FCC UNIT TROUBLESHOOTING

Fluid catalytic cracking is an extremely complex process and, as a result, unit operators can encounter numerous costly and difficult problems. Refining Process Services has assembled a team of experts that has the experience to address virtually any FCC-related problem. This program will give participants an opportunity to draw on this well of experience, and to receive advice, guidance and assistance from some of the best sources in the refining industry. In addition, participants will be encouraged to relate their operating experiences to the group, facilitating the sharing of innovative solutions to difficult situations. Thus, the program provides a forum to exchange information related to troubleshooting operational problems on the fluid catalytic cracking unit.

The panel of experts for the program will include Mr. CJ Farley, Vice President of Refining Consulting with Astron International, Mr. Warren Letzsch, an independent consultant, and Mr. Greg Savage of Nalco Champion, An Ecolab Company.

The program will consist of prepared presentations from panel members on various topics followed by discussion among the group. Ample time has been allotted for additional questions posed by those in attendance.

This program has been developed for refinery engineering, technical service and operations personnel, as well as engineers and technical service people from design, construction, service and catalyst companies.

PROGRAM SESSIONS

Day 1
1. Troubleshooting Problems With Catalyst Regeneration
   - Regenerator Fluidization & Combustion
   - Inefficient Spent Catalyst Distribution
   - Poor Air Distribution / Damaged Grids
   - Reducing Afterburn
   - Troubleshooting Catalyst Losses

2. Troubleshooting FCC Refractory Problems
   - Refractory Dry-out

3. Troubleshooting FCC Cyclone Problems
   - Key Cyclone Operating Parameters
   - Impact of Improper Design and High Velocity
   - Coke Deposition in Cyclones
   - Problems with Dipleg Flapper / Trickle Valves
4. **Avoiding Key FCC Rotating Equipment Problems**
   - Air Blower, Pumps, Compressors, Turbo-Expander

**Day 2**

5. **Troubleshooting Catalyst Flow Problems**
   - FCCU Pressure Balance
   - Avoiding Slide / Plug Valve Problems
   - Proper Standpipe Aeration / Avoiding Deaeration
   - Diagnosing Causes of Catalyst Attrition / Losses
   - Tools for Diagnosing Catalyst Flow Problems

6. **Troubleshooting FCC Reaction Section Problems**
   - Diagnosing Problems With FCC Feed Injectors
   - Optimizing Feed Injector Performance
   - Riser Catalyst Flow and Distribution Issues
   - Coke Build-up in Reactor Cyclones and Overhead

7. **Troubleshooting Problems in Catalyst Stripping**
   - Evaluating Catalyst Stripper Performance
   - Diagnosis of Inefficient Catalyst / Steam Mixing

8. **Troubleshooting Recovery Section Problems**
   - Reducing Impact of Fouling and Corrosion
   - Solving Problems With Main Column Bottoms Circuit

**PANEL MEMBERS**

**CJ Farley** is Vice President of Refining Consulting with Astron International, the parent company of Refining Online. He has over 20 years experience in the area of fluid catalytic cracking. CJ began his career at Marathon Oil, working extensively on FCC debottlenecking and optimization with an emphasis on reliable operation. He later worked at MW Kellogg in FCC design and technical services, and then joined Engelhard where he worked in sales, technical services and marketing. CJ has been leading FCC consulting at Astron International for the last 4 years. He holds a B.S. degree in Chemical Engineering from Purdue University.

**Warren Letzsch** is an independent consultant with an extensive FCC background. His prior employment was with Stone & Webster, Inc., a Shaw Group Company, where he was responsible for FCC/DCC technology and business development, and with Refining Process Services where he was involved in licensing of the MagnaCat® Process. He was also Director of Worldwide Sales and Marketing for UOP/Katalistiks. He has had experience with Total Petroleum as Manager of Refining Technology and with Davison Chemical and Shell Chemical in research, marketing, and technical support of petroleum catalysts. Warren has authored numerous articles on refining technology and holds seven patents in the FCC area. He holds B.S. and M.S. degrees in Chemical Engineering from the Illinois Institute of Technology.
Greg Savage is an Industrial Development Manager with Nalco Champion, An Ecolab Company Downstream Refining Group. He has over 10 years of experience in the refining industry with responsibility for solving technical problems, product development, and providing technical support to refineries in the areas of corrosion, fouling, catalyst metal passivation, desalting and personnel training. Greg holds a B.S. in Chemical Engineering from the University of Missouri Rolla and a M.B.A. from the University of Houston.