



HP NICKTREAT

A Non-Metallic Nickel Passivator Additive for FCCUs

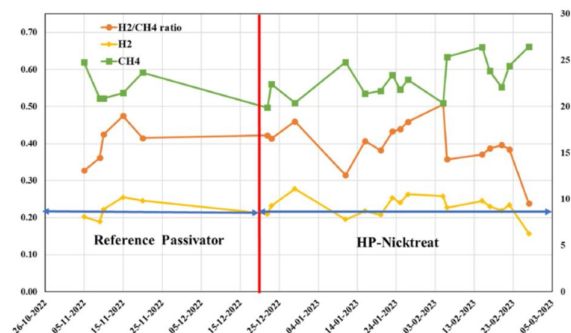
Fluid catalytic cracking is one of the most important conversion process used in petroleum refineries. FCCU feed (Vacuum Gas Oil) have metals such as Nickel, Vanadium, Iron etc; which slowly get deposited on FCC catalysts. Cracking residue feeds in FCC units increase the level of contaminant Ni and V metals on cracking catalysts. Residue feeds contain higher content of nickel and vanadium. This results in decreasing catalytic activity and increasing contaminant coke and hydrogen yields during catalytic cracking. This will catalyze the undesirable dehydrogenation reaction in the reactor. This dehydrogenation reaction will increase in gas production in the form of higher hydrogen and coke yield



FCC Unit

In this regard, HPCRDC has developed Ni Passivator (HP NickTreat) to minimize H_2/CH_4 ratio in dry gas in FCC unit. The purpose of adding Nickel passivator in the FCC unit is to minimize the yield of hydrogen and dry gas and thus avoid its detrimental effect on the product yields. This is typically used when H_2/CH_4 ratio in dry gas is more than 1.

This novel inhouse formulation Ni passivator (HP NickTreat) is non-metallic in nature. The performance evaluation was carried out using Advanced Cracking Evaluation (ACE)-MAT unit. After lab scale development 2 MT of HP Nicktreat was sent to HPCL VR for field trials. Key parameters of performance are tabulated below



- H_2/CH_4 ratio is maintained at par with reference passivator i.e. less than 0.5.
- H_2 varies in the average range of 9 to 10 vol% in dry gas
- CH_4 varies in the average range of 20 to 26 vol% in dry gas

Key parameters such as H_2/CH_4 , H_2 & CH_4 were on par with the commercial and well within the range. HP Nicktreat was also on par with metal based reference additive in other parameters such as Wet Gas Compressor (WGC) load and regenerator temperature.

Field trials lasted at VR for 2.5 months without any pumping issues. The cost of the additive is 50% of the benchmark additive.

After field trials in one unit at HPCL VR the additive is being scaled up for other units of HPCL VR and MR.