, Ohio, USA in a newly constructed, 5,700 square foot facility.
- New product line includes electro-mechanical and pneumatic pressure switches which can detect pressure changes for fluid & gas applications.



Solutions Exceeding Expectations



Most recently, the company was pleased to announce the appointment of its first female president, Diane Popovich. Diane has helped usher the Solon team into a new era, focused on improving company culture and rebranding initiatives. “We have a solid foundation and great group of people with over 70 years of experience. What I do is simply steer the ship and convert the good work produced over the years into an effective, modernized strategy,” said Popovich. “We are heading in an innovative direction.” Brianne Norcini expanded, “The revamp of our logo and redesign of the website came about with the change of management. It offered a unique opportunity to ‘freshen up’ as we celebrated our anniversary. We had the foundation of success, quality and technical expertise, but this was an opportunity to move into the next wave of growth by really diving into marketing and branding.”

A New Wave of Growth

As the Marketing and Brand Manager, Norcini has been particularly involved in revitalizing initiatives. “We have received very positive feedback from our customers, specifically with regards to the website, which is the virtual extension of our physical business. Every website aims for an Amazon-like experience, but on the B2B level; certification and product information are more technical. Customer feedback suggests that we do an excellent job at delivering data in a user-friendly way,” she said. The website includes an extensive resource library, complete with video gallery, technical resources, case studies, product spec sheets, catalog center, digital calculators and more.

For the first 60 years, the company was very product-oriented. The improvement of its manufacturing and quality processes, however, has allowed the team to explore new markets and to actively seek and help new customers, as well as implement new digital technologies.

This month, Solon will launch an interactive web tool to assist with the design of a live loading system for flange applications. It will be based on inputs relative to flange size, environment and bolting information; under normal assembly conditions. Output will include the recommended Solon Flange Washers, stacking arrangement, quantity recommendations, and assembly notes, along with quick access to specification reports. This user-friendly, no-cost tool is mobile optimized and designed to increase the value of the live loading system by providing the most cost-effective solution for the application requirements. “Similar to the bolt load and torque calculator that we have on our site, customers will be able to insert their variables into the flange calculator and receive recommendations for different materials and stacking arrangements for the live loading application at-hand,” said Scott Stirling, Director of Sales. “We want those using our products in the field to feel comfortable, and well-versed about their equipment,” he continued. “The goal is to make engineering support more interactive and user-friendly by not simply educating users on the importance of a product but teaching them how to properly use it.”

1962

- During the first orbit of Earth, astronaut John Glenn's flight suit included a relief valve using a snap-action Belleville spring developed by Solon.

1966

- Solon adds a 4,000 square foot addition to the Chardon location.

1968

- Flange washers are added to the Belleville spring product line. The washers are engineered to fit into flange designs and carry a higher spring load.



1970s

- SF6 gas density switches for high voltage circuit breakers are introduced. This allows for reliable monitoring of sulfur-hexafluoride gas density and leakage over a wide temperature range.



Paving the Way for New Engineers

It is no surprise that the millennial generation (aged 24 to 30) has been first to adopt and utilize Solon's new online website tools. Prior to the website redesign, the online portal was mainly used by those aged 50 and older. "Our SEO analytics and metrics indicate that our target audience has changed. "We are doing our best to appease all users, to make sure we are readily available and easily accessible – online or otherwise."

Bridging the knowledge gap between engineers approaching retirement, and those just entering the industry is very important in the valve industry; though it is often overshadowed by daily routine. "Many industries have challenges with transferring knowledge and information. It seems that only the work gets passed down, and perhaps not all of the knowledge. To rectify this, Solon established an internal database of applications and trouble shooting problems to help strengthen the learning curve between generations. "There is a learning opportunity in each case, with every customer. We give a big kudos to our team for regularly adding to this database. This gives new Solon team members a starting point and valid reference," said Stirling.

Solon also hosts a monthly 'Lunch & Learn' with its employees. The leader of each department hosts a presentation that is open for any member of the company to attend. Employees are encouraged to bring their lunch and join a discussion on a topic in which they are less familiar. "One presentation might be on process flow, another on a recent Belleville Spring washer installation, or sales strategy. It is a neat way for people to learn and boost company morale. This is an effort we established with the new leadership team, that helps foster a positive internal culture," said Norcini.

