

AFPM 2018 Operations & Process Technology Summit

GASOLINE PROCESSES	
Alkylation	
1	What are the benefits of alumina treating in sulfuric acid alkylation and HF alkylation? Has this technology been proven commercially?
2	What metallurgy works well and does not work well for use in alkylation units? In what applications does the alternate metallurgy perform better/worse?
3	What type of release mitigation safety systems do you use for sulfuric acid and HF alkylation units?
Isomerization	
4	What are your requirements for a unit depressurization valve in isom unit using a chlorided alumina catalyst based? Do you require the depressurization valve to be operable from the console and/or emergency shutdown device (ESD) panel?
Catalytic Reforming	
5	What is your experience with CCR catalyst on-the-fly replacement compared to changing at turnaround?
Isomerization	
6	What are the catalyst or design considerations that you employ to repurpose isom units for other services, or to repurpose another type of unit into an isom unit?
Catalytic Reforming	
7	How do you monitor and protect the heater tubes from overheating in high temperature services such as catalytic reformer heaters? How is the tube wall temperature monitored?
8	Fixed bed reforming and CCR reforming recycle gas compressor washing to remove salt deposits. What is the frequency? What is the typical deposit composition? What is used to wash the compressor?
Cat-Poly Alkylation	
9	Are you adding unusual feeds to catalytic condensation or oligomerization units?
Catalytic Reforming	
10	What are the problems with low coke operation in CCR reforming and how is it managed?

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HYDROPROCESSING	
Hydroprocessing	
11	What constitutes adequate quench reserve when you process cracked feedstocks in hydrotreating units? In hydrocracking units? What if a mixture of both gas and liquid quench is used?
12	Discuss impacts of hydrotreating operations required to meet Tier III regulations. Highlight the benefits and concerns of pretreat versus post treat operations including; impacts on cycle length, FCC yields, octane from post treating options, and gasoline blending.
13	What factors do you consider when co-processing jet fuel in a distillate hydrotreater versus processing the jet separately (including feedstock and unit consideration)?
14	In your experience, what operational factors contribute most to utility costs in hydrotreating units?
15	As hydrotreating catalyst development continues with the emphasis on activity and saturation, how has this changed optimization strategies for the entire hydrocracker?
16	How are you performing in-situ sulfiding for hydroprocessing catalysts protecting your waste water units from water soluble organic chemicals and their fuel gas system from non-decomposed mercaptans?
Poll Question	
17	Poll: Where do you route your disulfide oil from caustic treatment? If disulfide oil, that may contain caustic or other contaminants, is routed to a hydrotreater, what are preferred methods for treating it to avoid fouling exchangers, furnaces and catalyst?
18	Vacuum Gas Oil (VGO) Hydrotreaters are being pushed to process heavier feeds while maximizing Fluidized Catalytic Cracking Unit (FCCU) performance while meeting Tier III gasoline specifications. How are you balancing increased severity and cycle length? What considerations do you give to feed quality and upstream unit operations?
19	What considerations do you use for designing a hydrocracking reactor? What criteria do you use to determine number of beds, diameter, and beds' lengths?
20	<ul style="list-style-type: none"> • What considerations do you give to co-processing or block mode operations with renewables in an existing hydroprocessing unit?

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<p>21</p>	<p>What are your important considerations for water washing with respect to:</p> <ol style="list-style-type: none"> 1) Intermittent injection <ol style="list-style-type: none"> a. Process temperature of injection b. Duration of injection c. Frequency - triggers to begin d. How frequently before making it continuously. 2) Water Quality: <ol style="list-style-type: none"> a. pH range b. Oxygen c. Total Suspended solids d. Total dissolved solids e. Recirculation vs. make -up f. Other
<p>22</p>	<p>Can you elaborate on the benefits, drawbacks, and trade-offs of liquid phase vs. gas phase catalyst activation in a hydrocracking unit? Is there an activity or yield difference of liquid phase or gas phase activation of 2nd stage catalyst in a 2-stage hydrocracking unit? Consider both catalyst formulation and operational factors (MPT, excursion risk, etc.).</p>
<p>23</p>	<p>What are the sources of silicon that can impact a hydrotreater? How does silicon affect hydrotreater operations? What are your best practices for managing / mitigating silicon poisoning?</p>
<p>Poll Question</p>	
<p>24</p>	<p>Poll: How many refiners import and/or purchase gasoil feed for a hydroprocessing unit? What are common issues associated with imported or purchased gasoil feeds? Are there specific characteristics to target and / or avoid? Are there best practices for minimizing negative impacts to unit operations / reliability? How are supply limitations managed?</p>

