For more information: www.Fisher.com

Plugging Eliminated in Separator Letdown Valve using Special Fisher™ Cavitrol™ III Trim

RESULTS

• Plugging of the valve by entrained catalysts was eliminated, improving separator performance and uptime
• Flow capacity through separator now meets refinery requirements

APPLICATION
Separator letdown

CUSTOMER
Refinery

CHALLENGE
In a typical refinery, the cold high pressure separator (CHPS) separates the rich hydrogen gas, which is sent to the recycle compressor from the liquid effluent. The liquid phase is separated into recoverable products and sour water. The recoverable products are sent to the fractionation tower or low pressure separator through the CHPS letdown valve. The letdown valve controls the level in the separator as flow moves to the fractionation column. Many separators also include a sour water separation section. In some processes, these valves may dump the liquid effluent from the HHPS and the CHPS to a low pressure separator (HLPS or CLPS) before flowing to the tower. Utilizing a low pressure separator allows additional removal of hydrogen and light hydrocarbons.

In this application, the refinery was using a high pressure valve with anti-cavitation trim as the CHPS letdown valve. After commissioning the valve, it was discovered that unusual process conditions were causing out-gassing and entrained catalysts to form in the flow stream. The result was a plugged valve cage and a reduction of 50% of expected flow under wide-open valve conditions.

Specially designed Fisher™ Cavitrol™ III trim eliminated plugging and improved flow in this separator letdown application.
SOLUTION
Refinery personnel turned to their local Emerson representative for help. Process conditions and sizing calculations were investigated and Emerson severe service engineers concluded that a Fisher HPT valve using a special 3-stage Cavitrol III trim with larger holes was necessary to eliminate both cavitation and plugging due to entrained catalysts in the letdown stream.

A specially designed anti-cavitation trim designed to handle entrained catalysts up to 0.1" was manufactured and delivered by Fisher on-time to meet the refinery’s shutdown schedule.

After the new trim was installed, the refinery attained desired flow rates and experienced no further plugging of the valve.

RESOURCES
Product Webpage: Fisher Cavitrol III Trim

© 2018 Fisher Controls International LLC. All rights reserved.
Fisher and Cavitrol are marks owned by one of the companies in the Emerson Automation Solutions business unit of Emerson Electric Co. Emerson and the Emerson logo are trademarks and service marks of Emerson Electric Co. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, nothing herein is to be construed as a warranty or guarantee, express or implied, regarding the products or services described herein or their use, performance, merchantability or fitness for a particular purpose. Individual results may vary. All sales are governed by our terms and conditions, which are available upon request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice. Responsibility for proper selection, use and maintenance of any product or service remains solely with the purchaser and end user.