



TOTAL FILTRATION SERVICES

Engineering a Liquid Cartridge Solution for a Petroleum Refinery

Customer Case Study



PROFILE

A sophisticated crude oil processing company, supporting customers in more than 90 countries around the world, called upon Total Filtration Services (TFS) to identify a replacement for the liquid cartridges used to filter crude oil being unloaded from railcar units at their petroleum refinery located in Mississippi.

CHALLENGE

This refinery receives a large amount of spent petroleum-based liquids (i.e., gear oil, crude, asphalt emulsifiers) from rail cars that must be filtered before it's converted into products such as transformer oil and lubricant for gear pumps.

Liquid cartridge filters were being used in a recovery/recycle application during the load-out process to remove contaminants and prevent downstream equipment fouling.

Due to the high viscosity of the crude oil, the liquid cartridges are under significant pressure and would begin to warp and collapse inside the filter housing within a week.



The customer had recently started buying liquid bag filters from TFS was looking for a new liquid cartridge solution that would provide longer filter life, avoid down-time for filter change-outs, and allow more petroleum to be accepted during the load-out process.

THE TFS SOLUTION

The Account Manager met with the customer's engineering and maintenance team to understand filtration requirements and began working with one of TFS' trusted manufacturers, Graver Technologies, to identify a suitable replacement for the existing cartridges.

An initial trial was conducted using the Graver High Flow, which is a highly efficient pleated liquid filter element with excellent dirt holding capacity and used in a wide variety of demanding applications.

Results from the initial trial revealed the Graver High Flow would be a suitable replacement pending some modifications to increase the strength of the media and inner/outer cage.

Graver and TFS had follow-up meetings with the customer to make the necessary modifications to the cartridge, and a second trial was scheduled a few months later.





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RESULTS

The customer conducted a new trial with 12 of the modified cartridges, referred to as the Graver High Flow GF. The trial results confirmed that the new cartridges provided the same level of filtration without warping or collapsing. The improved durability of the filter cage and media lowers the customer's total cost of ownership by delivering the following cost-savings benefits:

- Cartridge filters are lasting significantly longer, which reduces filter change-outs and allows the customer to reallocate maintenance resources.
- Increased filter life avoids downtime during the load-out process, which allows the customer to recover the maximum amount of petroleum from rail cars.
- Less waste and disposal costs, due to the new filters lasting longer and not being replaced as often.

Since implementing the new filtration solution at their Mississippi refinery, the customer is now partnering with Total Filtration Services to address similar filtration concerns at their other refineries, as well as at a transformer manufacturing plant.