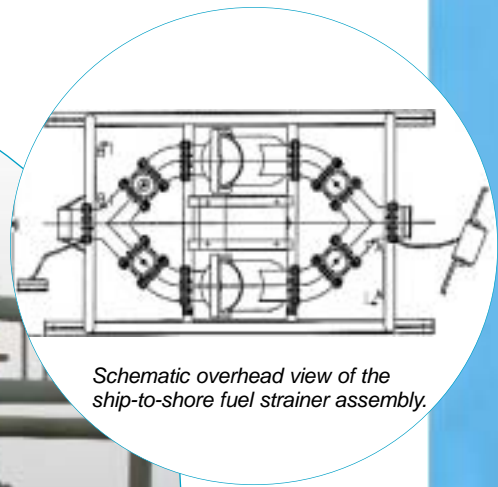
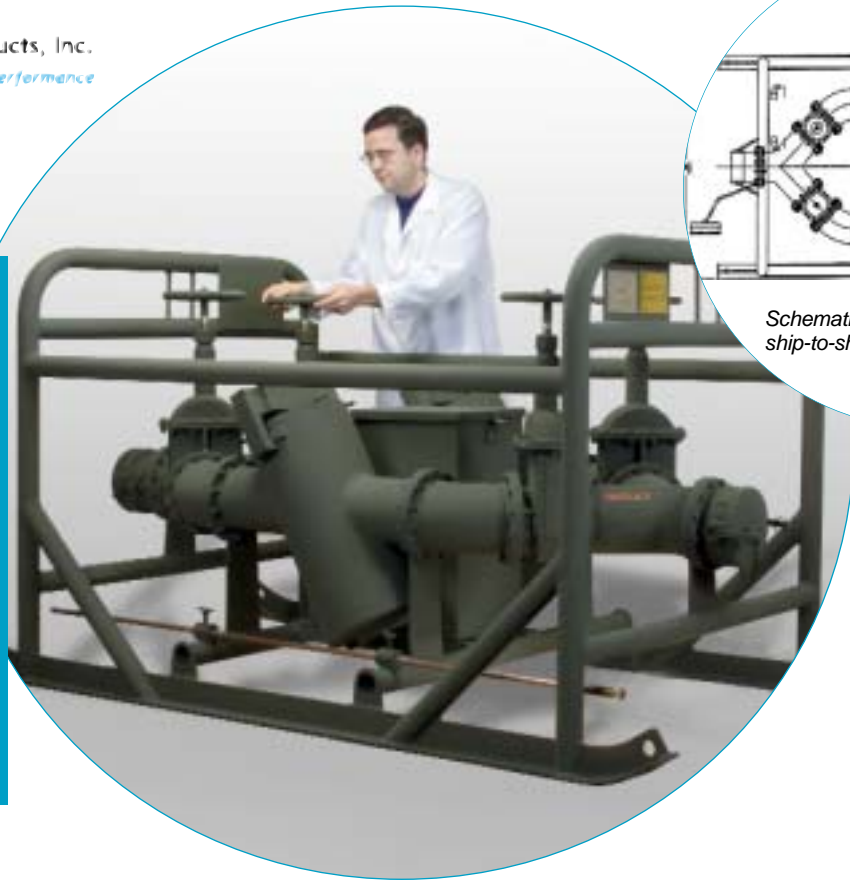




Fluid Conditioning Products, Inc.
Precision Filtration Proven Performance

Corrosion in fuel storage tanks is a major concern during sea transport... along with the danger of other contamination while opening and closing storage tank lids.



Schematic overhead view of the ship-to-shore fuel strainer assembly.

FCP Supplies Marines with "Ship-to-Shore" Fuel Strainer Assembly

The Challenge

The US Marine Corps needed a fuel-line strainer for loading fuel into tanker trucks in the theater of operations. This strainer system is carried by the tanker ship, unloaded and dragged to the shore by the ship's crew, and hooked up to the line transferring fuel from the ship to tanker trucks or temporary coastal storage facilities.

Corrosion in shipboard fuel storage tanks is a major concern. There is also the danger of other debris being introduced into the fuel and pumping equipment while opening and closing storage tank lids. Requirements the Marines specified for this application included:

- Excellent stability; rollover protection
- Electrical Grounding to prevent spark while fuel is present
- Balanced and lightweight for easy lifting
- All ends of the piping capped to prevent foreign debris from entering the system
- The entire system must be serviceable using standard wrenches and no specialized tools
- The system must withstand being dragged over almost any terrain or surface.

Benefits

Based on the U.S Marine Corps' specifications, FCP designed this strainer with a 40 mesh (equivalent to 400 micron) wire cloth inside a reinforcing basket which captures particles that could foul the fuel or damage pumping equipment. This assembly provides two paths for the fuel, allowing pumping to continue non-stop. One side of the

strainer can be closed by valves while replacing or servicing the strainer basket, while the other side continues to flow fuel at 600 gallons per minute. The strainer basket can be easily cleaned by rinsing or tapping out debris. FCP also designed a clamping system using a single nut to allow speedy access to the strainer basket, minimizing the amount of time either side of the system remains closed to flow. Two spare strainer baskets are included with the system in a weatherproof box integrated into the unit.

