Question 66: How does recycle affect time between coker furnace decokes/spalling?

Gary Gianzon (Marathon Petroleum Company)

Natural recycle helps to keep asphaltenes in solution; therefore, higher recycle tends to decrease furnace fouling assuming a constant furnace feedrate. Higher natural recycle reduces liquid volume yield and increases furnace firing which can impact unit economics. A recycle reduction test run conducted at one of MPC's refineries shows increased heater fouling by 1 F/day when decreasing recycle from 20 to 10 percent. The impact of recycle on heater run length is feed/heater specific but increasing recycle should result in increasing heater run length at a constant furnace charge rate.

Jeff Lewellen (HollyFrontier)

Our experience indicates similar results to the primary answer. If internal recycle impacts unit charge rate, the optimal value becomes an economic decision weighing total throughput verses decoking frequency.

Eberhard Lucke (Commonwealth E&C)

Assuming all other parameters (coil outlet temperature, velocity steam rates, heater charge rate etc.) stay constant, increasing the recycle rate will add more heavy gasoil material to the feed stream. This increases vaporization in the tubes and helps lowering fouling rates which should allow to run longer between spalling/decoking. Reducing the recycle rate will have the opposite effect of reducing the vaporization rate and increasing the fouling rate in the heater.

Tags

Coker

Fouling

Year
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