

Embreak* 2W2151 Reduces Crude Tower Corrosion by Enhancing the Removal of Corrosive Amine Salts from Crude Oil

Challenge

A North American refinery was experiencing severe corrosion of their atmospheric tower overhead condensers. In addition, the top sections of the tower were experiencing deposition and corrosion. A detailed investigation revealed the root cause of the problem to be amine salt fouling resulting in under deposit corrosion. The amine salts were capable of producing corrosion rates in excess of 100 mpy. The investigation also determined the source of the amine was from the raw crude – a possible residual by-product of H₂S scavenger treatment – and also tramp amines returning to the desalter from downstream treatment applications inside the refinery.

Solution

GE Water and Process Technologies' engineers, already involved in several areas of the refinery, became aware of the situation. A desalter treatment program was recommended utilizing Embreak 2W2151 as an adjunct chemistry in addition to the primary desalting chemical program.

Embreak 2W2151 functions to enhance the transfer of amines from the crude oil to the desalter wash water where they can be removed with the effluent brine. GE recommended the injection of the Embreak 2W2151 into the raw crude charge pumps upstream of the cold train exchangers.

Results

Figure 1 shows that after initiating Embreak 2W2151, overhead corrosion immediately was controlled. Samples of the desalted crude confirmed a reduction in the amine concentration leaving the desalter. GE engineers optimized the program over the next few weeks, and extended the time between overhead exchanger failures 5 fold – and still going!

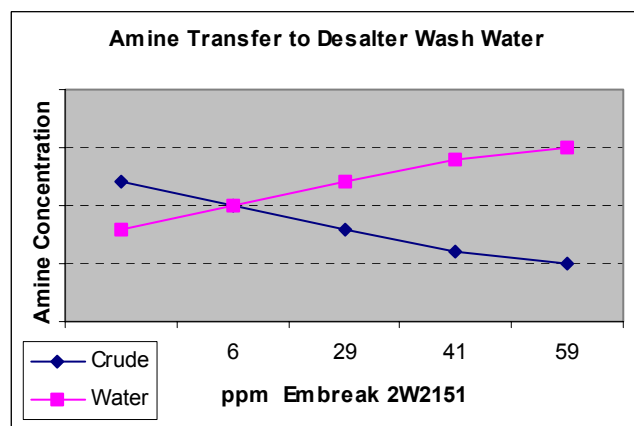


Figure 1: Embreak 2W2151 Promotes Amine Transfer to Desalter Wash Water



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

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