
Question 31: Is intermittent or continuous mud washing considered your best practice and why?

STEVE WILLIAMS (Marathon Petroleum Corporation)

- Mud wash is utilized to help keep the bottoms of a desalter vessel relative free of solids build up.
- Utilizes a distribution header with nozzles located near the bottom of the desalter to create a liquid disturbance at the bottom to preclude solids settling.
- Typical design is for water circulation through the system at 10 gpm/nozzle or approximately 10 ft/s velocity.
- This typical velocity only provides a mild washing action and not a vigorous lifting effect.
- Based on this fact, it was suspected that intermittent mud wash may not be able to free up settled solids from the bottom of the desalter once they are in place, while a continuous mud wash could prevent solids from ever accumulating and result in a desalter vessel relatively free of solids.
- Likewise, without any mud wash at all, a solids accumulation equilibrium relative to inlet and outlet headers is likely to be established and may resemble the intermittent mud wash case.
- Trails were conducted on a crude unit with 3 parallel 2 stage desalter trains to evaluate the impact of various mud wash practices.
- Trains were operated with continuous, intermittent, and no mud wash to make direct comparisons of performance.
- Upon opening the vessels, the desalter that utilized continuous mud wash was clear of solids, while the desalters that utilized intermittent and no mud wash contained solids and with virtually no difference in the condition of the two desalters.
- Will include pictures in presentation to demonstrate
- Based on these observations, it is recommended to mud wash continuously or not at all. No incremental benefit is evident from intermittent mud wash. An additional concern is the tendency to divert desalter make up wash water as the source of intermittent mud wash. This practice robs the desalter of needed water, leading to rapid emulsion formation.

SAM LORDO (Consultant)

Both intermittent and continuous mudwashing are used in Industry depending the concentration of filterable solids in the crude and the configuration of the refinery. To successfully operate a continuous mudwash the following equipment is typically present:

- Reduced velocity mudwash nozzle flow
- Ability to mudwash the entire vessel at one time
- Ability to recycle brine for mudwash water source
- Downstream Brine tankage

The reason for continuous mudwash is move the solids continuously. Having a continuous mudwash prevents sending slugs of solids and oil downstream when the process is started up. There is also a risk of water carryover when the mudwash system is started up. It also minimizes operation mistake, such as running the mudwash either too long or, not at all.

To successfully operate a Intermittent mudwash the following equipment is typically present:

- Properly sized and spaced mudwash nozzles

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- Ability to recycle brine for mudwash water source
 - Downstream Brine tankage

Intermittent mudwash is the most common practice. When an intermittent mudwash operation starts up in many cases a slug of solids and oil is sent downstream. This can create high water and solids carryover to downstream equipment causing unwanted impact on operations. High levels of oil can impact wastewater unit operation.

When done properly the continuous mudwash operation is the most effective.

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