Question 74: We have experienced leak issues around gaskets in cyclical and hot temperature services. What solutions have you developed to eliminate these issues?

TRAN (Houston Refining LP)

At one of our two cokers, we use ring joint flanges from the coker heater outlet to the coke drum inlet and have had no leak issues. At the other coker, we have a short section of piping at the coke drum feed inlet that had raised face (RF) with spiral wound gasket drum (SPWD) that would occasionally leak. We changed the gasket type to INCO625 RF and Belleville washers, which significantly alleviated the leak issues. During the upcoming turnaround, the area with INCO625 RF will be changed out with new piping that will take RTJ (ring-type joint) flanges.

BASHAM (Marathon Petroleum Corporation)

To echo Don’s points, we also use the ring joint gaskets and flanges on the piping from the coker furnace outlet to the drum inlet and then over to the fractionator. We also use the Belleville washers on the flange connections, particularly those of the coke drum feed and outlet valves.

LEE (BP Products North America)

For pipe flanges we have used RTJ flanges that are torqued to limit the leaks in cycle service. These are typically 9% chrome/1% molybdenum material for the flanges. Stainless steel materials have had a history in higher pressure services of cracking in the groove for the ring. For larger flanges the stiffness needs to be high enough that the flange does not flex during the bolt tightening process or due to the thermal stresses. On problem flanges we have brought in a consultant that has a guideline based on the bolt area to gasket area ratio. Many of the problem flanges had a ratio that was not within the guidelines. Gasket type is also important with the Kammprofile gaskets providing the lowest leakage of the various types of gaskets. Adequate gasket seating stress is important for all types of gaskets, including Kammprofile gaskets. The more problems a particular bolted joint has seen, the more important it is to use a bolt tensioning technique rather than a torqueing technique to apply the desired seating stress onto the gasket surface uniformly. We believe with the proper gasket, alignment, bolting and tensioning, every bolted joint can be leak-free.

Tags

Chlorides

Coker

Process

Year

2012