

# V500 Valves with Ceramic Trim Resist Erosion in Bitumen Furnace Application



## RESULTS

- Valve replacements improve process control and up-time.
- Valve replacements extend time between unit turnarounds from 3 to 12 months.



## APPLICATION

Diluted Bitumen Furnace Feed Valves

## CUSTOMER

Oil sand producer in Alberta, Canada

## CHALLENGE

Beneath the windswept soil of Alberta lies a thick, viscous mixture of bitumen, sand, clay, and water called oil sand. One of those components—bitumen—is a tar-like substance too thick and sticky to flow unless it is heated (melted). Extracting bitumen from the sand is a challenge for Canadian oil producers. Applying valves to control the extraction or separation process is also a challenge because bitumen can be very erosive.

One oil sand processor was experiencing excessive trim erosion problems with 24 Diluted Bitumen Furnace Charge valves. Diluted bitumen leaving the extraction plant enters a recovery unit where it is heated in a furnace to 110°C. Approximately 60 percent of the water and naphtha flashes off as vapor and leaves the drum through an overhead line. Bitumen, on the other hand, exits the drum through the bottom, into a second flash drum, where it is heated again—this time to ~300°C. (The second heating removes all the remaining water and naphtha.)

The temperature, pressure, and viscosity of this process was causing frequent, unplanned maintenance on the control valves. Every three to four months, they were shutting down and requiring trim replacements. The producer asked engineers at Spartan Controls (Emerson's local business partner) for a solution that would increase the valves' trim life, improve process up-time, and extend the life between turnarounds.

*The Design V500 eccentric plug rotary valve controls erosive and hard-to-handle fluids, providing either throttling or on-off operation. The valve's design features include streamlined flow passages, rugged metal trim components, and a patented, self-centering seat ring.*



Severe Service

For more information: [www.fishersevereservice.com](http://www.fishersevereservice.com)



## REFINING

### SOLUTION

Spartan engineers recommended Fisher® valves designed for highly-erosive applications --Design V500s with hardened trim. The specified valve design incorporates ceramic trim materials with Alloy 6 seat ledge inserts, carbide body overlays, Alloy 6 slotless seat ring retainers, and FIELDVUE® digital valve controllers. The end-user ordered two dozen.

### RESULT

These severe-service valves have improved process control and reduced the cost and frequency of maintenance. They are inspected during scheduled furnace outages, which occur every 12 to 14 months. The customer is savings money by avoiding trim replacements and downtime.

The plant achieves a 90% recovery rate and produces 240,000 barrels/day of oil. Bitumen is ultimately upgraded to light crude oils used to make fuels, petrochemicals, and lubricants.

© Fisher Controls International LLC 2008 All Rights Reserved.

Fisher and FIELDVUE are marks owned by one of the companies in the Emerson Process Management business division of Emerson Electric Co. The Emerson logo is a trademark and service mark 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 they are not to be construed as warranties or guarantees, expressed or implied, regarding the products or services described herein or their use or applicability. 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 such products at any time without notice. Fisher does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Fisher product remains solely with the purchaser.

#### **NORTH AMERICA**

**Emerson Process Management**  
Marshalltown, Iowa 50158 USA  
T 1 (641) 754-3011  
F 1 (641) 754-2830  
[www.EmersonProcess.com/Fisher](http://www.EmersonProcess.com/Fisher)

#### **LATIN AMERICA**

**Emerson Process Management**  
Sorocaba, Sao Paulo 18087 Brazil  
T +(55)(15)238-3788  
F +(55)(15)228-3300  
[www.EmersonProcess.com/Fisher](http://www.EmersonProcess.com/Fisher)

#### **EUROPE**

**Emerson Process Management**  
Cernay 68700 France  
T +(33) (0)3 89 37 64 00  
F +(33) (0)3 89 37 65 18  
[www.EmersonProcess.com/Fisher](http://www.EmersonProcess.com/Fisher)

#### **MIDDLE EAST & AFRICA**

**Emerson FZE**  
Dubai, United Arab Emirates  
T +971 4 883 5235  
F +971 4 883 5312  
[www.EmersonProcess.com/Fisher](http://www.EmersonProcess.com/Fisher)

#### **ASIA PACIFIC**

**Emerson Process Management**  
Singapore 128461 Singapore  
T +(65) 6777 8211  
F +(65) 6777 0947  
[www.EmersonProcess.com/Fisher](http://www.EmersonProcess.com/Fisher)



**Severe Service**

