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Fluid Handling International

http://fluidhandlingmag.com/article_display/?volume=5&issue=1&content_item=237

Volume 5, Issue 1

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January 27, 2017

The next generation

Fugitive emissions is a concern across all facets of the fluid handling industry. The effects it poses to the environment, employees' health, and the manufacturers' bottom line is troubling, and it is no secret that governing agencies around the world are tightening up on policies and regulations surrounding allowable emissions levels. These challenges, combined with greater production demands, have compelled valve users in all industries to seek solutions that are as efficient as they are effective.

A major contributor to the release of volatile organic compounds (VOC) is the valve, mainly because of its function and placement within a processing system. When valve seats, seals, and stems are damaged, emissions can occur. The packing can also play a part, especially in the presence of particularly hazardous chemicals and media. With valves serving as a major contributor to the release of VOCs, valve manufacturers are facing the same challenges that plague valve users. They must provide solutions that meet the individual needs of valve users, comply with government regulations, and satisfy industry standards. To address these issues and remain relevant in the industry, valve manufacturers are evolving their technologies to expand their uses, and the recently released Crane FKX 9000 triple offset valve (TOV) is a prime example.

Originally designed solely for water shut-off applications over 50 years ago, TOVs were historically selected because of their superior sealing features and cost savings versus other metal seated valve types. Offering a bi-directional zero leakage closure with either metal or soft seats, TOVs can be used in multiple applications and still provide the same level of leak resistance. They are easy to install as a result of their quarter-turn design and lightweight structure. As the name implies, there are three separate offsets designed into the valve. These three offsets work together to provide an uninterrupted sealing surface, minimize wear between the seat and seal, and preserve the sealing integrity over the cycle life of the valve

1. The center line of the disc/seat sealing surfaces
2. The location of the shaft with respect to the center line of the bore
3. The axis of the seat cone angle that is offset from the center line of the valve bore.

Its operating torque is lowered as a result of the optimized seat angle which also minimizes sticking or binding of the disc.

Recently, however, Crane has worked to incorporate new design enhancements that improve its versatility, enhance safety and performance, and expand its ability to function in demanding environments. For the harsh conditions of critical process applications, steam isolation and temperature extremes, this new TOV provides unmatched

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performance reliability and quality across multiple applications while delivering exceptional flow control, optimized Cv and low Delta P in a single valve.

Designed to reduce wedging and binding, the next generation Crane®FKX 9000 was engineered with an optimized seat angle and Stellite® hard-faced body seat, offering a longer seal life, and improved abrasion resistance, even after extensive cycling. These features combine to reduce the total cost of ownership and extend valve life.

To accommodate higher temperatures and pressures, as well as severe service applications, its precision machined metal seat and seal ring deliver reliable and bi-directional shutoff regardless of these conditions. Additionally, its right-angle conical design facilitates an almost friction-less in-line sealing.

Unlike position-seated ball, butterfly or plug valves, the torque-seating in this new TOV self-adjusts to evenly distribute seal compression. A “floating” seal ring and wide seal ring supporting gasket yield a better seal to eliminate binding and enhance performance.

Crane’s next generation TOV delivers superior performance in thermal expansion, unlike alternative designs, due to the optimal positioning of the pin connector located in the lower portion of the disk. Its bearing design also helps to prevent shaft deflection and permits longer valve life.

With a control classification traditionally associated solely with bellows-sealed valves, the Crane®FKX 9000 features an updated stem seal design and packing assembly that provides superior fugitive emissions control (ISO 15848, Class AH) under recurrent and extreme thermal cycling, despite the use of graphite packing to accommodate the higher temperatures. But, depending on the application in which it is used, the packing offering of this new valve can be differentiated so users can choose which works best for their needs: TA-Luft: acc. to VDI 2440, Standard (Process Industry): ISO 15848-1&2: Class BH C03 (< 100 ppmv), or Low-E Option: ISO 15848-1&2: Class AH C03 (< 50 ppmv). Furthermore, next generation TOV valves are tested to CO3 which covers four thermal cycles and 1,500 mechanical cycles.

Lightweight, compact, operative in a variety of applications, and incorporating these evolved features into the triple offset valve design, the Crane®FKX 9000 could become the epicenter of development as a low-cost option capable of increasing efficiencies and maximizing operational performance in numerous process conditions where other valves have historically presented pain points in the past. Its increased emissions control classification alone enables the Crane®FKX 9000 to meet greater demands than ever before in an expanded list of industries, as well as new applications within existing industries.