



Commercial Applications:

- Car/ Truck/ Bus Washes
- Garages// Car Wash Pads
- Work Loads/ Car Dealers
- Service Station

Mobile Oil Separator Application:

- On Seas/Oceans
- On Rivers/Lakes
- In Ground Water
- In Harbours

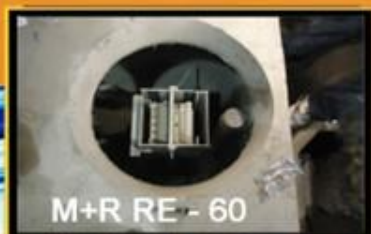


Industrial Applications:

- Oil & Gas Fields
- Refineries & Petrochemical Industry
- Oil Terminals
- Power Plants/ Fuel Depots

Special Features of Freyлит's Oil Water Separator

1. Freyлит's Corrugated Horizontal Coalescent plates with minimum 20 + year lifetime.
2. Oil concentration below 5 ppm (5 mg/liters).
3. The separated oil droplet size can be calculated by Freyлит's proprietary computer design program.
4. Separator footprint is significantly smaller than both TPI (inclined/tilted plate separator) and API separators, thus reducing civil construction cost, while achieving better oil outlet concentration.
5. 15 Year Warranty on the Freyлит Plate Packs.
6. Distance between our plates can be switched between 6mm and 12 mm to increase efficiency of the separation process.



Advantages of Our Plate Packs



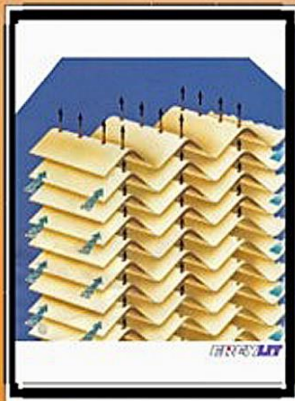
Freylit's oil separators are also known as 'Enhanced Gravity Separators' because they speed up the natural process of oil/ water separation.

- * Freylit's oil water separators use corrugated parallel coalescent plates to enhance this natural process, without the use of chemicals.
- * Designed & manufactured in Austria, under the strictest quality control & performance regulation testing.
- * Guarantee of under 5ppm (parts per million) of hydrocarbons in the effluent discharge water.
- * Low operation cost, no power supply needed, with very compact separators.
- * Minimum maintenance- no spare parts, no changing of filters or coalescent medium needed.
- * Exceptional long working life. 15 year warranty on the coalescent plates.
- * Very easy to install, no mechanical moving parts.
- * Full engineering, design and technical support for installation, commissioning and operation worldwide.

Process Description

The Freylit Oil Water Separator is a chamber designed to provide flow conditions so that globules of free oil will be assisted by the horizontal, oleophilous, nonotable corrugated plates of polypropylene to coalesce into a separate oil layer.

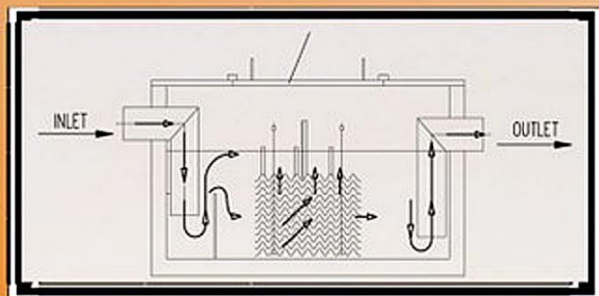
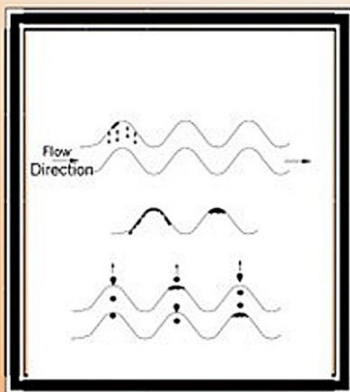
The oil / water mixture enters the separator and is deflected by a weir to ensure the larger oil globules rise to the separator surface to prevent suspended solids from entering the corrugated plates.



As the oil/water mixture is forced to migrate through the plates, the corrugated nature of the plates assist small oil globules to adhere to the underside of the plates due to the oleophilous (sticky) nature of the plates.

