

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.



Severe Service

SOLUTION

Refinery personnel turned to their Emerson Local Business Partner for help. Process conditions and sizing calculations were investigated and Emerson severe service engineers concluded that a Fisher® type 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.

RESULT

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

For more information on severe service solutions, visit www.fishersevereservice.com.

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