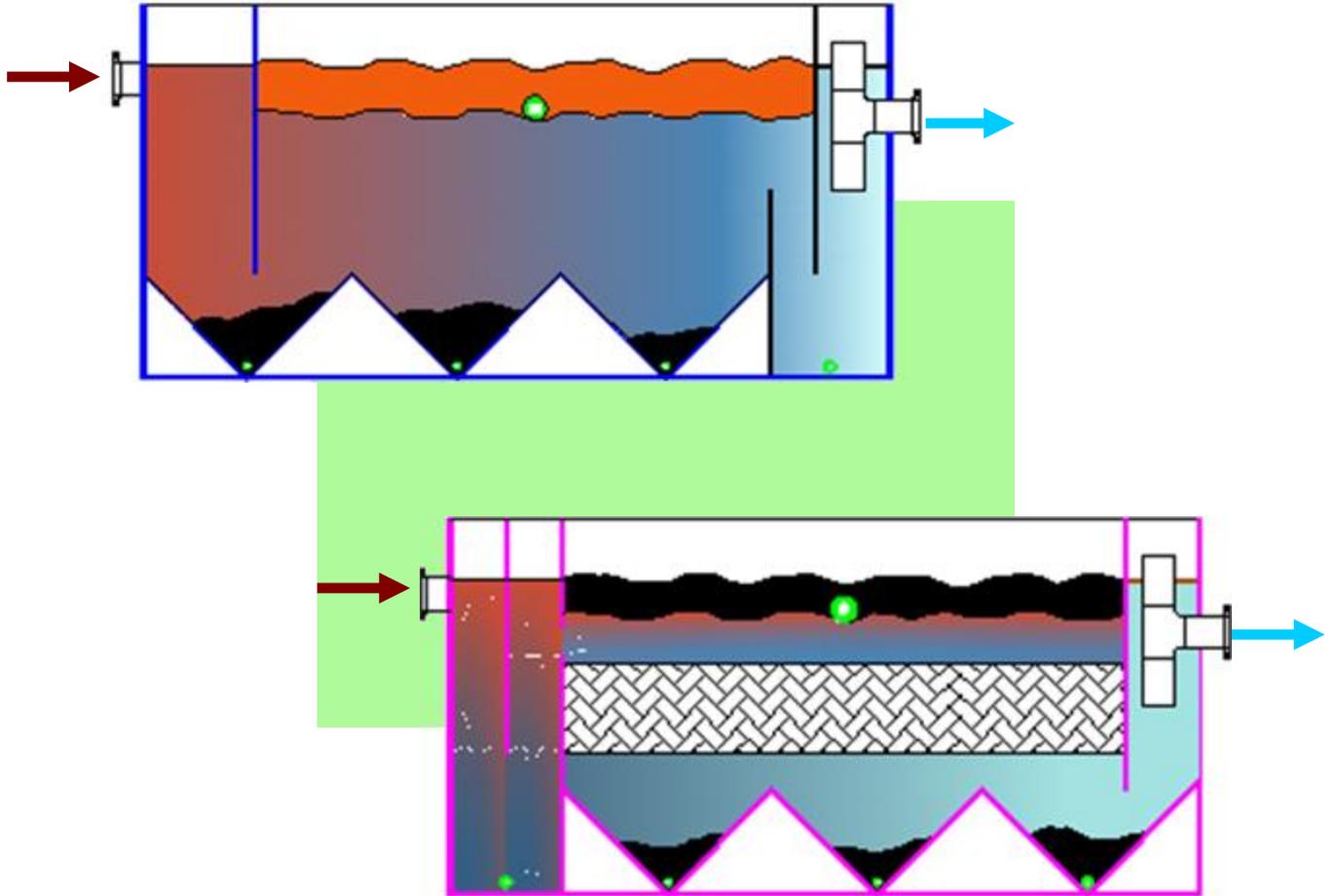


# NAPIER REID'S API - OIL WATER SEPARATOR



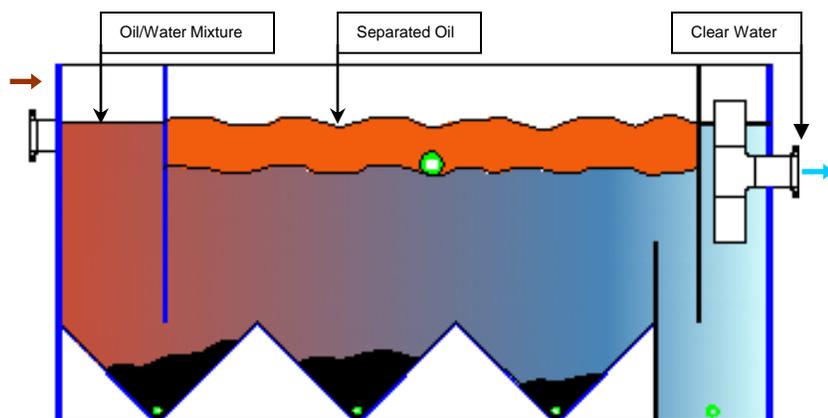
*For effective oil – water separation.*

## Process

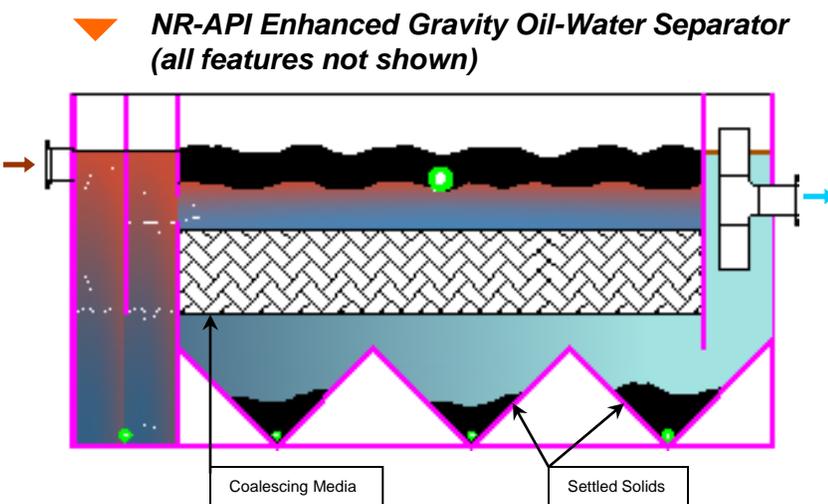
Napier Reid's API oil-water separators (OWS) are used to pre-treat and remove free oil from wastewater. The OWS are designed as per API design recommendations (API-421). Napier Reid designs and manufactures standard gravity oil-water separator as well as enhanced gravity oil-water separator.

In gravity oil-water separator, the oil-water mixture enters the OWS and is retained for sufficient time. Due to the difference in the specific gravity of oil-grease and water, the separation takes place. The rise rate of oil droplets in the water can be calculated by using Stokes Law.

In enhanced gravity OWS, the oil-water mixture enters the separator and is evenly distributed over the high efficiency specially designed coalescing media. The oil-water mixture flows down and enters the coalescing media. Oil from the mixture impinges on the oleophilic media surface. The oil accumulates on the media and coalesces to form larger oil droplets. The larger oil droplets exert greater buoyancy force than small oil droplets, and rise faster inside the coalescing media. When these oil droplets reach the top of the media, they detach and rise to the water's surface. The solids that come in contact with the surface media slide down the media and are collected in the hopper beneath.



