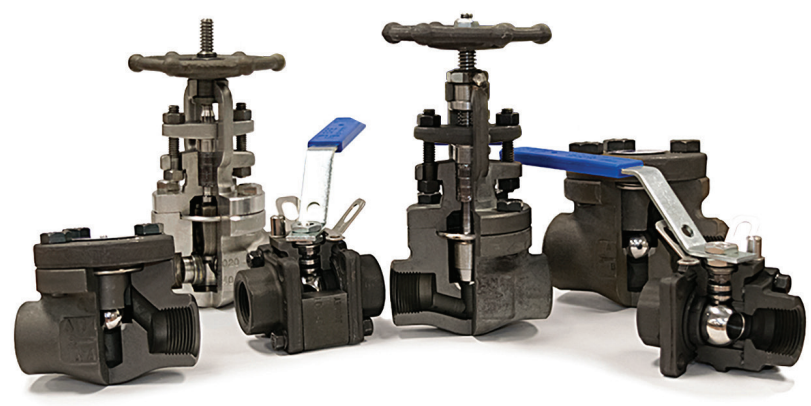
# BONNEY FORGE: LEADING THE WAY WITH INNO

*Bonney Forge has been devoted to producing the highest quality products since its inception. As the world leader in manufacturing fittings and valve flow control products, Bonney Forge exceeds industry standards by continuously striving to surpass expectations and deliver innovative and superior services. With over 140 years of experience, the company has forged a global reputation of manufacturing excellence. Its commitment to investing in the continued growth of its products has made Bonney Forge the forefront manufacturer of low emission valves.*

*Fugitive Emissions Journal recently had the pleasure of speaking with Bonney Forge's Managing Director of BFE, Antonio Sonzogni; VP Product Engineering, Specialties and China Operations, Paul Heald; Vice President, Valve Products and Business Development - Southwest Region, Steve Thomas; and Manager of Sales Engineering and Valve Projects, Tim Harrigan. The team was excited to discuss the company's integrated manufacturing, its commitment to product quality and its unwavering dedication to reducing fugitive emissions.*



***By Angelica Pajkovic***

Founded in 1876 with an initial focus on forged and finished hardware, Bonney Forge has experienced many advancements in technology since its inception. Working its way through the first half of the 20th century, the company focused on hand tools, military hardware and commercial forgings. As it strove to be a leading force, the company foresaw the important role flow control products would come to have in the industry, and quickly entered the fittings and valves market. Today, Bonney Forge's core product base is comprised of forged steel fittings, forged steel branch connections, forged steel valves and cast steel valves.

In 2010, the company's interest in reducing fugitive emissions once again highlighted its commitment to its mission statement:

> *To be the recognized leader in the industry, marketing and manufacturing forged steel valves, cast steel valves, forged fittings, branch connections and other related products to satisfy its customer's needs.*

Bonney Forge's discussions concerning fugitive emissions began to intensify when the Environmental Protection Agency (EPA) began to move steadily towards implementing more stringent restrictions on emissions. By proactively working with both end users and the EPA, Bonney Forge was able to make product adjustments that would push it well ahead of its industry competitors.

"Our CEO, John Leone, made a decision early on that Bonney Forge was going to adhere to its mantra and provide the leading products in the industry," stated Heald. "That meant we were not going to take a blatant approach and wait, instead we were going to manufacture exclusively low emission valves."

Discussions with end users and involvement with API standards meetings allowed Bonney Forge to understand the requirements of the EPA's emissions regulations. Given this understanding, in 2010, the company began developing the Bonney Forge Eco-Seal® valves that not only met the API standards, but also were compatible with global standards and the International Organization for Standardization (ISO).

"Since 2011, all of the products we supply to the industry have been low emissions for cast steel valves and 2013 for forged steel valves," stated Thomas. "We have fugitive testing equipment at all of our valve manufacturing plants in Italy, China and the United States. This allows us to monitor fugitive emissions on production valves to ensure fugitive emission compliance."

