Packing to meet emissions goals

In this, our special edition of Valve World Americas wherein we deal with the subject of Fugitive Emissions, we had the opportunity to speak with Scott Boyson, Global Business Development Manager at AW Chesterton Company. Mr. Boyson is responsible for Chesterton's valve sealing business and has over 15 years experience working with numerous end-users, OEMs and valve repair shops to assist them in their sealing efforts. Scott has been directing Chesterton's efforts to meet the stringent sealing requirements that are facing industry and is responsible for the product line portfolio and development of new valve packing products to meet these challenges.

By Kate Kunkel

We began our interview by asking how packing manufacturers' responses to issues concerning new regulations were being adopted by industry for fugitive emission control pertaining to valves.

"As a packing manufacturer we are forced to adapt to many different regulations, guidelines, and specifications which are being written at numerous levels," responded Scott. "The EPA, State and County air quality boards, along with end users and valve manufacturers are all participating to establish these guidelines and specifications. At Chesterton we made a decision to face these new standards by focusing efforts to develop fugitive emission control products and programs to work directly with the end user and valve OEM's to ensure compliance.

"It's imperative that packing manufacturers address not only the technical perspective of these new guidelines but also strive to make sure there is a positive commercial impact for the users as well. We need to help bridge the gap between purchasing, engineering, maintenance, and production at the user level as well as act as a communication liaison between the valve manufacturers and users."

We asked Scott what effects the changing economic conditions have had on industry response to increased emission regulations.

Scott responded. "Refiners are looking at opportunities to increase performance while lowering overall cost and risk while the chemical industry is seeing more activity as a result of recent EPA enforcement activities. However, not all chemical manufacturers are as focused in this area to the same extent.

Discussing all the aspects of total costs and regulations associated with valve sealing is becoming increasingly important.

"Many industries are in a reactive mode rather than a proactive mode. As in so many other areas, employment trends are lagging the economy."

But no matter the number of employees or the state of the economy, the very real cost of emissions is not something that can be overlooked, so we asked Scott what some of the factors are which contribute to that cost.

Scott replied, "The largest number of leaks found through the monitoring process are related to valves. Too often the process of selecting a valve for a particular application is based solely on the initial cost of the valve without regard for additional costs that can be incurred if the valve is found to have a leak.

"What must be understood is there is an acquisition unit cost for the valve and plant purchasing is typically measured by their ability to lower this number. There is also the "Total Cost of Ownership" for that valve which is more difficult to measure but is critical to understand. And, once a leak has been identified, there are additional costs that must be taken into consideration pertaining to a valve. They include the cost of product lost to atmosphere, potential fines, the cost of first attempt to repair, and the cost of repairing if on-line leak sealing is required. Add to that the cost of increased monitoring and the extension of the monitoring frequency and costs associated with shutdown to perform emergency repairs, if needed."

We discussed the costs of failing to meet government regulations and what effect that has on the perceived importance of keeping emissions to a minimum.

Scott laughed. "The companies who have seen the EPA with respect to enforcement have a very different perspective. Once problems are found, inspection levels and frequency of inspections increase and the compliance standards are raised. A fine alone will not necessarily change their practices. Today the EPA is using what are called consent decrees. These are agreements between a particular plant owner and the EPA stating what must be done in lieu of a much larger fine. As part of these consent decrees, Enhanced Leak Detection and Repair programs are implemented. These programs require a reduction in the allowable leakage rates from 500 ppm to 250 ppm or in some cases 100 ppm. With these decrees, the need for compliant valves and packing is a must.

"It's not uncommon for a chemical facility to have as many as 100,000 monitoring points and valves can easily make up 25% equating to 25,000 valve packing area monitoring points. As a best case scenario, these must be monitored quarterly. However, once a leak is identified they must immediately move to a monthly monitor status raising their "Total Cost of Ownership" exponentially.

"Since everyone is not familiar with consent decrees, articles such as this are very important to keep the flow of information headed in the right direction. From a supplier's standpoint it is not just about supplying product. We must be there to continue to educate and inform industry of what is going on throughout the US and other areas in North America."

Scott continued. "The end result is that, users are seeking out ways to seal their equipment and comply with the current regulations. The need to satisfy their requirements has led to packing manufacturers seeing an increased demand to test their products. We are being required to do both industry recognized testing and user specific testing along with type testing for numerous valve manufacturers."

We asked what some of the biggest challenges would be in achieving this.

Scott answered. "One of the biggest challenges this brings is increased cost to produce products that are capable of providing the long term sealability necessary to comply with the requirements of LDAR and the Enhanced LDAR decrees. Also, in the world of packing, there are two distinct areas of concern when developing packing.

"First is the original material installed in the new valve when purchased and second is the packing to be used for re-packing valves during a turnaround or during other maintenance procedures. The two areas are very different. One is defined by the acquisition cost of the new packing set and the other is defined by the labor cost and frequency required to re-pack and possibly repair existing valves. The challenge is to have users realize that all new valves will have life-cycle costs associated with them. This is especially important in light of Consent Decrees. So you have to be able to inform the users to bridge the gap between new valve costs and re-packed valve costs so they truly understand the total cost picture."

"What about the standards?" we asked.

Scott replied. "The standard most often recognized for packing today is the API 622, which is a fugitive emission packing test. Additionally, there is the API 624 which is under review and has not been approved. However it will be soon. This is a valve type testing standard to certify that a particular valve meets proper emission standards utilizing a 622 certified packing product. Valve manufacturers would like to standardize on one packing that will work in all of their valves, which would be ideal. This would reduce inventory while ensuring long term sealability in new and used valves alike.

Valve packing manufacturers are responding to new sealing standards with advanced, single spool, low emission packing.

We asked it if was possible to make one packing work.

"The tighter enforcement by the EPA has required manufacturers develop packing that meets the leakage requirements of industry and create cost effective alternatives," Scott replied. "The EPA has forced all of the manufacturers to re-invest in R&D while also taking into account what we develop needs to be a cost effective alternative. In the case of block valves (on/off), we feel that we have developed a packing that meets the low emission performance requirements of the market. The API 622 Standard has really put valve packing manufacturers to work."

Control valve emissions sealing requires special focus from valve packing manufacturers due to their low, packing friction requirements for leak-free operability.

Scott continued. "The only problem we see is to get one packing to work across all industries such as power plants, nuclear, etc. However, we are making strides in this direction. We also need to focus on control valve sealing. Control valve sealing is especially difficult due to the low friction requirements for valve seals. In addition, these valves are very dynamic. One packing is much more difficult for control valves but we are making good strides in sealing these effectively and reliably."

We asked how packing suppliers and valve manufacturers could improve the process industry and reduce fugitive emissions.

Scott was quick to reply. "Our most important role is to inform our customers of the technology that is out there, what the best practices are and what other people are doing to bridge the gaps. In all cases, users are looking more and more to the suppliers as key resources for technology, trends, and really providing the knowledge and expertise. We cannot just sell product any more. This is a growing trend all over the world. Up your game!"