Rupture Pin: Get the

Shell and Exxon approached Julian Taylor of Taylor Tools in 1986 and asked him to solve a serious problem they were facing with pilot operated valves that were failing to operate 5% of the time. The set pressure was 1220psi and the tolerance was +/-1.5%, a tolerance that was not possible with conventional methods. Julian developed the Rupture Pin pressure relief valve, which was used in conjunction with the existing pilot operated valves. Using Euler's Law of Compressed Columns, he was able to meet the stringent requirements set out for him. After receiving recognition from ASME as an approved technology, volume sales of the Rupture Pin Valve began in 1990.

Julian Taylor

Anthony Taylor

Valve World Americas had the opportunity to visit Rupture Pin Technology's Oklahoma City, Oklahoma headquarters to meet with Founder and inventor of the Rupture Pin technology, Julian Taylor and his son, President and CEO, Anthony Taylor to discuss the company's unique product offering, the power of invention and the importance of inspiring the engineers of the future.

By Sarah Bradley

Today, Julian Taylor is a consultant for Rupture Pin Technology, a company that believes in acting as a solutions provider and problem solver for the company's clients. Mr. Taylor was able to pass on his three companies – Taylor Valve Technology, Rupture Pin Technology and Taylor Vaetrix - to his three sons and he continues to build on the technology that was the foundation of the companies through new inventions. Starting the company with three employees, Rupture Pin has grown to over 50 employees today, who appreciate the corporate culture behind the family-run business. The Taylor family prides itself on the close-knit community within the organization. As President and CEO of Rupture Pin, Anthony Taylor is proud to maintain and grow the company legacy.

"When my father came out with the first Rupture Pin device, that was actually to solve a problem for Shell and Exxon. They approached my father, knowing the reputation he had in the industry for being an innovator, especially along the lines of pressure relief devices. That has really been the mentality of the organization ever since, to be technologically focused problem solvers," said Anthony Taylor. "I actually remember when my dad came up with this technology. I was a kid of six or seven years old and my dad would always write on napkins at dinner or whatever scrap paper he could find, because if an idea came to him, he didn't want to lose it. I remember when he came up with this pin concept, he was very excited and I remember him talking about how this pin was going to change our industry. And now it really has - it really made such a significant impact on our industry and changed the way a lot of businesses approach safety from a pressure containment standpoint. I feel very fortunate to still be working with my dad who is the innovator and inventor behind all of our technology."

Using his education in engineering and physics and his experience in the oil field, Julian had established a strong background for inventing. He began reflecting on the problems he encountered in the oil field and searching for a solution. Now, with over 110 patents for products that he has invented, Rupture Pin continues to create solutions for issues that customers are facing. Through communication with their exclusive distribution channel and independent representatives strategically located in domestic and international markets, Rupture Pin is able to identify new applications for their products.

"You always have to find the problem," explained Julian. "My focus was building my company, improving the technology that was out there and finding problems to solve. I was always looking for a different way of doing it. I have a theory that there are six ways of doing everything, so I always try to find all six and see what I come up with. No company can stay on a leading edge unless they can continue to come up with new products to solve new problems. That has been always our philosophy."

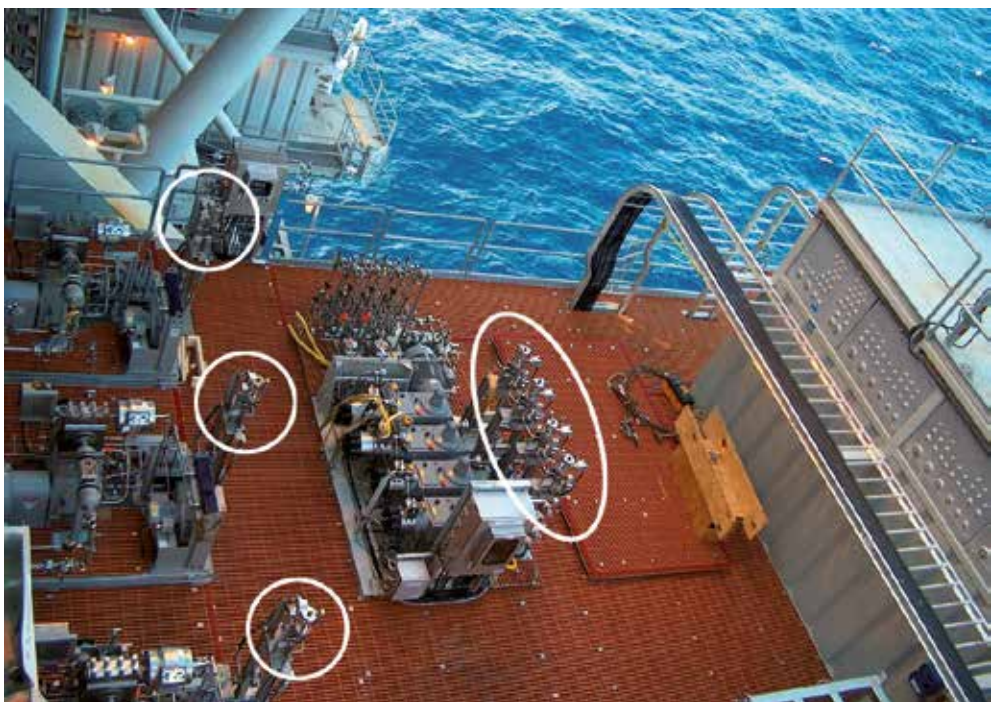
THE POWER OF THE PIN

For over two decades, many of the world's top companies have experienced the performance advantages of Rupture Pin's advanced relief valve technology. The unique, patented pin technology has been used in more than 35,000 valves around the world. Servicing the oil & gas production, chemical processing, food processing, pharmaceutical, pipeline, pulp & paper and well drilling industries, the Rupture Pin product is one of the most versatile and environmentally friendly products on the market in the prevention and reduction of fugitive emissions.