Fostering a Positive Culture

With over 70 years of experience, it is the constant evolution of the company, and its ability to embrace change, that has allowed its continued success. Managing and maintaining a solid foundation of employees has always been a foothold for Solon's positive reputation; this starts with fostering the right attitude and culture. "We embraced changes over time and are starting to see the positive results of our cultural shift. Any company that wants to be successful in the long run must adapt to current temperatures," reflected Stirling.

"Living in an era where things are moving rapidly toward automation, we are both a customer-centric company and a personnel-centric company. We believe in work-life balance and as a result, foster initiatives, such as bringing in food and ice cream trucks to encourage the team to step away from the machines for an hour or so. It is these types of initiatives that make a huge difference in our company culture. These initiatives compound our cultural evolution as they allow us to intersect what our employees like and love with effective training, support and data management. We are not satisfied unless our team is satisfied, growing and developing," said Norcini. Solon uses customer surveys as part of its corporate metrics to measure customer



TIMELINE

1975

- Solon's explosion-proof pressure switches selected as the primary Trans-Alaska Pipeline System.

1979

- Operations expand, including another 4,000 square foot addition.

2000s

- Solon begins manufacturing DIN/Disc springs, ideal when many deflection cycles or forces are critical.
- 16,000 square foot expansion of manufacturing and warehouse space.



2011

- Solon becomes certified to ISO 9001:2008 standard.



satisfaction. "Not only do we offer customer surveys but employee surveys as well, which are equally important. The health of our company, and the people in it are our primary concern," Brianne continued. As they take the leap into the next phase of growth and development, Solon is committed to developing its employees and management team from the ground up, all while introducing innovative products.

Strategic, High-Quality Products

Solon recognized a need in the industrial market space early on and began to manufacture relief valves that utilized Belleville springs. "From there grew the need to produce Belleville springs. Number two, use a similar technology or know-how to eventually manufacture pressure switches," George Davet, Executive Vice President commented. He continued, "If you look at the two product lines we specialize in, they seem very different, but there is a commonality between their early designs. They were both developed and inspired from a relief valve." The pressure switch business developed into temperature-compensated pressure switches, which they refer to as density switches. "The Belleville spring market was relatively small for the first 35 to 40 years of the company. When I joined the company, nearly 30 years ago, the pressure switch market was about two times the size of the Belleville spring business," he reflected. "Now the Belleville spring business is larger, and this is where the company has seen the majority of its growth."

Although Solon makes a wide variety of Belleville springs, its specialty lies with Belleville springs made for sealing or bolting applications. "A lot of the bolting applications involve bolted flange joints and valves, so they are all being used for sealing indirectly. The idea of using a spring being applied to a valve is simply to add elasticity to the bolting system in a small space," said Davet. "These are highly stressed, highly engineered components and they offer the ability to inexpensively maintain the load on a seal by engineering it into an existing system. Adding that elasticity ensures that the seal has an appropriate amount of stress to prevent a leak." The Belleville does not, therefore, add load or change the seal itself, it simply improves the sealing system and increases its lifespan. "Without direct stress, seals will not work. Therefore, the Belleville is necessary to help maintain enough stress to ensure that the seal is effective."



The next phase of the company will focus on improving and perfecting bolting processes and making it easier for users working with bolted connections to apply solutions to existing systems. "We are confident in our product designs, and we are prepared to take the next step with our team - improving our marketing, sales and customer service strategy," said Davet.

Exceeding Customer Expectations

As Solon's customer service and technical product development continues to evolve, clients are met with a multitude of options to best suit the application at hand. "Continual improvement is an integral part of our quality policy," commented Davet. "From a corporate perspective, this is the direction we have taken; we want to continue to develop to make ourselves better," he continued. "Once you become static or stagnant, you are in a lot of trouble. We need to evolve as our customers' needs change. The ability to adjust, adapt and change is a solid foundation for quality products and engineered solutions." Davet maintained that the Solon team will always strive to find the best solution to customers' problems quickly, effectively, and at the lowest possible price point.

2013

- Solon purchases two properties on Industrial Parkway in Chardon, adding 24,500 square feet of manufacturing space. The three facilities now total 54,000 square feet.



2014

- The company's custom differential vacuum switches used to demonstrate nuclear fusion at the Lawrence Livermore National Laboratory (LLNL), and National Ignition Facility (NIF) in California.

2018

- Solon achieves ISO 9001: 2015 standard certification.
- Diane Popovich is appointed as the first female company president.