## Focus on Fugitive Emissions

In order to develop the sought after reduction in fugitive emissions, engineering teams at both Bonney Forge Europe and Bonney Forge Corporation worked together with the packing manufacturer to enhance the performance of the valve. The design modifications to the valves, in addition to the newly developed packing, allowed Bonney Forge to appeal to a global market. It wanted to ensure that the packing and products achieved low emission standards across the globe, meeting or surpassing API, ISO, and TA Luft requirements. Bonney Forge Eco-Seal® is a truly engineered low emissions packing solution that is also tested and approved beyond the aforementioned industry standards by major end users.

*Both Bonney Forge Valve Engineers and Valve Packing Engineers collaborating to optimize performance of Bonney Forge Valves utilizing Bonney Forge Eco-Seal® packing technology.*


*Low Emissions testing being performed in-house on Bonney Forge Eco-Seal® packed cast steel valves.*

"Originally, we were testing to the API 622 for the packing, which recorded 1510 cycles. When the API 624 came out and only required testing with 310 cycles, it signified how far ahead of the curve we were already," stated Heald. "Not only were we able to reduce emissions to less than 50 PPM with our valves, but we were also able to increase the number of performance cycles, almost five times the API 624 requirement of 310 cycles, with no packing torque adjustment."

"The compatibility of the packing and the valves not only allows the products to be fugitive emission compliant, but it also extends the mechanical ability of the valve," added Thomas. "The valve itself works easier, as it is not under the stress that is applied to many of the manufacturer's packing when it is in the process of being sealed. The ability to modify the valves and specially craft the packing therefore reduces emissions while extending the life of the valve."

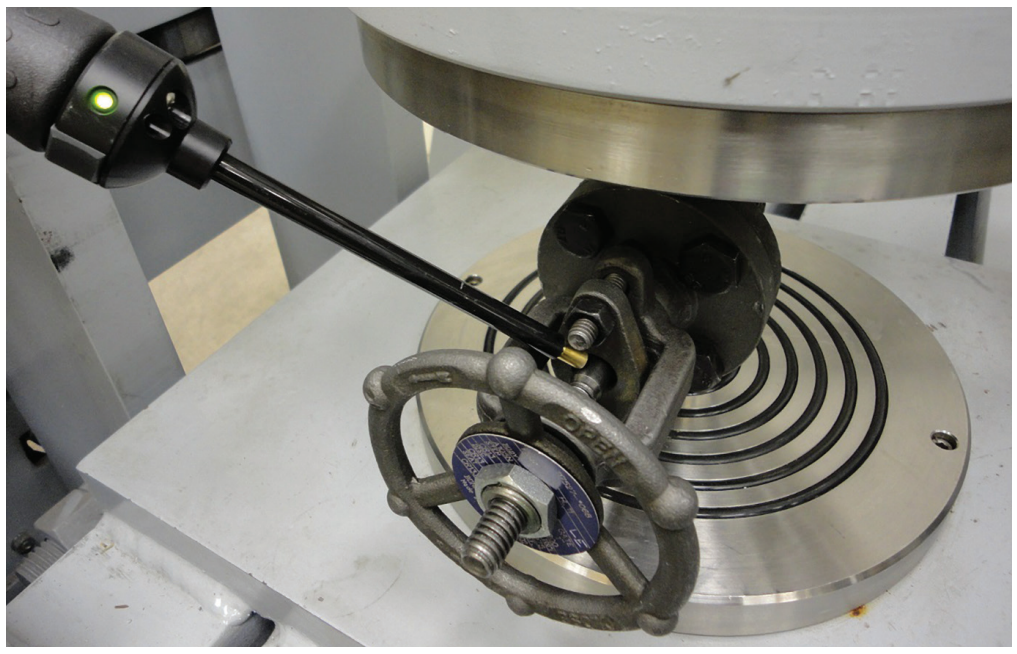
"The continuous investment in the latest generation of equipment allows Bonney Forge to constantly obtain the levels of tolerance required to be able to maintain the emission level within the limits imposed by the standards," stated Sonzogni.

Bonney Forge does not rest at type testing. All valve production facilities, which includes, China, Italy and the United States, have fugitive emissions testing equipment that are used to perform production checks. Having this testing equipment in house allows Bonney Forge to ensure that they remain on the leading edge of low emissions products.

