Duperon® FlexRake® Sentinel™ PFE
Perforated Fixed-Element Screening System
In 1995, Duperon Corporation created a new screening segment in the wastewater market with the introduction of the FlexRake®. The designed simplicity of this multi-rake screen earned its own U.S. patent for solutions to operator challenges.

Today, the design of the Duperon FlexRake Sentinel PFE follows the Duperon tradition of looking for a better way. Investing more than eight years of research, development, and in-field testing to eliminate the problems associated with rotating style screens led to a simple but breakthrough concept: Move the debris instead of the screen!

**Eliminates Carryover**

_Carryover is the debris that collects on a screen and continues downstream when it's not effectively removed, wreaking havoc on systems and processes._

The FlexRake Sentinel PFE uses a stationary perforated screen that is front-cleaned and front-returned. By moving the debris instead of moving the screen, Duperon eliminates carryover.

**Eliminates High-Maintenance Brushes and Caustics**

_Cleaning brushes wear out and and get packed with fats/oil/grease (FOG) that attracts debris._

The FlexRake Sentinel PFE does not require brushes because debris is not permitted to mat on the screen. The unique design eliminates maintenance and replacement of brushes, carryover into downstream processes, and the use of cleaning caustics. Discharge is simple using the proven Duperon debris blade for large solids and an integral spray system to clear finer materials.

**Eliminates Seal Leakage and Failure**

_Seal leakage is caused by gaps as narrow as fifteen thousandths of an inch (0.38 mm) in the seals surrounding moving-element screens. This leakage can allow hair to easily bypass the screen. Failures occur when seals simply tear, fall out or wear out._

Because there are no seals, there is no risk of leakage or failure. The FlexRake Sentinel PFE uses surface-to-surface contact, eliminating the high costs of replacing difficult-to-find broken seals and the potential for debris bypass.

**Eliminates Tunneling**

_Debris gets stuck in the hole of a thick perforated plate and can't be removed by the flow or cleaning mechanism._

Using a thin, rigid, corrugated screen instead of a thick perforated plate prevents the buildup of objects and FOG (fats, oil, grease) within the holes. Its unique structure combines the strength of a bar screen and the capture-capacity of a perforated screen: the best of both technologies.

**Eliminates Blinding & Stapling**

_Stapling occurs when hair or fibers reach through the perforations and wrap around the screen. Blinding is the combination of FOG and uncontrolled stapling accumulating on the screen._

Hydropression™ enables the Duperon FlexRake Sentinel PFE screen to clean each individual hole with 99% first-pass cleaning efficiency. Cleaning each hole every 7.5 - 12 seconds prevents blinding and stapling.
**Hydropression™** [hahy-droh-presh-en], noun
1. the basic principle that makes a perforated fixed-element screen possible.
2. relief of hydrodynamic and hydrostatic forces that hold the debris against the screen, creating a neutral pocket in front of the debris for easy removal. This is accomplished by the Effector Plate™, a simple component that travels along the back side of the screen.

**Active Hydropression™** [ak-tiv hahy-droh-presh-en], noun
1. proprietary process that actively cleans each individual hole with every pass of the Effector Plate using sprayers that are integrated and synchronized with Debris Lifts on the face of the screen.

**Simplicity, step by step**

1. The proven FlexLink™ technology and the Effector Plates are driven by a single Hydraulic Cylinder using a Lifting Ratchet. This ensures that both upstream and downstream components remain in sync.

2. The Effector Plate creates a neutral pressure pocket over the Debris Lift, removing the pressure of the debris against the screen, therefore creating the Hydropression Effect.

3. The integrated sprayers within the Effector Plate begin to clean each hole of the fixed-element screen, also known as Active Hydropression, eliminating blinding and stapling.

4. As the debris is moved back from the face of the screen, it is collected by the Debris Lifts and transported to the top of the screen for discharge.

5. When the Debris Lift reaches the top of the machine, a spray bar clears the fine material and the Debris Blade discharges the heavier solids into an integrated Sluice Trough. The Sluice Trough discharges into a washer compactor.

**Proven FlexLink® Technology**

With over 20 years of field experience in the harshest environments, the FlexLink technology used in the Duperon’s flagship FlexRake screening system has been key to its success. Designed with quick adaptation to debris and no submerged mechanical components, it eliminates in-channel maintenance and high life cycle costs. The FlexRake Sentinel PFE is an extension of this technology platform and its founding principles. Identical to the FlexRake in upstream operation, the FlexRake Sentinel PFE is a front-cleaned, front-returned, link-driven system. Whether you’re selecting a perforated screen for increased debris removal and efficiency or to protect downstream processes, the Duperon FlexRake Sentinel stands ready.
Duperon® FlexRake® Sentinel™ PFE Perforated Fixed-Element Screen

General Specifications

Typical Applications
Municipal and industrial wastewater, pre-process debris removal, tertiary screening, membrane/IFAS/MBBR protection, industrial & food processing, and pre-screening of process waters.

Max. Flow Rate
10 MGD (2 mm / 3 mm holes)  
12 MGD (6 mm holes)

Drive
Hydraulic Power Unit Pump Motor Continuous Duty 3 PH, 60 Hz

Motor
2 HP

Controls Strategy
Differential control. Two-speed operation. Auto shutdown at low levels.

Width
2 to 5 feet

Unit Length
Up to 50 feet

Angle of Installation
0 Degrees (Vertical)

Construction Material
304 SSTL  
or 316 SSTL

Aperture Opening
2.0 mm, 3.0 mm, 6.0 mm

Water Supply
Filtered effluent

Cycle Times
7.5 seconds, variable speed

Water Usage
0.9 – 1.2 gallons per square foot screen area

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