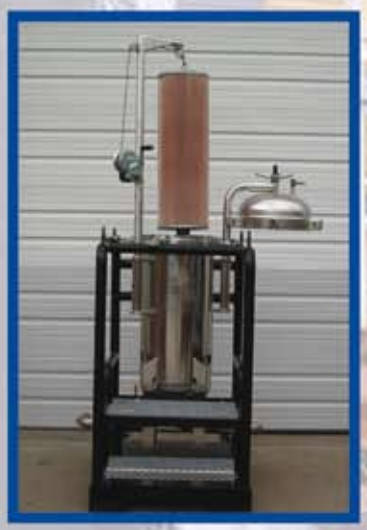
Improve Your
Bunker Fuel Filtration

Most Effective Filter Area in the Market, >100 m^2 per Element
High Flow Rates per Element, >1.5 m^3/min
Highest Dirt Loading, >130 kg per Element
99.98% Removal of Targeted Particles, 2µ-90µ
High Temperature Elements, >200 °C
Minimize Disposal Cost For Spent Elements
Replacements and Retrofits for Existing Filter Housings
Filtration of Lubricating Oil for Large Engines
Custom Solutions for your Specific Problem

580 L/Min



1,700 L/Min

FTC
FILTRATION TECHNOLOGY CORPORATION

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BUNKER FUEL FILTRATION PROBLEMS AND SOLUTIONS

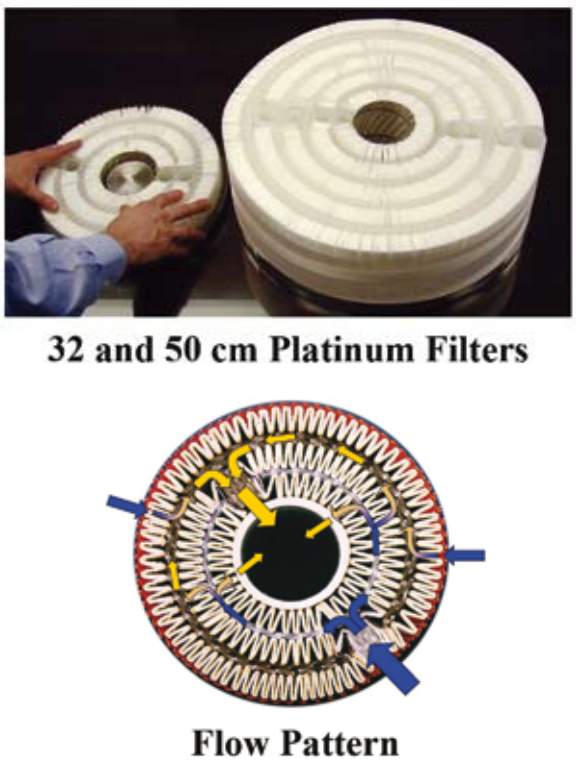
A unique set of problems face maritime users of Bunker Fuel Oil (BFO). The test results of the fuel purchased meeting ISO 8217 Fuel Standards may take two weeks to complete; too late if there are problems and the ship is at sea. Various methods of conditioning fuel prior to burning are employed to separate fuel from water and solids. Settling tanks and centrifugal purifiers are used with high temperature cartridge filters at the final filtration stage. New filtration technology can provide much higher solids holding capacity, meaning fewer filter changes and fewer fouled filters, resulting in a more reliable fuel supply system.

Filtration Technology Corp. (FTC), located in Houston, Texas, has been providing filtration solutions for large industrial applications for over 20 years. BFO with its high viscosity, high flow temperature requirement, and solids loaded stream, can be effectively and economically filtered with the "Platinum" high flow, high surface area cartridge filter system. These filters employ a unique and patented internal flow distribution system allowing much higher usable filter surface areas. Space required for Platinum filter installation is actually smaller than conventional systems, allowing the user to have redundant backup systems in tight spaces. This patented product is employed in numerous industrial applications worldwide.

