

AFPM 2014 Q&A and Technology Forum

FCC	
Reliability	
80	What is the reliability experience of multiloader and continuous additive/catalyst loaders? What maintenance is required?
81	How many refiners have installed reactor vapor line isolation systems? What has been the experience with their reliability since they are used infrequently? Are there any best practices to share in regards to installation and operability?
82	Units operating with low main fractionator bottoms yield encounter a number of problems including coking and fouling in the slurry system and increased catalyst loading in the circulating slurry. What problems have you encountered and what practices have you done to manage these problems?
83	As the time between FCC unit turnaround events are continuously being extended, what areas have been identified as having a high likelihood of failure due to erosion and what preventive measures can be taken to avoid such failures?
84	Discuss considerations for improvement of power recovery train reliability.
Sulfur	
85	What FCC gasoline sulfur reduction technologies are being used to control sulfur during cat feed hydrotreater or gasoline product hydrotreater outages? Will these products be a viable option for Tier III gasoline sulfur specs?
Profitability	
86	What are the most profitable dispositions for slurry oil and what issues must be considered for each option?
87	The increase in light tight oil as a percentage of North American crude slate has resulted in lower FCC feed production, and consequently a reduced FCC feed rate at several refineries. To address these issues, what strategies have been implemented operationally and catalytically? Are refiners looking at sending new streams to the FCC or increasing the proportion of existing streams such as resid? If so, what steps do refiners take to evaluate these potential new feedstocks and what steps do refineries take to minimize uncertainty and reduce risk?
88	During a turnaround, how long does it take from oil out to vessel entry? How do refineries minimize this time? Please specify the unit capacity.
89	What are the best practices in the industry for profitable LCO maximization? Please elaborate on (a) FCC catalyst/additive technologies, (b) Cetane maximization, (c) process design and operations strategies and (d) any impact on naphtha octane and how to mitigate it?
90	What is the most profitable way to schedule the FCC and associated catalytic naphtha hydrotreater turnarounds? Are there benefits in synchronizing the shutdown of these units?
Catalyst	
91	What are the characteristics of FCC catalyst to minimize particulate emissions at the stack?

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92	What is the impact of high iron commonly seen in some tight oil feeds? What level of Fe on the equilibrium catalyst causes problems, and what are the typical symptoms? What changes to FCC units hardware, catalyst and operation have been implemented to manage Fe poisoning? What is the impact of other uncommon contaminants such as K, Ca and Mg?
Safety	
93	What are the process safety concerns in withdrawing equilibrium catalyst from the FCC regenerator? How do you manage catalyst transfer piping and spent catalyst hopper temperatures? What materials of construction are appropriate (or inappropriate) for these services?
94	To reduce the risk of igniting the gas mixture in the electrostatic precipitator (ESP), we are considering safety interlocks for de-energizing the ESP when carbon monoxide content gets too high. Please share your experience regarding (a) setting an appropriate trip point, (b) other interlocks to consider, and (c) advantages over operating procedures.
95	What are the key wash nozzle design criteria for an effective FCC main column overhead water wash system? Please discuss the effectiveness of using hollow-cone versus full-cone and the spray angle direction - upflow versus co-current flow?
Process	
96	What are the different methods to increase C3 recovery? What are the typical C3 recovery improvements for these various methods?
97	What is the optimal pH for wet gas scrubber water and how is this maintained? What are the implications of too high or too low pH?
98	What are the options for removing catalyst fines from the main fractionator bottoms product? Which, if any, can reduce the ash content to 50 ppm or less?
99	We are struggling with high afterburn in the regenerator. What hardware changes (spent catalyst distributor, air distributor, etc.) have been implemented to improve afterburn? What commercial experience exists using computational fluid dynamics (CFD) to resolve such issues?
100	How do Nitrogen compounds distribute in the product streams of FCC Units? What effect does riser severity and feed properties have on this distribution?
101	What factors influence butylene selectivity in the FCC LPG? What is the relative role of feedstocks, catalysts, additives, and operating conditions?
102	What benefits have refiners realized by installing packing in their FCC strippers? How did this equipment impact catalyst circulation and unit pressure balance?
103	We increased reactor severity and noticed an increase in oxygenates in LPG and sour water. Can you explain the mechanism by which phenols and other oxygenates form in the riser?
104	How are radioactive surveys and/or gamma scans utilized to optimize FCC operation?
105	Thermal cracking within the riser negatively impacts product properties, unit capacity and overall performance. Which process parameters should be monitored to estimate the extent of thermal cracking? What are the typical ranges for these parameters and what shifts would trigger concern?

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