Model H for high pressure safety relief.

The rupture pin is the focal point of this unique technology and is vital to the function, accuracy and consistency of the valve. Each pin is carefully crafted using a precise manufacturing process, as modifications to the pin can control the valve's performance. The manufacturing process ensures that each valve will perform its function accurately, consistently and within an extremely tight tolerance.

"I developed the pin because there was an issue with pilot operated relief valves not operating as required all of the time. They were failing about 5% of the time. The pin was an attachment of the valve to open the valve when the dome pressure reached a certain amount. I was so impressed with the accuracy, that it could be done with that pin, that I decided to start another company. It has been successful and not only have we been successful in accurately opening something to relieve pressure, we can now utilize our technology to isolate pressure as well. In effect, mechanical HIPPS units have become a major product. We started calling our technology for pressure relief Rupture Pin and we decided to name the products that isolate pressure Buckling Pin valves," explained Julian. "Every time it goes off I'm excited about it. One time we tested it with a three inch valve and I wanted to see the highest set pressure we could attain for the valve with as large a pin as we could manufacture. With the air, we increased the pressure in our valve to 18,000 psi



Several Model H valve's used for high pressure safety relief on an offshore drilling platform.

The Model CM for the pulp and paper industry.

The Model JA installed and in us

Power of the Pin!

Rupture Pin Technology manufacturing facility in Oklahoma City, OK.

Model C ASME certified pressure relief valve.

and when it went off, it rattled all the adjacent buildings! It was like an explosion! But it didn't damage the valve and the design was approved."

Using specific measurements of length and diameter, the Rupture Pin team is able to accurately achieve the set pressures and tolerances that their customers require. "The big difference between the pin and a rupture disc is that when the disc bursts, you have to open the line to replace it and that is when you get pollution," said Anthony. "The pin is differentiated from the rupture disc for a number of reasons. If you are talking about environmental safety, because our pin sits external to the flow, we don't have to break the line, which makes it more efficient, more effective and safer. We are able to maintain very tight tolerances, whereas with the rupture disc they typically fail early, especially when you are talking about a system with a high frequency of pressure spikes or fluctuations. We differ from safety relief valves, which are designed to leak 100% of the time. With our product, there is no leakage, no fugitive emission until the valve actually opens and in those types of instances, you can always pipe that flow back into the system, containment tank or whatever the application may require to prevent those fugitive emissions."

Every valve manufactured by Rupture Pin is shipped with a Valve Certification document that is unique to each individual valve. The documents are prepared to the customer's exact specifications. Each valve undergoes Quality Control checks at various stages of production - from the inspection of raw materials, to in-progress tolerance checks and welding quality inspections. Final testing and inspection of the valves check for any deficiencies and when the assembly and Quality Control departments have approved all components, the valve is then assembled and tested. All valves are given a "Bubble Test" to verify the integrity of the valve body, a "Seat Test" to verify the pistons Class VI seal and a "Shell Test" to verify the sustained pressure integrity over time.

INVESTING IN THE FUTURE

As the technology behind this innovative product was the work of a visionary inventor, Julian believes it is important to instill this desire to discover new solutions, create new inventions and develop new innovative problem solving skills in the engineers of the future.

"I try to teach innovation to the children of Oklahoma. Taylor Companies sponsor the Oklahoma Student Invention Exposition. About 4500 kids, K through 12th grade, from all over the state participate. The best 250 student inventors compete in the finals, where patent attorneys are the final judges. The student with the best invention in each grade wins a trophy for themselves and for the school plus two envelopes with cash one for the winner and one to give to their teacher. It is incredible to see the creativity and ideas these children have and it makes you feel really good to see kids with the potential to come up with an invention and take it even further and build a company in the future. Two student invention have even been commercialized," Julian said.

Julian and Anthony Taylor are also optimistic about the future of Rupture Pin Technology with plans to expand the company's reach, product line and continue to provide innovative solutions to their customers needs.

Model I-A Mud Drilling Relief Valve.

"The challenge is always growing the businesses. You want your company to reach a certain level and that brings additional challenges. It is all about staying at the forefront of the industry with our technology and making sure that you have a product that is superior and difficult to replicate.," said Anthony. "We recently hit USD$10 million in total revenue and that is a big milestone for any company. In terms of future growth, we are very optimistic – we foresee a lot of new applications that we are going to be able to provide solutions for with new inventions that my dad is developing. We are planning to focus on the international market and approach that market the right way – do our research, ensure that we know what it is going to take to effectively penetrate that market and then move forward. We are currently targeting Canada and plan to focus on Europe."

And as for Julian taking a day off and thinking of retirement, the prospect doesn't even seem to be on the horizon for the trailblazer.

"No, I don't want to retire. I would be bored," he replied.

se in the field.

A Model JA and JB combination replacing a traditional mechanical HIPPS system.