BFO has a very high viscosity at ambient temperatures. An increase in temperature to reduce this viscosity to a more manageable level for filtration purposes is required. High temperature presents a problem with conventional filter media and components used to manufacture the filter cartridges. FTC has successfully employed special cellulose media and epoxy adhesive to manufacture filter elements capable of continuous exposure to temperatures in the 200 °C range. The internal components of these filters also require the use of metal components and stronger filter housings.

One should remember that a fuel product is being heated in a pressure vessel and there is the potential of generating combustible vapors at extremly high internal pressures. Special provision must be incorporated in the vessel design for safe release of the vapor if an overpressure situation occurs. A change-out safety procedure for spent filters must be strictly followed. Also, there may be a need for redundancy in the number of filter housings to allow for cool down before opening the housings. Space is at a premium inside the engine room and more compact elements that do not sacrifice effective filter area solve this problem.

A doubling in the effective surface area means up to a four-fold increase in solids filtration capacity. This is the basis of the unique FTC "Platinum" high flow filtration system. All the components in this high temperature element can be incinerated.



A 50CM OD PLATINUM HIGH CAPACITY FILTER REPLACES 150 CONVENTIONAL 6.35CM OD ELEMENTS. THE HOUSING REQUIRED WILL BE 61CM ID ON THE HCF VS. 107CM WITH CONVENTIONAL PLEATED ELEMENTS. FLOW RATES OF UP TO 1.5 M^3/MIN CAN BE HANDLED EFFECTIVELY

Bunker fuel oil filtration challenges

The removal of contaminants in BFO is one of the biggest challenges facing the industry. Due to its high viscosity, BFO cannot be filtered at ambient temperature. The temperature must be raised to over 160 °C to reduce viscosity and allow BFO to be filtered. The process includes at least two steps. The first phase will usually employ permanent equipment to remove larger

Inside view of one 91 cm outside diameter housing fitted with five each of the 32cm OD "Platinum" elements. Each of the five elements can handle flows up to 580 L/Min.

Portable skid for industrial applications, each housing can handle up to 2,900 L/Min, this skid is interconnected to flow in series or parallel. Compact skid-222 cm wide x 44 cm high x 335 cm long.

particles and a majority of the water present. Centrifuges and oil purifiers may also be used as part of this first step. The second phase will involve the use of polishing filters to further reduce the presence of sediments.

Both users and producers, with the help of international associations, should come to an agreement on the target for particle removal that should be adopted. The IMO, which may be slow, has already made policy changes in 2005; the lowering of the maximum sulphur content to 4.5%. In emission control areas, the target is set at 1.5%. In comparison, over the highway requirement for big trucks is now 10 ppm in the EU and 15 ppm in the US.

This final filtration is challenged by the operating temperatures that will be required to reduce flow viscosity. There are already media on the market that can take temperatures over 200 °C. However, the high volume of consumption of fuel for one vessel will require a very high number of conventional filters. A 120m vessel burns up to 250mt of BFO daily while at cruising speed.

Most of the time, state-of-the-art filter technology calls for the use of pleated filter elements. But to accommodate standard filter elements to handle high volumes of fluids and sediments requires a large number of cartridges and large diameter vessels. The key to high volume filtration is the use of filters with very large surface areas and small diameters. This special type of filter must be designed in such a way as to utilise all of its surface area. All the media must be a part of an engineered system, that regardless of its location in the filter, will contribute to the removal of solids. We must repeat that a doubling of the effective surface area will result in up to a four-fold increase in solids removal. This directly relates to the number of change outs and also number of spent filter cartridges requiring disposal.

The latest technology is based on relatively new types of filter elements known as High Performance cartridge filters. These elements incorporate internal flow channels and pleated filter media. FTC has been manufacturing elements that can handle up to 1.5 m^3/min and 200 °C for many years.

The pictures located above show a cutaway that provides details of the basic design and flow paths of this popular, innovative product.

The BFO market is dynamic, with many changes yet to come. However, these fuels will always require efficient filtration.

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