

Valve Plug Seizure and Corrosion Eliminated in Hydrogen Recycle Application using Fisher® Valve

RESULTS

- Plug seizure problem experienced in the original valve was eliminated using the Fisher® high-pressure valve.
- Proper material selection eliminated corrosion stress cracking issues in the valve trim.



APPLICATION

Recycle gas to hydrocracker reactor control valve.

CUSTOMER

Refinery in Singapore.

CHALLENGE

A hydrogen recycle valve, controlling hydrogen flow to the hydrocracker, was causing frequent disruption to the refinery's operation and impacting plant efficiency due to valve plug seizure and corrosion cracking problems.

The hydrocracking process produces lighter hydrocarbon products from heavy feedstocks through reaction with hydrogen in multiple heated catalyst beds. Controlling hydrogen feed into the catalyst bed directly impacts the cracking conversion process and the quality of the light hydrocarbon products. At the same time, piping and valves in this application experience polythionic acid and caustic stress corrosion cracking, and naphthenic acid corrosion.

The refinery approached Emerson Process Management Singapore for a control valve solution to address the problems.

The post-guided Fisher® EHZ valve design was selected to minimize the effect of solid particle buildup in the valve.



SOLUTION

Emerson Process Management engineers evaluated the problem and recommended a six-inch EHZ 347 SST body with proper trim material to address the corrosion cracking problem that was occurring under the severe operating conditions. The post-guided EHZ valve design was selected to minimize the effect of solid particle buildup in the valve. Sufficient actuation force to overcome excessive valve friction, which could result from potential particle deposits, was also incorporated in the design.

RESULT

Since start-up, the Fisher valve has operated smoothly without any of the valve plug seizure or corrosion stress cracking problems experienced by the original valve.

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

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