Series R100™ Coalescing Pipeline Filter Multiple Stage

Design Pressures to 3000 psig std.

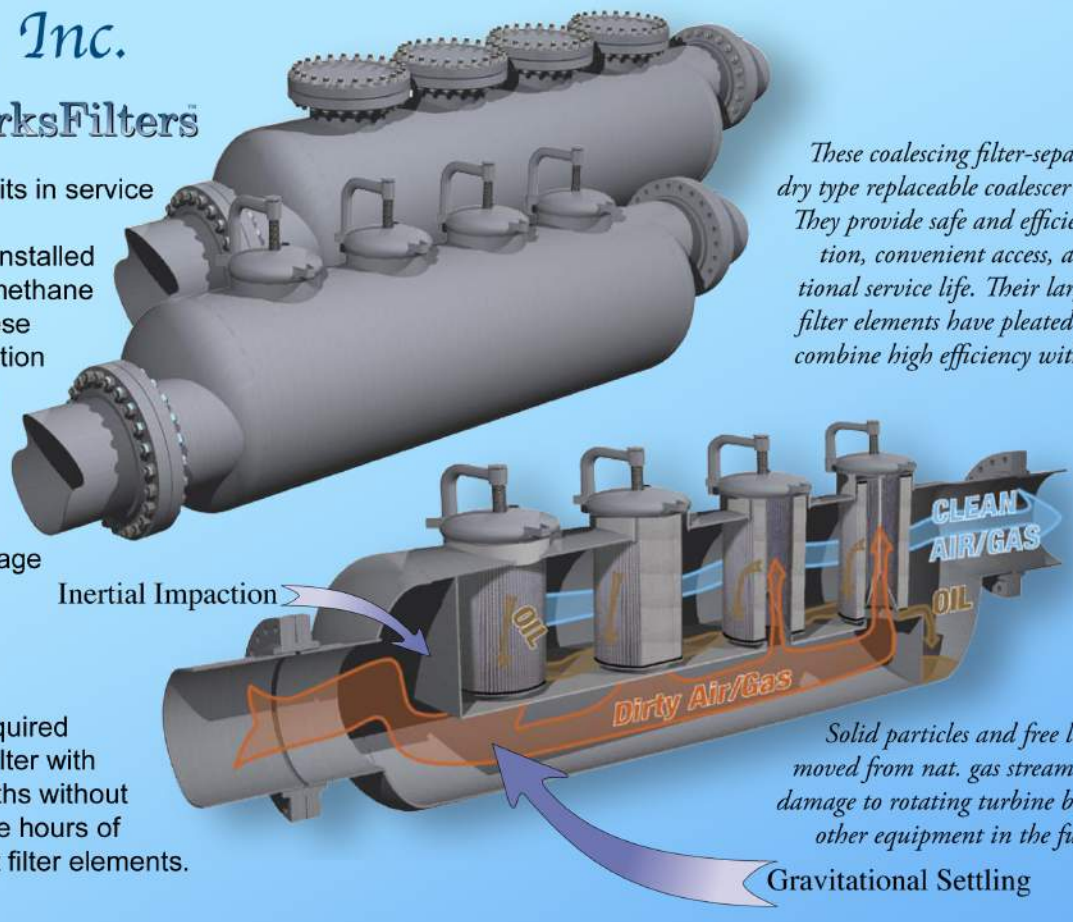
Shawndra Products™, Inc.

Makers of SparksFilters®

A Field Proven Filter Design, many units in service

The largest gas supplier in the Appalachian basin recently installed Sparks R100™ coalescing pipeline filters at five coal bed methane operations in Virginia and West Virginia. The first two of these filter units have now been in continuous, service-free operation for six months and more. One unit processes seven million cubic feet per day of natural gas, filtered at the manifold head of ten gas wells, to remove water, liquid mist, coal dust, and sand to protect two downstream Caterpillar engines and two compressors. R-Series filters remove the solid particles and liquids from natural gas, utilizing multi stage filtration technology vastly reducing maintenance service and downtime to compressor engines, turbines and other gas fired equipment.

