

Ask the Expert

The *Ask The Expert* column will give readers the opportunity to have their valve concerns addressed, find out the answers to their pressing valve challenges and ask for feedback on application issues. If you have a question that you need answered, please feel free to contact s.bradley@kci-world.com with the email subject: Ask The Expert. If you are an individual with extensive valve expertise that you believe the Valve World readership could benefit from, please contact our Editor to become a future featured Expert.

This month our Experts are Rodney Roth & Scott Boyson – Business Development Managers for A.W. Chesterton Company.

Q Why is low emission valve repair required?

A New valves are now being purchased as low emission valves. In fact, API standards have been completed to formally outline testing requirements for valves and packing to establish a formal approach to address the low emission requirements. API 624 is a valve type test standard that defines low emission testing requirements used on API 600, 602, 603, and 623 gate and globe valves. Additional API standards are currently being developed to address type testing of valves with rotating stems and sealing materials other than graphite for low emission compliance as well. As part of the ongoing work by end users in this area, valves purchased prior to the establishment of the testing standards need repair and reconditioning, low emission standards are required to be met and this has to be done using updated repair methods and guidelines. In addition to the repair of currently installed valves, there is also the need to maintain the low emission status of valves having been purchased as “Certified Low Leaking Valve Technology”, therefore increasing the need for special low emission repair requirements.

With increasing frequency, end-users are required under government mandates to repair their valves to specified low emission standards. The US EPA requires the use of “Certified Low Leaking Packing Technology” as part of the repair requirements.

Also, end-users are becoming more proactive in this area and would like their existing valves repaired to low emission standards. While OEM repair guidance would be helpful, it may not always be available from the valve manufacturer.

Q What is the definition of a low emissions valve repair?

A The use of the low emission valve term and its definition can vary quite widely. It can be defined from API624 tested valves to a marketing term that is supported by little engineering data. The US EPA is typically requiring the use of low leaking packing technology to help define a valve repair where the definition is -

“Certified Low-Leaking Valve Packing Technology” shall mean valve packing technology for which a manufacturer has issued either: (i) a written guarantee that the valve packing technology will not leak above 100 ppm for five years; or (ii) a written guarantee, certification or equivalent documentation that the valve packing technology has been tested pursuant to generally-accepted good engineering practices and has been found to be leaking at no greater than 100 ppm.

The statement tested to generally-accepted good engineering practices, is commonly used for API 600 and API 602 valves and is the methane-based API 622 packing test. Variations of this standard can be used for valves such as control valves, by increasing mechanical actuation, adjusting temperature, and changing the allowable number of required adjustments, etc.

While this ensures the packing is suitable, it is also important to repair the valve to recommended OEM low emission guidelines or established recommended practices. Recommended practices are in place as part of API recommendations, but the recommended practice (RP) for valve repair did not have the necessary recommended guidelines to repair valves effectively to meet low emission requirements. API RP621 is currently being updated with the addition of the necessary recommendations to repair or recondition valves to meet the more stringent low emission requirements being set forth.

Q How do I conduct a low emission valve repair?

A Currently the most effective way to repair or recondition valve to meet low emission requirements would be to utilize guidelines established by valve manufacturers to make their specific valves suitable for low emission service and compliance.

With the completion of the API Task Group work being done to update API RP621, low emission valve repair will be as simple as informing the valve repair facility you use to repair your valves that you are invoking “Low E” per API RP621 and the necessary requirements to meet EPA guidelines will be met.

A number of areas are being addressed that will make low emission repairs different than the standard repairs. Accurate gland flange nut torque will be used to properly load the packing set to recommend and proper seating stresses specified by valve and packing manufacturers. To obtain proper gland and therefore proper packing stress, the use of thread lubricant and hardened washers under the gland flange nuts has been made part of the API RP621.

Stem and bore tolerances of repaired valves are required to be much tighter when repairing valves to low emission standards along with assuring proper stem finishes. There are other things that must be considered when repairing valves to low emission standards, for example, the use of properly documented API 622 packing. Many valve repair shops are in the process of training their mechanics to the new standard and



to the requirements of the packing manufacturer's requirements for proper packing installation. Some valve repair companies are already implementing the use of “Certified Low Leaking Packing Technology” as their standard everyday packing as a way of ensuring the valves they repair are capable of handling any potential service they may be placed in at the end user level.

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