## A Diversified Product Line

Bonney Forge is an integrated supplier of a full range of forged and cast steel valves with integrated in-house forging, machining, assembly and testing facilities. Produced in Italy, China and the USA, the valves are manufactured in a variety of sizes and designs, including: gate, globe, check, cryogenic, integral flanged, bellows sealed, extended body gate and y-patterns and pressure seals. To meet the demands of its customer's most stringent requirements, Bonney Forge uses the highest quality material to meet and sur-

# VATIVE AND FORWARD THINKING TECHNOLOGY



*Pressurized with helium, this forged steel gate valve is being monitored for leakage through the stuffing box. The pictured emissions tester (wand with green light) can detect emissions as low as 5 x 10-8 mbar l/s.*

*Bonney Forge Europe's in-house cryogenic test bunker allows for production testing of a wide variety of cryogenic valves for the LNG market.*

pass the industry codes and specifications. Materials include stainless steel, carbon steel, common alloys and exotic alloys.

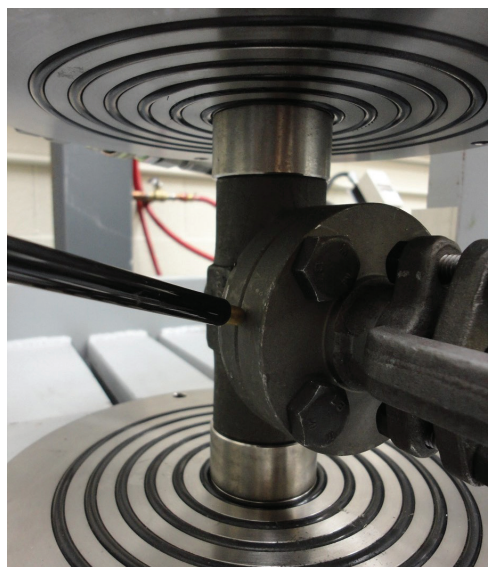
Self-sufficiency is Bonney Forge's strong suit. Having its own forge shops gives the company the ability to produce raw forgings for fittings and valves. Valve assembly, testing operations and inspection to industry requirements, assure that its forged and cast steel valves meet or exceed all applicable product specifications. The forge shops in Italy and the USA have a complete line of forging and support equipment, including die sinking technology. Its automated production lines and quality machining systems deliver high volume capabilities that are tested to the highest standards. Dedicated facilities at Bonney Forge Europe and WFI International, Inc. dedicated to housing made to order products, round out Bonney Forge Corporation's manufacturing capabilities. Additionally, Bonney Forge uniquely provides test reports for the relevant raw materials and fulfills routine requests for products and mill test reports.

A recognized manufacturer of API 602 and API 600 valves, Bonney forge has expanded the product line to include floating and trunnion mounted ball valves, true double block and bleed valves, pressure seals, API 6A, API 6D and compact valves for offshore applications. Valve sizes range from ¼" and 36" in pressure classes from 150 class through to API 15000 psi. The company also has API RP591, ISO-9001, 14001, ASME, DIN, PED, TSG recognition and its products are inspected to the strict requirements of ASME B16.11, MSS SP-79, MSS SP-83, MSS SP-97, ASME B16.34, API 602, API 600, API 623, API 594 and API 608.

## Quality Focus

As one of the last true manufacturers of its own products, Bonney Forge has excelled at providing quality service and expertise. The best way to achieve global quality is by ensuring that the manufacturing process is controlled and continuously improved by the company's Quality Management System (QMS). The advanced technology and strict testing practices implemented in Bonney Forge facilities allow the company to develop a range of products with superior quality. What makes its testing and quality assurance system stand out from other companies, is its use of third party testing to certify its products.

"Having a third party company test the valves and provide feedback is the only way to truly know if a product is emission compliant," explained Thomas. "We wanted an honest look at what we are creating, and having someone from the outside test and certify your product provides you with unbiased feedback and a fortified sense of assurance."



*Same valve as above, is also subjected to emissions testing at the body/bonnet gasket area, simliar to the requirements of ISO 15848-1.*

The ability to perform customer specific testing is another aspect of Bonney Forge that makes it a leader in the industry. In addition to testing for fugitive emissions, the company is also able to perform cryogenic testing, API 6A testing, submerged testing, special order testing as well as hoppers from gas to PSL 3 testing. These capabilities have made Bonney Forge a leading resource for end users all over the world.