This same pipeline filter replaced a competitive unit that required seven 4" x 36" elements. The new Sparks™ Series R100™ filter with only three elements had operated continuously for six months without needing any service, saving this CBM producer seventy-five hours of remote field maintenance and over $20,000 in replacement filter elements.



These coalescing filter-separators use dry type replaceable coalescer elements. They provide safe and efficient operation, convenient access, and exceptional service life. Their large rugged filter elements have pleated media to combine high efficiency with low ΔP.

Solid particles and free liquids removed from nat. gas streams prevents damage to rotating turbine blades and other equipment in the fuel supply.

Black Powder Filtration

In central Illinois, a natural gas aquifer storage field was experiencing high amounts of iron sulfide (black powder) getting through its traditional filter separators. A single stack R100™ solved the problem using 0.01 μ efficient elements. Figure 1 shows the filter at the time that it was taken out after a complete 6-month withdrawal season. Even with all of the buildup on the internal, ΔP was just approaching 5 PSID. This same filter was also dumping upwards of 2,000 gallons per day of water from its first stage separation.

Figure 2 shows an optional addition of high gauss magnetic fin spacers, which attract larger particles and help extend the life of the filter media.

Note: Some forms of iron sulfides will combust when exposed to air. Please dispose of saturated elements carefully and responsibly.

Figure 1

Figure 2

Cleaning Procedure – Reverse Flow Filter Elements

NOTE: Reverse Flow Filter Elements are designed to flow from inside to outside and should be cleaned from outside to inside.

Our synthetic filter media is made to capture and hold dirt particles. The element will have a shorter service life after cleaning in that not all particulates will be dislodged.

Liquid dishwasher solution (such as Dawn) or other types with "grease" cutting ability are readily available. A low water (40 psi max) pressure spray will also dislodge particulates.

First, a spray directed at a downward angle from the outside is usually effective. Second, you may also carefully "strum" your fingers across the inner pleats or otherwise open them while spray cleaning from the inside, also at a downward angle to further dislodge the dirt.

Compressed air sprays (again 40 psi max) can also work well, just be careful not to blow apart the fibers of more fragile media like fiberglass felts with the spray.

Rinse with clean water, and make every effort to air dry the element in a warm place immediately. Customers have reported cautious success using industrial spray wand cleaners, or even a handful of quarters at the local car wash.

Used Coalescing Filter Element Disposal:

Shawndra filter elements are entirely non hazardous in the new unused condition. Absorbed material may change disposal class. End user should refer to local and/or state regulation prior to disposal.

Environmental Impact of hydrocarbons

The purpose of a coalescing filter is to remove impurities from natural gas including but not limited to (oil) hydrocarbons, acids, H2S, dirt, sand and other particulates. A filter must be replaced regularly for optimal functionality.

It is recommended that the filter element, once saturated or dirty be cleaned in place, simply by removing the top seal plate and washing first with water (90 psig max.). Depending on contamination, the filters may be cleaned up to 8 or 10 times. After wash, the wastewater may be removed in the same manner as removal of the liquid sump areas. As with any gas filter vessel, caution should be used when opening vessel, good ventilation is a must along with allowing time for any fumes to dissipate.

~The Environmental Protection Agency (EPA) provides a set of standards for all states to follow regarding used oil regulations. The Standards, which are part of the EPA Resource Conservation and Recovery Act (RCRA), require businesses and individuals who store and transport used oil to document and ensure its proper handling. Coalescing filter elements used in gas service can generally fall under these requirements.

To properly dispose of a coalescing filter, the EPA recommends performing a hot-drain. Hot- draining is the process of allowing for the oil to drain out for at least 12 hours at a temperature over 60 degrees Fahrenheit. There are no requirements stating who must perform a hot-drain. After draining, the element will normally be required to go to a controlled landfill. Individual state requirements must be followed.

EPA guidelines make this process optional at the federal level to allow for state experimentation with more efficient forms of disposal.