Title: Delayed Coking Process Technology

Potential PDH: 24 **Code:** BTT044

Description:

In order to increase the value of refinery products derived from the bottom of the crude oil barrel, many refiners are introducing delayed coking into their processing configuration. This program has been developed by Refining Process Services to provide an in-depth discussion of the process fundamentals and mechanical systems associated with the operation of a delayed coking unit. The information presented ranges from a description of heavy oil chemistry through a discussion of the current trends driving delayed coker revamps and re-configuration of refinery heavy oil processing schemes. The program will be presented by Mr. Jerome DeHey of I Cubed Energy Consulting.

Outline:

Process Background
- History
- Typical Flow Plan Yields
- Comparison with Fluid Coking

Heavy Oil Chemistry
- Composition of Heavy Oils
- Thermal Cracking Reactions
- Compatibility

Coker Feed Systems
- Crude/Coker Interactions
- Tankage Considerations
- Non-Conventional Feeds
- Coker Preheat Options

Coker Preheat Furnace
- Past Design / Current Design Strategies
- Effect of Geometry on Run Length
- Effect of Feed Properties on Run Length
- Effect of Contaminants on Run Length
- Effect of Operating Conditions on Run Length
- Decoking Options

Coker Drum Operations
- Mechanical Details
- Dynamic Coking Model
- Foam Formation / Use of Anti-Foam
- Overhead Line Quenching Options
- Pressure Relief Systems

Coker Process Variable Effect
- Key Operating Variables
- Key Feedstock Parameters
- Effect on Product Yields
- Effect on Product Qualities
- Upgrading/Processing Options for Coker Products

Petroleum Coke Quality Issues
- Types of Petroleum Coke
- Dispositions for Petroleum Coke
- Current Market Trends
- Feedstock Effect on Coke Quality
- Operating Variable Effects
- Coke Calcining Operations

Decoking Operations
- Sequence of Events
- Blowdown Systems
- Automatic Deheading Devices
- Details of Coke Cutting System
- Options for Green Coke Handling
- Coke Dewatering/Cutting Water Systems
- Heatup Condensate Processing Options

Fractionator And Gas Plant Operations
- Gas Oil Wash Zone Options
- Heat Removal Options
- Naphtha End Point Control During Switches
- Lean Oil/Sponge Oil Options

Commercial Considerations For Delayed Coking
- Troubleshooting of Delayed Cokers
- Optimization of Delayed Coking Systems
- Debottlenecking Options
- Unit Monitoring and Test Runs
- Process Economics

Trends In Delayed Coking
- Cogeneration
- Low Pressure/Ultra-Low Recycle Coking
- Strategies for Improved Furnace Run Length
- Strategies for Shortening Decoking Cycle
- Refinery Sludge and Slop Oil Disposition

Instructor:

Jerome K. DeHey is a principal in I Cubed Energy Consulting, and the founder of JD Engineering and Associates. He is involved in consulting in all areas of heavy oil and residua processing, primarily delayed and fluid coking. Prior to joining I Cubed Energy Consulting, Jerry was employed with Solomon Associates, KBC Advanced Technologies, and Exxon Research and Engineering, working in the areas of coking, hydroconversion, and hydrotreating process development and technical support. He holds a M.S. degree in Chemical Engineering from the University of Texas, and is a licensed professional engineer.