

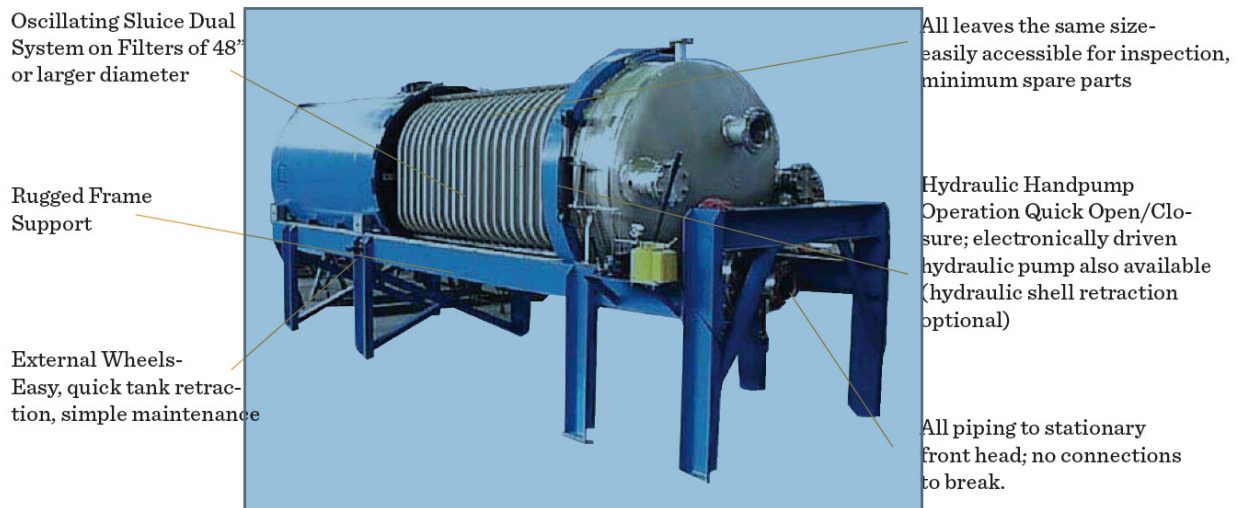
## Topic: Biodiesel Filtration System Re-Usable Filter

### Solution

#### Process 1: Dry Filtration with Reusable Filters

1. Perform Dry Discharge Filtration using Pressure Vessel Plate Design (RE-USABLE) with Magnesol combination.

Figure 1: Filter Pressure Vessel Plate Design



#### Principle of Operation:

With the addition of Magnesol to the biodiesel upstream of the Pressure Vessel the process fluid as it comes in contact with the plates leaves a cake residue that is disposable as shown in Figure 2. The clean biodiesel fuel penetrates the filter and exits the filter.

