

Ethylene Oil Quench Tower

Fouling Control Prevents Premature Shutdowns or Outages

Challenge

Ethylene producers continue to push the envelope to remain profitable in today's competitive environment. With energy costs, cyclical supply and demand curves and continuous pressure to enhance operations, producers work to increase plant run-lengths between shutdowns/outages.

In order to achieve the targeted runlengths, critical non-spared equipment like Oil Quench Towers (also known as Primary Fractionators) must maintain optimal operating conditions to ensure no premature or unexpected outage/shutdown.

Due to the nature of oil quench tower operation, fouling is inherent to this system. The coke fines in the cracked gas and the highly reactive vinyl monomer radicals in the pyrolysis gasoline serve as the tower quenching medium.

Additionally, this tower is responsible for generating dilution steam necessary for the furnace operations. Polymerization resulting in higher viscosity in the tower bottoms is undesirable as it limits the overall heat transfer needed to deliver the required low pressure steam (dilution steam). This inefficiency results in higher operating costs when fresh dilution steam is generated.

GE Infrastructure Water & Process Technologies has invested significant research and development to understanding the fouling mechanisms and developing the best multifunctional product portfolio to control fouling throughout the oil quench tower.

Fouling Control Technology

GE offers a patented multifunctional product portfolio that addresses vinyl monomer polymerization (i.e. Styrene, indene and divinylbenzene free radicals) and coke deposition throughout the tower.

Our products are thermally stable in the oil quench tower conditions and will control tower bottoms viscosity and/or associated equipment cleanings in the system without any foaming tendency.

The products have been commercially proven on varying tower designs such as trayed towers, structured packing and loose packing designs.

Solution Benefits

Using our patented products in combination with both technical application expertise and our monitoring and analytical tools (i.e. Multiple Regression Analysis and Statistical Process Control and gums testing), we can provide you with the following benefits:

- Reduction in production losses
- Flexibility in tower operating temperature to maximize dilution steam generation
- Lower operating and maintenance costs due to less frequent equipment cleaning and improved process efficiency.
- Extended runlengths due to reduction in unexpected shutdowns/outages.