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CRUDE/VACUUM DISTILLATION & COKING	
Safety	
25	Coke drum integrity can be compromised due to the use of feed side entry devices. What is your experience with drum roundness upon inspection?
Reliability	
26	How do you monitor furnace convection section fouling? What mitigation steps do you implement?
27	What is your method for chemical treatment to reduce furnace coking?
Crude Quality	
28	What are your best practices around initial crude oil qualifications? Upon receipt, what are your best practices for continuous inspection/receiving crude oil at a plant?
29	How are crudes with high filterable solids crude managed to mitigate their impact on the operation? What levels of solids do you see and how are they measured?
Desalting	
30	When injecting wash water upstream of the cold train in a 2-stage system, do you use fresh wash water or brine water from the 2nd stage desalter?
31	How does emulsion breaker performance compare when injected in the crude or wash water? What is your method to inject emulsion breaker for 2 stage desalters?
32	Have you developed processes to successfully extract the emulsion layer from the desalter so the emulsion can be treated separately? Please describe your chemical treatment programs and equipment that have been implemented successfully to treat this extracted emulsion?
Best Practices	
33	When processing cracked stocks in a crude unit, what potential issues do you expect? What changes in operations or treatment programs can you mitigate these issues?
Corrosion Control	
34	What is considered your practical limit on TAN (Total Acid Number) of blended crude diet before monitoring, treatment, or metallurgy upgrades should be considered to avoid naphthenic acid corrosion issues?

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Vacuum Tower	
35	For deep cut vacuum tower designs what is your experience with heater coking and typical run lengths? Are you using on-line cleaning (similar to coker heater spalling)?
Coker	
36	How do you manage the potential negative impacts of H ₂ S Scavengers in imported Coker feed?
37	Do you extend the time between de-coking the furnace by cutting coil outlet temperature or cutting furnace charge? How often are spillings done in Coker furnaces? What is the temperature recovery after spalling?
38	How does coke morphology vary with changes in feed quality? What feed tests do you require to quantify the impact on coke quality?
39	What operating conditions increase the generation of coke fines? What reliability issues do you associate with increased fines production?
Answer Book Only	
Crudes	
40	What is your experience, design and opportunities for on-line crude blending coupled with Near Infra-Red?
Desalting	
41	What effective practices do you deploy to improve the removal of inorganic contaminants in crude such as Iron and Calcium? What has been the industry success rate with these practices?
42	Some of the lighter waxy crudes have higher paraffin melting points making it difficult to treat and remove solids, salts in the desalter. What practices do you deploy to manage these higher melting point waxy crudes?
Plant Utilities	
43	What are your economic and operational reliability implications of increasing cycles of concentration in your cooling tower?

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	FCC
Safety	
44	Describe your procedures for placing and operating the FCC in hot standby/safe park mode. What safety concerns do you consider and what safeguards should be in place?
45	What are the safe and reliable options for rodding out plugged bleeders such as hydraulic ram pumps, packing gland / drill assemblies or tangential bleeders? How are these options used in a best practice for ensuring piping is hydrocarbon free and ready for maintenance?
Operations	
46	What is your strategy to minimize Main fractionator bottoms (DCO/Slurry) versus LCO production apart from feed quality/catalyst selection?
47	Are there any operational parameters that can be manipulated to improve the operation of the slurry circuit and minimize fouling? Can you outline the slurry exchanger circuit recommended design practices to minimize fouling, plugging and erosion?
Catalyst	
48	What is the range of activity for FCC catalysts in the FCCUs? When is catalyst activity considered too low? When do you decide to reformulate versus changes in operating conditions in order to increase unit conversion?
Operations	
49	As the demand for higher octane gasoline components increases and lobbying for a 95 RON gasoline standard continues, how are you adjusting your operations to meet the market demand? What FCC specific changes do you make to produce higher octane gasoline components?
50	Butylene demand and prices in relation to other refined products reached a record level in 2017. What caused it and what can we do in the FCC to produce more butylenes?
Reliability	
51	For Advanced (closed) Riser Termination Systems, where does coke form inside the reactor vessel? What is the typical amount accumulated during a run?

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Environmental	
52	What are your best practices for wet flue gas scrubber water supply and system monitoring (sampling frequency, instrumentation verification, etc.)? How do you handle the effluent water and any new emerging trends?
Reliability	
53	In the Third Stage Separator (TSS), what is the expected life of swirl tubes or cyclones assuming good performing regenerator cyclones? Of these two types, which handle upsets/variable particulate loadings better?
Environmental	
54	What are your best practices for soot blowing or scouring waste heat boiler tubes that ensure minimal impact to process variables, environmental limits are met, and spurious trips of safety instrumented functions on the ESP are avoided?
Operations	
55	With new challenges presented by the Refinery Sector and Maintenance Venting Rules oil circuits are taking longer to prepare for maintenance; what successes and challenges have you had in staging shutdown operations to allow for safe entry to the FCC Reactor / Regenerator Section prior to clearing other sections of the unit?
56	Excluding nickel passivation. How does antimony use in the reactor riser impact the FCC operations and equipment?
Operations	
57	How are you optimizing the use of Wet Gas Scrubbers caustic use and SO _x additives?

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