AFPM Q&A and Technology Forum 2014

Gasoline Processes

Denver, Colorado, USA 6 October 2014

ISBN: 978-1-5108-0092-2

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2014) by American Fuel & Petrochemical Manufacturers (AFPM) All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact American Fuel & Petrochemical Manufacturers (AFPM) at the address below.

American Fuel & Petrochemical Manufacturers (AFPM) 1667 K Street, NW, Suite 700 Washington DC 20006

Phone: (202) 457-0480 Fax: (202) 457-1486

info@afpm.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2634 Email: curran@proceedings.com Web: www.proceedings.com

TABLE OF CONTENTS

GASOLINE PROCESSES	
Introduction	
Safety	
Question 1: What independent protection layers (IPLs) are you using in cyclic reformers during regeneration to prevent hydrocarbon and oxygen mixing through isolation valves? What IPLs are you employing to prevent improper valve switching?	
Question 1: Answer Book Response10	
Question 2: What are the Best Practices for backflow prevention on naphtha processing units, especially naphtha hydrotreating units?	
Question 2: Answer Book Responses 12	
Question 3: What considerations do you make in determining the need for a safety instrumented system (SIS) in an isomerization unit? What safety integrity level (SIL) do you use for temperature excursions, liquids fed to the regeneration superheater, or other significant safety events? What typical unit design features do you implement to mitigate these safety events?	
Question 3: Answer Book Responses	
Question 4: What are the recent safety improvements in the procedures or equipment for sampling sulfuric acid?	
Question 4: Answer Book Response	
Question 5: What are your experiences with alternatives to gauge glasses in alkylation units? Are there any specific services where you prefer glass gauges?	
Question 5: Answer Book Responses	
Question 6: What are the Best Practices for mitigating and monitoring corrosion under insulation (CUI) in cold services such as alkylation/isomerization units?	
Question 6: Answer Book Response	
Theme	
Question 7: Comment on your experience with the value generation potential of each of the refinery gasoline processing units: reforming, naphtha hydrotreating, isomerization, alkylation, and FCC-gasoline post-treating. What interplay exists between the units that can be leveraged?	
Question 7: Answer Book Response	
Question 8: What are your typical run-lengths between maintenance turnarounds for gasoline units? What evaluations do you make to ensure that a prolonged turnaround interval is the most profitable choice?	
Question 8: Answer Book Responses	

Question 9: With a significant portion of the current workforce eligible for retirement, what are you doing to preserve and pass down the knowledge to the new employees entering the industry?
Question 9: Answer Book Responses
Question 10: How do you assign process engineers responsibilities? Are they divided by technology, operating complex, projects, or other categories?
Question 10: Answer Book Response
Alkylation
Question 11: What is your experience with advanced control of sulfuric acid flow and strength?
Question 11: Answer Book Response
Question 12: The industry has recently been discussing alternative metallurgy specifications for HF alkylation units. What is your experience on this issue?
Question 12: Answer Book Responses
Question 13: What steps are you taking to ensure that the olefin content of the normal butane stream from the alkylation unit being fed to the isomerization unit is being controlled within specification?
Question 13: Answer Book Responses
Question 14: What are the advantages and challenges associated with alkylating amylenes?
Question 14: Answer Book Responses
Aromatic Extraction Units
Question 15: What methods are you employing to improve the performance and life of aromatic extraction unit clay treaters?
Question 15: Answer Book Response
Blending6
Question 16: In recent years, the gasoline blend pool has shifted due to increased ethanol blending, higher volumes of high RVP material from processing lighter crudes, and other specifications changes. How are you taking advantage of these changes to optimize the gasoline processing units?
Question 16: Answer Book Response
Question 17: How does alkylate contribute to gasoline blend pool sulfur? With pending Tier 3 regulations, what steps are you taking to understand and control this contribution? 63
Question 17: Answer Book Responses
Question 18: Do you have experience with gasoline corrosivity due to the breakdown of organic fluorides from alkylate? Is the issue mitigated by increasing the residence time in tankage prior to blending?
Question 18: Answer Book Responses

Chloride Beds	8
Question 19: What are the common locations and adsorbent types for chloride treating beds in gasoline process units? What practices are you using to best manage this asset?	
Question 19: Answer Book Responses 6	8
Project Management	1
Question 20: What are your current typical lead times for reforming, isomerization, naphtha, and FCC gasoline post-treating catalysts? What is your outlook for these lead times?	1
Question 20: Answer Book Response	2
Naphtha Treating	
Question 21: Have you had experience with buildup on pump seals in stabilizer or debutanizer reflux pumps that process material that potentially contains chloride salts? In what circumstances do you use salt dispersants and could they mitigate or aggravate this phenomenon?	
Question 21: Answer Book Response	
Reforming	
Question 22: What is your method to clean a "Texas tower" type of combined feed/effluent exchanger? Comment on the differences between cleaning in-place, extraction and reinsertion, and online cleaning	t
Question 22: Answer Book Response	5
Question 23: What are the sources of platinum loss in precious metals catalysts? What role can your refinery engineers play in minimizing this loss?	
Question 23: Answer Book Responses	7
Question 24: What is the maximum oxygen content you allow for the platinum redistribution step in a fixed-bed reformer? What sets the maximum oxygen concentration?	
Question 24: Answer Book Response	
Question 25: What factors contribute to your decision to place the regeneration section of a CCR in standby mode when the unit is operating in a low-coke mode? Discuss the advantages and disadvantages of the different standby modes (black-catalyst circulation, he shutdown, cold shutdown, etc.)	ı Dt
Question 25: Answer Book Responses	2
Caustic Treating	3
Question 26: What are options for disposition of the caustic regeneration outgas stream associated with an LPG or gasoline caustic treater? What measures have you successfully used to prevent fouling, pluggage, and corrosion in this line?	3
Question 26: Answer Book Responses	4
Shale Crudes	5

Question 27: What impacts are you seeing in naphtha processing units from	n contaminants
suspected to come from shale crudes (e.g., tramp amines, chlorides, and for	uling)? What are
you doing to mitigate these impacts?	
Question 27: Answer Book Responses	
Closing Remarks	