

New Heavy Oil “Green” Demulsifier DM20184S Improves Dehydration and Reduces Furnace Fuel Usage

Challenge

A Gulf Coast refinery was experiencing poor dehydration when processing heavy blends of Maya and Merey. Water carryover was averaging 0.6% in the desalted crude due to low oil residence time, and high charge rates when compared desalter design specifications. The unit was constantly running on the “ragged edge”. Any upset, or change in crude slate would significantly increase the water carryover. So significant was the water carryover, that it could be tracked with fuel usage at the crude tower furnace.

Solution

The current desalter treatment program was replaced with Embreak* DM20184S at similar dosages. A long-term evaluation was scheduled to document unit performance. During program initiation, hourly averages were collected from the refinery data acquisition system to determine if the positive impacts could be seen in operational data over a shorter time frame.

Results

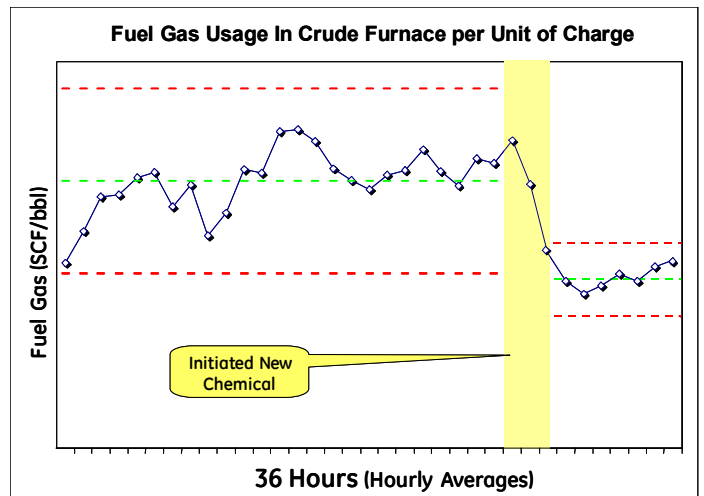
Shown at the right is a graph of the fuel usage per unit of charge for a 36-hour period around the time that the chemical treatment program was changed to Embreak DM20184S. This snapshot was confirmed by lab testing using BS&W as a measure of water carryover.

The period prior to chemical change averaged 0.6% water in the desalted crude. These levels were reduced to an average of 0.27% water carryover in the desalted crude after the chemical change was made.

Benefits

- Lower fuel usage at crude furnace
- Annual fuel savings of \$1.0MM per year
- Lower furnace emissions

Fuel Usage Calculations					
Data Input Form					
Calculation Method		Enter Specific Heat in boxes to the right or use default of 1.00 BTU/lb		Cp Water :	1.00 Btu/lb · °F
<input type="radio"/> Use Enthalpy				Cp Steam :	1.00 Btu/lb · °F
<input checked="" type="radio"/> Use Specific Heat					
Crude Charge Rate	105,000 BPD	Furnace Inlet	450 °F		
Desalter Temperature	273 °F	Furnace Outlet	698 °F		
Current Water Out Case 1	0.80 %	Furnace Efficiency	85 %		
Water Carryover Case 2	0.27 %	Fuel Cost	\$ 8.50 MMBTU		
Output Calculations					
	Pounds of water	Excess Heat Required	Hourly Energy Cost	Daily Energy Cost	Annual Energy Cost
Case 1 :	12,245 #/Hr	17.4 MMBTU/Hr	\$174.49 Hour	\$4,188 Day	\$1,528,556 Year
Case 2 :	4,133 #/Hr	5.9 MMBTU/Hr	\$58.89 Hour	\$1,413 Day	\$515,888 Year
Delta :	8,112 #/Hr	11.6 MMBTU/Hr	\$115.60 Hour	\$2,774 Day	\$1,012,668 Year



Find a contact near you by visiting gewater.com or e-mailing custhelp@ge.com.

Global Headquarters
Trevose, PA
+1-215-355-3300

Americas
Watertown, MA
+1-617-926-2500

Europe/Middle East/Africa
Heverlee, Belgium
+32-16-40-20-00

Asia/Pacific
Shanghai, China
+86 (0) 411-8366-6489