

QuadPlex™

The Alternative to DE Filtration



The new QuadPlex™ filtration skids from Total Separation Solutions are defining the evolution of cartridge filtration. Designed to replace diatomaceous earth filtration units both offshore and onshore, this revolutionary design takes full advantage of backwashable media to dramatically extend the life of the filter. Though DE filtration is often considered the low-cost filtration method, the economics are clear when you consider the advantages of the new TSS QuadPlex.

- “Smart” Filtration
- Backwashable for Long Life
- Modular
- Consistent Flow
- Smaller Footprint
- Improved HSE
- Reduced Trucking/Disposal Costs

Backwashable Media in Smart Filtration

Backwashable media is an integral part of the new QuadPlex system. Using Process Logic Control (PLC), the QuadPlex automates both the filtration and the backwashing processes. The PLC system does the work and has the logic to backwash based on time or pressure differential, yet it is smart enough to maintain flow when a vessel is in the backwash mode. The

backwash cycle is designed to efficiently use air and water to quickly clean the media in less than one minute while minimizing the volume of water required. “Smart” filtration requires fewer people, and less operator training.

Modular Design = Increased Flexibility

The QuadPlex incorporates proven “candle” filter technology (so-called because the filters look like candles) where the dirty fluid goes from outside to the inside of the filters. The filters hang upside down so that gravity helps with backwashing the filters and dirt is removed out the cone-shaped bottom of the vessels. Unlike traditional candle filter designs, the QuadPlex incorporates filter modules that can be setup to work with almost any type of filter element. The modules can simply be changed out, so any vessel can run numerous types of filtration. In fact, the modular design ensures that the QuadPlex will always be ready to take advantage of any new filter technology.

Piped for Consistent Control

The QuadPlex piping design allows all vessels on the unit to be run in parallel or in series, depending on the application. Valves are pneumatically controlled, and can also be run in manual mode. The QuadPlex has hose connections on both sides of the unit to provide flexibility when in use offshore.



TOTAL SEPARATION SOLUTIONS, LLC

Innovative Technologies in Fluid Filtration, Processing and Reclamation

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Reduced Footprint

The self-contained QuadPlex fits within a 20-foot shipping container, and can be shipped anywhere in the world. The dimensions are 17.9 feet (5.5m) long, 7.5 feet (2.3m) wide, 7.9 feet (2.4m) tall, and weighs in at 18,000 lbs. (8,160 Kg).

Advantages

• Modular

- Inserts to adapt to bag filters, cartridge filters and even cross-flow filtration media

• Media

- Bag filters
- Catalytic filters for iron removal
- Wedge-wire screens
- Sintered metal tubes
- Sintered plastic filters
- Tangential filtration tubes

• Smart – Process Logic Controlled

- Logic controls backwash cycles and flow through the unit

• Backwashable

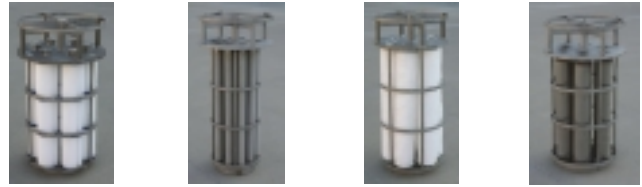
- Less than one minute process
- Air or water
- Integrated air and water tanks

• Candle Filter Design

- Dirt and dirty fluid go out the bottom

• DE Replacement

- Consistent flow rates
- Smaller footprint with less equipment
 - Eliminate polishing filter
 - No six skid required
 - Less hoses and leak potential
- Less operator dependent
- Increased safety
- Superior value
- Reduced cost
 - Logistic costs
 - Less crane lifts required
 - Reduced equipment transportation cost



• DE Replacement (cont'd)

- Only the dirt – For every pound of “dirt” removed, DE adds another 4 pounds of DE to the disposal costs.
- No pre-coating required
- No wash down required

- Better quality control

- Reduce downhole contamination
- Eliminate ongoing diatomaceous earth cost

- Warehouse space

- Better environmental/safety profile

- Reduced personnel
- No exposure to DE dust
- Lower and safer work station
- Less labor intensive
- No tanks/skids to climb
- No bags to lift

- Minimize waste disposal

- No DE disposal costs

• Weir Tanks

- “See and treat” fluids

- Three chambers with complete input/output control valves.

QuadPlex Filter System with Carbon Steel Oilfield Skid

- PLC controlled system
- Automatic fill system
- Automatic backwashing
- 24” OD ASME stainless steel 316 vessels
- Stainless steel 316 piping
- Pneumatic valves
- Air hoist for installing and removing filter baskets
- Drip pan
- Flow meter
- Instrument cabinet with air purge system
- Stainless steel tubing for differential pressure gauges
- Stainless steel sample ports/valves
- Stainless steel fluid tank, with weir plates(1000 gallons)
- Dual cranes for installing and removing filter baskets
- Sling
- Dual stainless steel air tanks with regulators
- Galvanized walkways
- Epoxy-coated carbon-steel frame with lifting lugs
- Series or parallel operation
- Flow rates up to 10 BPM with any two vessels in backwash mode



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