

Sabian® Compressible Filter

Tertiary Produced Water Oil and Solids Removal

Enerflex's Sabian® Compressible Filter enhances filtration efficiency to remove the smallest traces of oil and solids that remain in produced water after other treatments. The system is designed for inlets of oil-in-water (OIW) and total suspended solids (TSS) up to 50 ppm and can achieve a target water quality of <3 ppm OIW and TSS. Capacities range from 5,000 BWPD to 47,000 BWPD. Sabian filters are high-efficiency, cost-saving performers. Each small-footprint, easy-to-install unit reduces potential capital, auxiliary equipment, site space, energy, filter media, and downtime.

How It Works

As produced water flows through the filter, oil and solids are captured by a media bed of ground black walnut shells and the filter's performance is enhanced by a compressible design. By applying external pressure, the porosity and pore size of the media are reduced, improving its ability to trap oil and solid particles. When the media becomes saturated, a patented backwash cycle is triggered by either a preset time or pressure drop. During backwash, compression is removed, and a mixture of compressed gas and water is injected to fluidize and agitate the media, quickly cleaning it. The water-wet black walnut shells easily shed oil and oily solids. After cleaning, the media resettles for one minute, and then the filter resumes operation. This system operates hydraulically, without mechanical agitators or scrubbers. The media settles much more evenly than with other systems, thus eliminating dead zones, tar balling, and wormhole (channeling) problems.

Key Benefits

Cost Saving

- Conservative flux rate, lower backwash frequency, and reduced energy consumption and media attrition reduce operating costs.
- Minimize maintenance costs by removing failure prone internal scrubbers, pumps, and other moving parts.
- Eliminate multiple stages of tertiary filtration.
- Reduce expenditures and footprint by reducing the need for cartridge filters.

Better Performance

- >98% removal efficiency.
- Compressible filter design can reduce outlet OIW and TSS by up to 50% more than traditional, non-compressible filters.

Flexibility

- Adjustable filtration level to accommodate oil slugs.
- Negligible upstream surge capacity is required because the same pump and water are used for feed and backwash, allowing use of existing tanks with no flow diversion.



Standard Features

- ASME code pressure vessel
- One charge of crushed black walnut shell media
- On-skid piping, valves, and fittings
- Water-resistant control panel

Materials of Construction

- Filter vessel: internally coated (NACE MR 0175) carbon steel
- Compression Module(s): site specific material options
- Removable internals: 316 SS
- Piping: internally coated (NACE MR 0175) carbon steel

Standard Options

- Backwash treatment tank
- Filter feed pumps
- Backwash pumps
- Upgraded materials for pumps, valves, instruments, and piping
- Ancillary equipment such as transfer pumps and chemical injection
- Cold-weather protection such as skid enclosure and tank insulation
- Water characterization services
- Other options as required to meet specifications

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