
Question 75: What are the potential problems or negative impacts of utilizing FCC slurry/decant oil as coke drum OH (overhead) line quench oil?

SRIVATSAN (Foster Wheeler USA Corporation)

Again, FCC slurry/decant oil has a similar distillation range to HCGO but a higher endpoint. Although it could possibly be used as just overhead quench, we caution that if the slurry/decant oil is not be filtered properly, it will contain catalyst fines that could accelerate the coke deposition by settling in equipment or piping. We normally recommend using the blowdown tower bottoms as the primary source for quenching the overhead vapor line. The secondary means of quenching is provided using HCGO. LCGO and other gas oils, including slops, can also be used as desired.

PRIBNOW (CITGO Petroleum Corporation)

We do not have any experience using slurry oil as coke drum overhead quench. We utilize slop oil, as Srini mentioned, as a way to vaporize and reprocess that material. We charged slurry oil to our coker when excess capacity was available. However, we found that it degraded the heavy coker gas oil quality back to the FCC. The FCC conversion drops, and catalyst becomes dark; so, we tend not to do that much anymore.

SRINI SRIVATSAN (Foster Wheeler USA Corporation)

The purpose of the coke drum overhead quench oil is to reduce coking reaction by lowering vapor temperature and mitigating coke formation. A portion of the overhead quench is also condensed and forms recycle. Foster Wheeler recommends using the blowdown tower bottoms liquid as the primary means to quench the overhead vapor line, the secondary being the use of HCGO. LCGO and other gas oils including slops can also be used as desired. FCC slurry/decant oil has a similar distillation range as HCGO with a higher endpoint. Although it could possibly be used as an overhead quench, we caution that if the slurry/decant oil is not filtered properly, it may contain catalyst fines that could accelerate coke deposition by settling in equipment or piping.

EBERHARD LUCKE (CH2M Hill)

Although I never worked in a unit that used FCC slurry/decant oil as quench oil, we used it as coker feed; so, my concerns are based on that experience. FCC slurry/decant oil carries a significant amount of cat fines that are difficult to remove from the stream. So I would assume that with the injection of the

slurry/decant oil, these cat fines will be introduced into the coke drum overhead system. The fines will end up either on the inside of the vapor line, in the bottom of the fractionator, or carried even further through the system and will act as seeds for coke buildup and cause accelerated fouling/coking of equipment. The cat fines will also most likely cause erosion in the nozzle that is used for quench oil injection. Additionally, quench oil distribution will be poor (but can be fixed by the selection of the correct material).

ROBERTSON (AFPM)

Before we get to the last question, I want to remind you that the Crude P&P is this afternoon at 2:00. During that time, a lot of these issues we have covered will be discussed in more depth. Tomorrow, the Light Tight Oil and FCC P&Ps are run concurrently. If you have any other issues you want to discuss that were not raised in this forum, please attend those P&Ps.

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