Figure 2: Vertical Filter Plates with Magnesol Cake Residue

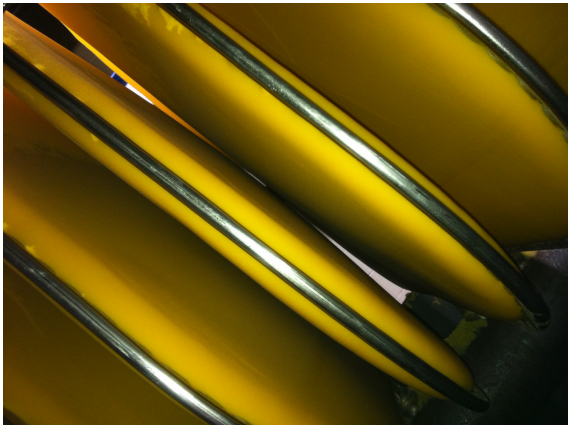


Figure 3: Filter Plates Interior View



Figure 4: Filter Plate

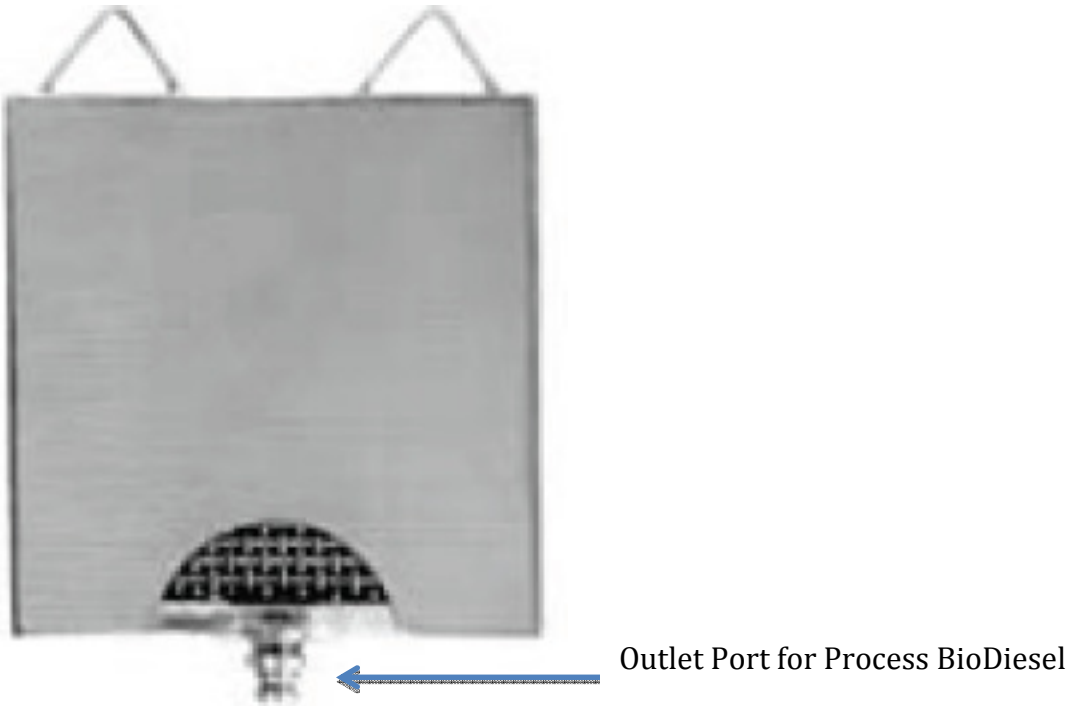
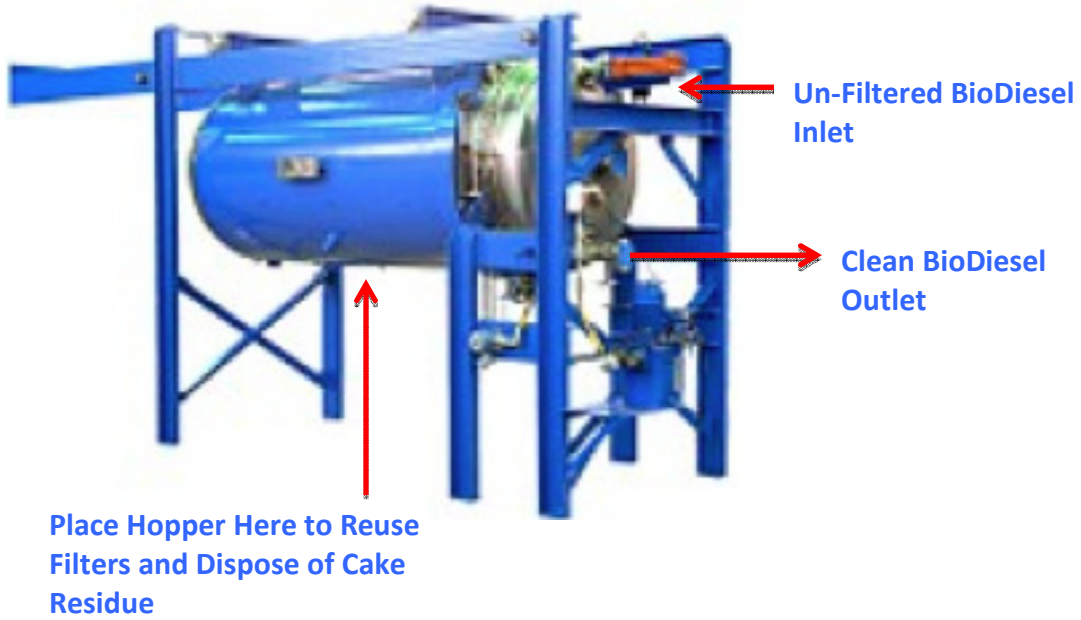


Figure 5: Dry Filtration System Overview (Inlet/Outlet/Reuse Discharge)



### Specifications:

- Pressure Vessel to ASME Sect. VIII Div. 1 code
- Re-Usable Filter Options
- FILTRATION AREA PER FILTER: 405 FT. 2
- CAKE CAPACITY PER FILTER: 33.75 FT.3 @ 1 INCH CAKE THICKNESS
- FILTER TANK: HORIZONTAL TYPE
- DIAMETER: 60 INCHES
- GROSS VOLUME: 1100 U.S. GALLONS
- OPERATING DESIGN: 75 PSIG @ 300 ° F
- FILTER VESSEL: CARBON STEEL
- NON-WETTED PARTS OF: CARBON STEEL PAINTED
- FINISH: MILL STANDARD
- FRONT COVER CLOSURE: QUICK OPENING CLOSURE, WEDGE LOCK TYPE W/ FORGED LOCKING RING. AUTO HYDRAULIC PUMP AND 4-WAY VALVE
- SHELL RETRACTION: HYDRAULIC CYLINDER
- VIBRATOR: QTY 1, PNEUMATIC VIBRATOR
- MATERIAL: CARBON STEEL / ALUMINUM BODY
- INLET DISTRIBUTION: CARBON STEEL BAFFLE PLATE
- CONNECTIONS: 150 # FLANGED X ANSI X R. FACE
- MATERIAL: CARBON STEEL EPOXY PAINTED
- LEAVES: QUANTITY (16) VERTICAL LEAVES ON 4 " SPACING
- FRAME: T-316 SS KEYHOLE
- SURFACE MEMBER: 24X110 PDW
- DRAINAGE MEMBER: 4 X4 X 0.080
- OUTLET NOZZLE: MACHINED CASTING
- GASKET: VITON O-RING
- CONTROLS: LOCAL CONTROL FOR OPENING SHELL AND
- VIBRATING LEAVES, HYDRAULIC SAFETY INTERLOCK, NEMA 7, CAST ALUMINUM

### Conclusion:

To purify biodiesel fluid with reuseable filters the following are the components needed in such a system:

1. Feed Pump to Mixing Tank
2. Mixing Tank with Agitator to mix biodiesel fuel with Magnesium Sulfate
3. Dry Filtration System