FCP selected aluminum for the frame to reduce weight, and steel for the filter to provide durability. The assembly is lightweight and balanced with lifting hardware integrated into the frame for easy portability. FCP permanently attached dust caps at all open ends with ball chains to prevent them from being separated from the strainer. Finally, the unit underwent government required testing of its portability by physically dragging the unit 400 feet over rough terrain.

Other Applications

FCP has custom-engineered or manufactured fuel strainers and filters for many other vehicle applications, including:

- M1 Battle Tank
- C-130 Hercules Aircraft
- Space Shuttle Liquid Nitrogen Fuel
- Diesel Fuel Filter for Submarine APU
- Mk-48 ADCAP Torpedo
- MQM-107 Subsonic Target Drone
- SAM & Air-to-Air Missile Fuel.

Custom Engineered Solutions for High Performance Filtration Applications

FCP's Fuel Strainer and Filter Products

FCP uses a variety of designs for fuel straining and filtering, depending on each customer's specifications.

These designs include:

- Perforated Metal and Wire Mesh Strainers
- Pleated Wire Cloth
- Pleated Non-Metallic Media
- Sintered Metal Media.

Strainers

Typically, strainers filter out particles that are 100 microns in size or larger. These particles can cause severe damage to engines, pumps and other major system components. FCP manufactures strainers in a wide variety of sizes, shapes and configurations using wire mesh or perforated metal. The key design parameters are flow rate, pressure drop and particle size. FCP has developed strainers ranging in size from a 1/8th inch (3.2 mm) inlet filter to a 6 foot (1.83m) tall unit. In some applications, magnets can be incorporated in the strainer to remove metallic particles.

Pleated Wire Cloth

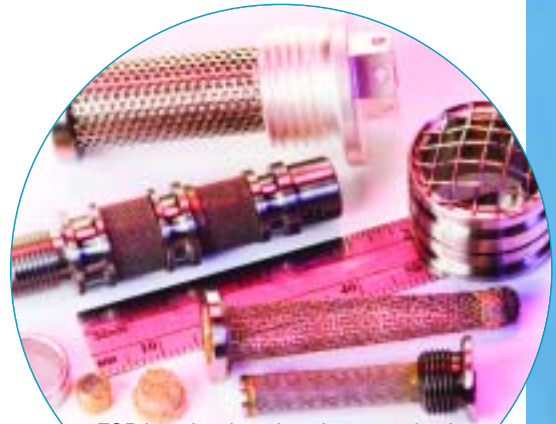
FCP wire cloth filters offer outstanding performance, especially in withstanding very high differential pressures and temperature extremes. Depending upon the application, these cleanable filters can have an absolute micron rating that ranges upwards from 5 microns. The cloth can be woven from a variety of materials, and can be pleated or non-pleated. Wire cloth filters can be welded, brazed or epoxied, as required by each individual application.

Pleated Non-Metallic Media

FCP develops and manufactures disposable filters for the removal of contaminating particles ranging in size from 3 - 150 microns absolute. Disposable filter media are relatively flexible and fragile, and so must be layered with wire mesh for structural support. This makes it possible to pleat the filter, which greatly increases its surface area and, as a result, its dirt-loading capacity.

Sintered Metal Media

Sintered metal filters offer some advantages over pleated wire cloth elements. Because they are rigid the filter element is self-supporting, so it can be formed in a wide variety of shapes. The filter media consists of tiny spheres that are compressed in a mold to the desired shape. This method of manufacturing creates a cleanable, depth-type filter element. Sintered metal filter elements hold less dirt than pleated elements, but can withstand higher pressures than non-metallic filter elements. They may also offer cost advantages over pleated wire cloth filter elements.



FCP has developed strainers ranging in size from a 1/8th inch (3.2 mm) inlet filter to a 6 foot (1.83m) tall unit.

Filter Performance Data

Most filters used in fuel filtering applications fall within the performance boundaries listed below, but FCP can work outside these individual parameters when required:

- Working pressures to 1000 psig (69 bar)
- Element collapse pressures up to 250 psid (17 bar)
- Particle retention down to 3 microns
- A wide range of flow rates

Note that these are typical characteristics, not a specific combination.

Why Select FCP?

FCP provides a wide variety of custom engineered filters for air, hydraulic fluid, lubricant, oil, fuel, water, and steam filtration applications. We specialize in precision filters designed to meet rigorous temperature, chemical, and pressure specifications. We maintain the certifications and approvals needed to support our customers. These include:

- AS 9100, Rev. B.
- ISO 9001: 2000
- NADCAP
- MIL-I-45208, and
- Sub-Safe Level 1.

The world's largest defense contractors, jet engine manufacturers, and nuclear submarine builders depend on FCP, so you can too.

Contact us today!

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