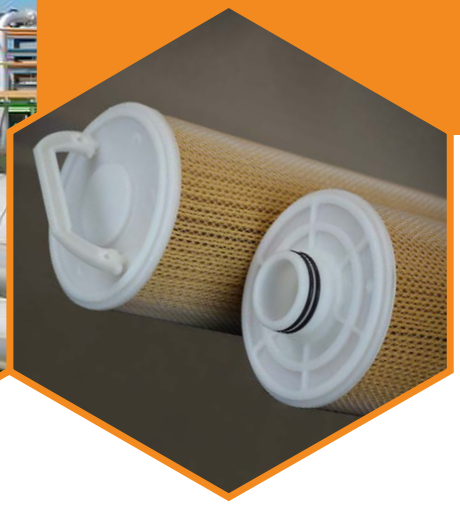

Feedstock Filtration Solution for a US Gulf Coast Renewable Diesel Refinery

PROBLEM

A US Gulf Coast renewable diesel refinery was experiencing unusually high changeout frequencies on their feedstock filter vessels. The feed consisted of waste products such as tallow from recycled animal byproducts and used cooking oil collected from restaurants. The pre-treatment and filtration of their feedstock was critical to protecting the expensive catalyst downstream in the hydrotreating and isomerization process. Operators at the refinery were changing filter cartridges and bags numerous times within a single shift. With three filter vessels running at once in the process, the frequency of element changeouts had become challenging and expensive to manage. FTC's local distributor proposed FTC as a filtration solutions provider that could evaluate the refinery's current filtration operations and develop a custom filtration solution to increase filter life and improve effluent quality to protect their catalyst beds.

ANALYSIS

The third and final filter in the pretreatment process was the most important. It represented the last line of defense before the stream entered the hydrotreater and catalyst

Secondary filter vessel with replacement FTC Torrent 600 pleated cartridges, offering 12 times the surface area of existing bag filters

bed. Several blending tanks were immediately upstream of this critical filter and once process conditions such as temperature, flow, and pressure were noted, FTC and their partners began analyzing the current specifications of the existing filter housing. FTC's Research and Development department designed a specific filter cartridge to trial. To accommodate the 22,000 BPD flow rate, FTC focused on expanding the usable surface area of the filter element. At this point, the refinery was averaging just two days of runtime before changeout differential pressure was reached.

SOLUTION

Working closely with refinery personnel, FTC decided on a filter medium and cartridge design that would markedly increase dirt holding capacity by maximizing effective surface area. Newly designed trial filters were delivered to the customer, and after a successful fit test and installation, the filter vessel was brought to full capacity. This first set of custom elements based on FTC's Clarify® 740 Premium Series cartridges ran for over five days before needing to be changed out. This increase of 150% in cartridge life was followed up by another trial set that lasted seven days! The customer quickly realized the benefits of extended filter life and reduced maintenance cost.

RESULTS

After this technology and design proved itself, FTC was asked to address the next filter vessel upstream of the tanks. Bag (sock) filters were being changed multiple times a day at this vessel. Thankfully, an existing FTC cartridge style was available for direct fit in this housing and the same proven media was selected for trial elements. Once FTC cartridges were installed in the second filter housing, changeout frequency decreased from several times a day to almost a full week of runtime between changes. By utilizing FTC's customized Clarify® and standard Torrent® filter cartridges at different points in their process, the customer was able to reduce the number of costly changeouts and improve the quality of their feedstock. In the end, FTC and its channel partner delivered a winning combination of reduced total cost and better protected equipment as part of a custom filtration solution for the customer's renewable diesel process.

TORRENT 600® AND CLARIFY 740® PREMIUM CARTRIDGE FILTERS

FTC's Torrent® 600 Series High Flow filters are designed to meet a wide range of solids removal needs in fluid processing industries. Torrent® High Flow filters are engineered to deliver low pressure drops and high dirt loading capacity, and are ideal for low viscosity fluids and low solids loading fluids where higher flux rates are acceptable. They are also recommended for standard fluids and solids loading applications where inside-to-outside flow is desired.

FTC's Clarify® 740 Premium series filter cartridges bring all the benefits of the original FTC Deep Pleat design, re-engineered to provide a greater range of micron ratings and more dirt holding capacity. Available in cellulose and polypropylene filter media, these next generation cartridges can be constructed with metal or non-polypropylene components for applications that involve higher temperatures.

ABOUT FTC

Since 1987, Filtration Technology Corporation (FTC) has built a reputation for developing and delivering innovative products at the forefront of filtration technology. We engineer and deliver the highest quality process solutions, training, testing, and cutting-edge technology with unparalleled service and support. Through the ongoing development of new, game-changing products, FTC continually redefines success for our customers.

FILTRATION TECHNOLOGY CORPORATION
11883 Cutten Road, Houston, Texas 77066 | (713) 849-0849 | F: (713) 849-0202 | **FTCfilters.com**