Question 72: With advance controls on the FCCU and gas plants, what are refiners doing to train new operators and keep their experienced operators sharp and ready to handle FCCU upsets and emergencies? Are refiners using simulators to help with the training and retraining?

Emerson Domingo (Sunoco)

Sunoco employs Dynamic Matrix Control (DMC) on all the FCC gas plants and DMC on reactor and regenerator systems. One FCC has a complete process training simulator, and we are in the process of installing simulators on all of our FCC's.

For the FCC with the simulator, the board operators are typically given 6 total weeks of job duty training which includes classroom training, process simulator training, and one-on-one specialty board training with an on-shift seasoned board operator. Our process simulators have about 20 training scenarios that range from a simple scenario, like responding to a high tower level: to a complex scenario, like responding to a wet gas compressor shutdown. Operators are also trained on start-ups and shutdowns using the simulator. For DMC, board operators are initially trained with the DMC off so they can get familiar with manual unit operation and then they are introduced to operating with the DMC on.

To keep the operators fresh, our target is to have board operators spend a day on the process simulator off-shift on a quarterly basis. The simulator would be updated with some newly configured scenarios based on lessons learned from past FCC upset events and how to better respond to them.

For DMC, there are usually periods of times during normal operation that the DMC is turned off due to operational issues. This provides the operators with some "non-scheduled" training. If it has been a long period of time without operational issues, operators would then be asked to run the board with DMC off for a shift to re-familiarize themselves with manual unit operation.

In addition to above, we also conduct routine "What-If" drills. This is especially done when high risk maintenance activities are about to occur on the unit or the refinery. During a "What-If" drill, the applicable emergency procedures that may be needed are reviewed with all the unit operators.

Compressors

Reactor Vessel

Regenerator

Safety

Start-up

Year

2010

Submitter

Licensor

Operator