Due to the oils specific gravity, the oil globules join together and rise through holes placed at the apex of the corrugated plates to form a layer on the water surface.

Periodically, the accumulated oil layer is removed by sucking/removal of the top layer of liquid, by a septic service company, or automatic valves.



FREYLIT USA Inc.

1809 Associates Lane, Suite D. Charlotte NC 28217

Phone: 704-424-1006 Fax: 866-430-7769

Email: admin@freylitusa.com Website: www.freylitusa.com

Freylit Oil/Water Separator Design & Process Efficiency

A. Performance Criteria –effluent oil content:

Class 1 oil/water separators in the United States, as well as many around the world, are predominately designed per guidelines outlined in *The American Petroleum Institute Bulletin 421 [1970's]*. When treating effluent oily waste water, no national efficiency standard exists in the United States. API 421 calls for a coalescing media of parallel plates inclined 45 to 60 degrees and spaced 0.75 to 1.5 inches apart to separate oil droplets of assumed 60-micron size. No residual oil content of the water discharged is specified in API 421.

The European Norm EN 858-1, adopted 2002, provides a very low oil content in the water leaving the oil/water separator [5 mg/l] vs what is allowed by API 421. However since 1983 FREYLIT oil separators have been designed on the basis of the *Austrian Standard B5101*, which not only was the predecessor of EN858, but in fact embodied far stricter testing methods [Freylit Testing Results **1.9 mg/l** ~ see attached].

The FREYLIT Oil Separators remove the follow oil droplets:

- ✚ 100% of 25.7 Microns oil droplets and larger
- ✚ 98% of 25.0 Microns oil droplets and larger
- ✚ 25% of oil droplets with a size of 13 Microns

Freylit uses a special program to calculate oil droplet size. API 421 calculates using a 60 micron size assumption.

❖ Size

Freylit's Oil Separators are smaller than our competitors that use inclined plates or API standards, to achieve **higher performance criteria** [see below].

❖ Life of the Coalescent Plates.

Minimum life of the polypropylene plates is 20 years

❖ Enhanced Temperature Coalescing Plates

By using *Polyoxymethylenhomopolyme*, FREYLIT can build oil separators that can operate up to 70 degrees Celsius.

❖ Plate Spacing.

Whereas API 421 calls for plate distances of 0.75 (20mm) to 1.50 (40mm), FREYLIT's plates are spaced **0.225 to 0.45** Freylit's plates are interchangeable. This means they can be turned 180 degrees and can adjust the effluent discharge parameters. The smaller spacing is an effort to improve coalescing of the oil droplets and hence improve removal efficiency. If the space between the inclined plates is too large you never can reach oil outlet concentration under 50 ppm (50 mg/l) because the small oil droplets rise slowly and have not the chance to touch a plate.

❖ Inclined Plates v. Horizontal Plates

Freylit's reduced plate spacing versus API 421 in an effort to increase the effective surface area of the media, in order to counter another API 421 design weakness. As half of the total surface of any parallel inclined plate is always angled upward, rising oil droplets rarely impact the plates. In other words half of the surface of any inclined plate media never supports oil droplet coalescing.

❖ Oil & Residual Outlet Concentration.

Below 5ppm (5mg/l). API 421 calls for a coalescing media of parallel plates inclined 45 to 60 degrees and spaced 0.75 to 1.5 inches apart to separate oil droplets of assumed **60-micron** size, as compared to **25 micron size** by Freylit oil separators. No residual oil content of the water discharged is specified in API 421. API 421 does not specify a water quality exiting the OWS, but does SUGGEST **50 ppm (50 mg/l)** of oil in the water being discharged

❖ Shape of Coalescent Plates.

FREYLIT's horizontal wave pack separators, unlike parallel inclined plates, allow the oily water that is passing through the separator to bounce off each wave section of the undulating plates. This shape along with a slight tapering at the ridge results in additional particle collisions (possibility to coalesce) of bigger and smaller oil droplets. The droplets become bigger, on account of these particle collisions, which accelerate their upward movement, so that they are consequently trapped by the corrugated plates and move up the vertically placed holes to the surface.