"Bonney Forge does not make products for other companies, nor do other companies manufacture any goods for us," stated Thomas. "All of our products come straight from our facilities. This allows us to control all aspects of a valve or fitting, from its inception to delivery. That way the end user gets consistent quality products with full traceability."

## Customer Care

Bonney Forge's full manufacturing integration provides end users with the assurance that their requirements will be met when working with the company to design their systems. Bonney Forge produces high volume runs of forged steel fittings and unions in a variety of classes and material grades for any application. These products are available from inventory with 90% to 95% of an order shipped next day.

"We have a fast track valve system in place, in order to provide our customers with the products they require, with minimal to no lead times," stated Harrigan. "With our refined expertise, we are also able to accommodate special orders. Unlike many manufacturers, valves with special chemical specifications, unique mechanical properties and special NDE's, are all systems Bonney Forge can deliver."

The company's modern forging equipment, computer-aided design, in-house heat treat and complete metallurgical testing facilities, make Bonney Forge a fast, reliable source for virtually any type of valve or fitting component.

"To meet the ever-increasing demand for documentation, Bonney Forge has implemented a software and an office dedicated to the post-order documentation," added Sonzogni.

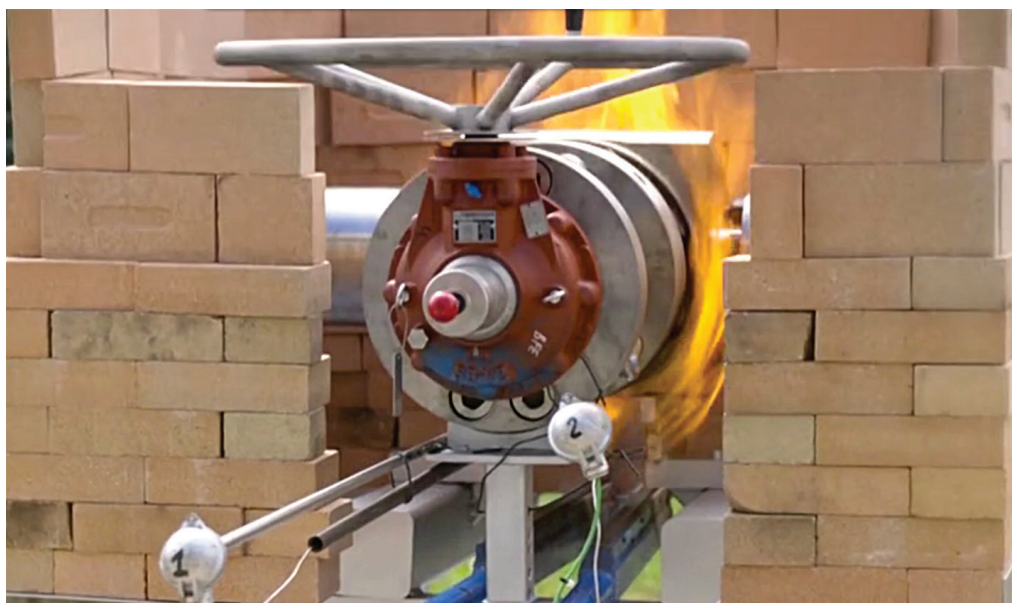
> *"Quality is Bonney Forge's culture, period. That is the reason why we have customers that return for our products year after year."*

## Forward to the Future

The company's continued investment in technology helps it maintain a consistency in product, unparalleled in the industry. Modern state-of-the-art machining centers have reduced product variability while increasing product serviceability.

"Quality is Bonney Forge's culture, period," stated Harrigan. "That is the reason why we have customers that return for our products year after year."

With a focus on maintaining quality metrics and staying within the set standards, Bonney Forge consistently supplies products that are better than industries expectations. Accordingly, Bonney Forge is a recognized leading resource for the power, oil, chemical, marine, nuclear, subsea and construction industries. With locations in Mount Union, PA; Houston, TX; Bergamo, Italy; Shanghai, China; and the ever evolving expansions, Bonney Forge is the best suited to meet the needs of its global customers.



*API 6FA fire testing being performed on made to order valve, this test ensures valves will perform in emergency situations.*