

## 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 questions that you need answered, please feel free to contact [s.bradley@kci-world.com](mailto: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-in-Chief to become a future featured Expert.

This month our Experts are Rodney Roth, Strategic Account Manager/ Stationary Equipment – A.W. Chesterton & Vance St. Jean: Senior Specialist/Stationary Equipment – A.W. Chesterton.

### Q Can “Low Leaking Valve Technology” be Achieved in Control Valves?

**A** This is absolutely possible in temperatures to 400 -450 F. Low E Packing designs have been developed by multiple OEM’s capable of sealing to less than for these applications. Additionally, some aftermarket packing manufacturers have developed Low E sealing options. These designs are typically PTFE or PTFE and graphite materials or some combination of the two materials and have been tested to a variety of different testing protocols.

In higher temperature applications above 450F, the answer is more complicated. In these applications, the primary blocking agents required to prevent emission leakage can burn out or volatilize creating volume which can lead to leakage occurring. There are valve designs available with extended bonnets used to move the stuffing box away from the process to allow for the use of one of the low temperature packing designs. The use of Live loading for these valve designs is also very affective and is used as part of most of the “Certified Low Leaking Packing Technology” designs for Control Valves. This is an area of concern for many end users and has led to work being done by many sealing products manufacturers to development a solution.

As the solution will be in great demand.

### Q How do you choose the best option from the products available?

**A** The starting point should be a review of the options available from your valve OEM. Control valve OEM’s offer various products designed to work effectively based on the temperature, pressure and valve design for your specific application. The OEM of choice may or may not offer a warranty depending on the design chosen. Having said that, there are many other options Low E packing sets available independent of OEM designs. The additional offerings can be found through a variety of packing manufacturers who offer solutions for these types of valves. These designs range from standard square die-form rings and wedge shaped configurations made from different materials of construction. These designs are manufactured to transfer gland loads to the packing sets more efficiently, translating to exceptional sealing, longer packing set life and lower packing set wear. In addition to the variety of packing configurations, the use of live loaded gland bolts is very common in the wide range of applications being sealed. The ultimate goal here is to obtain turnaround to turnaround reliability for your specific application. Additionally, it is important to remember these valve types encounter frequent cycling, thermal growth and various levels of system vibration, which can all have an adverse effect on packing performance.

### Q Why is “stem friction” a critical factor in selecting the packing design?

**A** Stem friction is possibly the most critical factor to be considered with regard to Control valve performance. Many control valves modulate

in service, and never being operated in a fully open or closed position. Excessive friction created by the packing set can limit the stems ability to move freely, thus affecting plant operations and the level of process control needed. The term used for this phenomenon is “sticktion” or sticking of the stem in one position. Ideally, the stem should move with 1% change in the signal through the positioner. The term used to describe the difference in the amount of signal change required to move the stem is “deadband”.

Many valves require a 3-4% signal change, which can affect process control in many negative ways. Packing manufacturers capable of providing the best solutions for Control valve sealing can provide the calculated friction the packing will impart on the stem allowing end users to verify proper actuator selection. This number can change dramatically when changing from a PTFE packing design to a graphite packing design. It is considered “good practice” to check the friction prior to making any change to confirm proper operation of the valve.

### Q How does packing selection affect long term sealing performance?

**A** As represented in the discussion above, there are many factors to consider when selecting the best packing design for your Control valve. It is extremely important to be judicious in cross checking your requirements for leakage at your production site as well as any EPA mandated regulations or Consent Decree language. It is also a good idea to review any relevant testing standards for the products being produced or potentially selected. Upon completion of the complete of all factors to be considered, you can begin the necessary research to identify and procure the best packing design needed to perform best in your specific application relative to all the factors considered.



## MAKES A GREAT VALVE BETTER

[www.UniTorq.com](http://www.UniTorq.com)



Rack & Pinion Actuators



UTQ & UTM  
Electric Actuators



Declutchable Gear Overrides



Positioners: Pneumatic,  
Electro-Pneumatic & Smart Digital



Senitec - Limit Switches

**UniTorq is constantly investing in new technology and evolving products to meet changing demands. Our tradition of providing quality products and outstanding service remains our highest priority.**



Providing one source – from the valve up.

UniTorq Actuators & Controls  
2150 Boggs Road, Suite 410  
Duluth, GA 30096  
Phone: (770) 446-7074  
Fax: (770) 447-1825

For more than 20 years, UniTorq has consistently provided its customers with reliable, affordable actuators and accessories.