Control Valve in Pressure Reducing Station with ENVIRO-SEAL™ Packing and Cryogenic Testing Provide “No Leakage” Service to New LNG Train

RESULTS

- Customized packing minimizes friction and fugitive emissions.
- Valve testing addresses stringent seat-leak and low-temperature requirements.

Emerson personnel in Australia tested two large Fisher FBT valves to meet low-temperature and tight seal requirements. It took about 30 hours to get the 24x30 valves and trim to cryogenic temperatures, using 2.2 tons of dry ice and a spray of vaporized liquid nitrogen.

APPLICATION

Emergency depressurizing valves

CUSTOMER

Liquified Natural Gas (LNG) train in Australia

CHALLENGE

Natural gas is liquefied in an exchanger and then stored at cryogenic temperatures of -300˚F (-184˚C), when leaks are more likely. Each train requires between 10-12% of the feed gas for its own use. Total energy lost over the Liquefied Natural Gas (LNG) supply cycle may be 13% of the feed gas or more.

Because these energy losses translate into production costs and lost profit, the efficiency of the system is important. Control valves applied throughout the cycle, therefore, need to operate reliably, without leaks, and under severe-service conditions.

The United Kingdom-based EPC invited Emerson and its local sales office, Western Process Controls, to supply 76 Fisher™ severe-service valves for a new LNG-Train V project in Western Australia. About 35 valves will be used in Emergency Depressurizing applications in the LNG Train.

FISHER™ For more information:
www.Fisher.com

EMERSON™

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SOLUTION

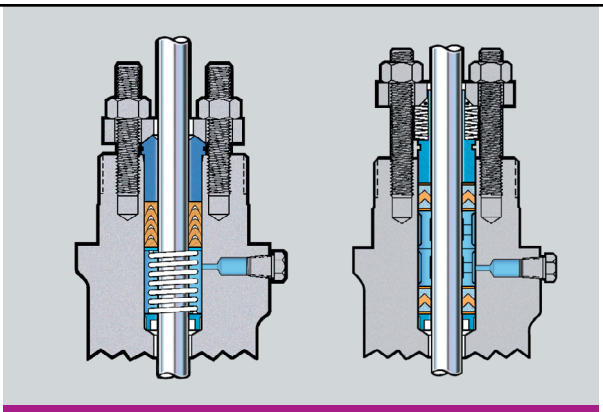
Several groups within Emerson played a critical role in meeting customer requirements on this project. Personnel in Tokyo, Japan produced two 24x30 inch, 600# FBT (fabricated, angled-body) valves. Each valve assembly included FIELDVUE™ digital valve controllers with HART® communication capabilities, which provide performance data on these critical valves.

Secondly, the Engineered Products team in Marshalltown, Iowa customized ENVIRO-SEAL™ packing for the FBT valves' two-inch stem diameter. The ENVIRO-SEAL packing system provides superior sealing performance, eliminates fugitive emissions, and extends the life of the packing material.

Thirdly, personnel from WPC in Perth supported a rigorous testing regimen that enabled the cryogenic and low-temperature valve construction to meet stringent seat leak testing and fugiitive emission testing requirements. The WPC team tested the FBT valves with helium at 25 bar test pressure at -56˚F (-49˚C). While the allowable leakage rated was 44ppm of He for the body/bonnet seal and 35ppm of He for the packing, the actual measurement that resulted was "no detectable leakage" using the Varian heli test detector.

An EPC-appointed an inspector and the end-users' Principal Instrument Engineer witnessed the testing. Both men were happy to sign off as "zero leakage."

The Fisher valves' design, as well as the testing services provided during this project, enabled Emerson to meet the application requirements and the customer to protect its multi-million-dollar compressor.



ENVIRO-SEAL™ packing for a two-inch stem diameter was not previously available, but because of this LNG project, others may benefit from this customized design.

RESOURCES

Fisher FBT Valves Product Webpage
https://www.emerson.com/en-us/catalog/fisher-fb

http://www.Facebook.com/FisherValves
http://www.YouTube.com/user/FisherControlValve
http://www.Twitter.com/FisherValves
http://www.LinkedIn.com/groups/Fisher-3941826

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