▲ **NR-API Gravity Oil-Water Separator**  
(all features not shown)



▼ **NR-API Enhanced Gravity Oil-Water Separator**  
(all features not shown)

Stokes Law equation for rise rate

$$V = \frac{g (d_w - d_o) D^2}{18 \circ}$$

where

V = velocity of rise of oil droplets (cm/sec)

g = gravitational constant (981 cm/sec<sup>2</sup>)

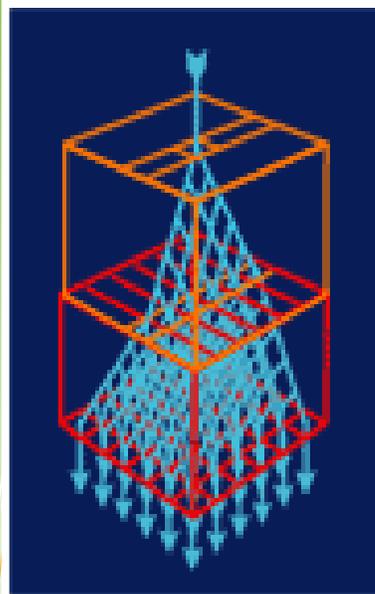
d<sub>w</sub> = density of water (gm/cc)

d<sub>o</sub> = density of oil (gm/cc)

D = diameter of oil particle (cm)

○ = viscosity of water, poise

## Advantages of Napier Reid's API Oil-Water Separator



### Process:

- Removes up to 99.9% of oil droplets 20 microns and larger
- Effluent quality of less than 15 mg/l free, non-emulsified oil possible.
- Designed as per API-421 and to speed the gravity separation process according to Stokes' Law.
- Models available for flow up to 5000 gpm.

### Design & Equipment:

- Compact design.
- NR's API oil-water separator can be custom designed to suit your application and fit into the existing space.
- No moving parts inside the separator.
- Easy to clean.
- Efficient wastewater distribution to assure full usage of the cross section of the media.
- Equipment designed to prevent short circuiting of wastewater around, over or under the media.
- Design allow solids to settle and to be retained in the separator until discharged at regular intervals.
- Optional oil storage chamber can be provided if required.
- Optional cover can be provided, if required for odour control.
- Specially designed coalescing media has high surface area.
- Coalescing media has excellent oleophilic properties.
- The media with smooth vertical surface and high void volume, has excellent anti-plugging and self cleaning properties.
- The tank can be offered in different material of construction – stainless steel or carbon steel with epoxy coating.
- Degree of automation can be provided as required – from completely automatic to completely manual.

### Space and O&M Cost:

- Compact design, requires smaller footprint and space.
- Almost zero operation and maintenance cost.
- No power consumption.
- No chemical cleaning of the media required. The media can be cleaned by just high pressure water jet.

## Application of Napier Reid's API Oil-Water Separator

- Oil Refineries
- Ocean Vessels
- Offshore platforms
- Oil drilling
- Transport Facilities
- Manufacturing Facilities
- Recycling Facilities
- Construction Facilities
- Parking facility runoff
- Storm water sewer overflows
- Rainwater runoff

- Wastewater treatment facilities
- Mineral Industries
- Pulp and Paper Industry
- Automotive Industry
- Oil recovery Industry
- Machine shops
- Landfills
- Power generating plants
- Marine equipment
- Equipment wash down
- Railroad yards

### About Napier - Reid

*Over 50 years of excellence in water & wastewater treatment*

Napier-Reid is located in the greater Toronto area in the Province of Ontario, Canada. We supply engineering services and process equipment for water and wastewater treatment.

We have the technology, resources and experience to design, manufacture and implement innovative water and wastewater treatment solutions worldwide. We have completed over 3000 projects since our inception in 1950. This stands as a testament of our ongoing commitment of providing the highest quality service, products and after sales support in the industry. Our capabilities include engineering, manufacturing, installation and field support. We have in-house personnel for complete mechanical, electrical and instrumentation process and control system design. As a manufacturer, our designs focus on cost-effective solutions, simplicity of installation and ease of maintenance.

Napier-Reid has developed an excellent team with many years of experience. We have a well-deserved reputation for innovation, service and integrity. A significant portion of Napier-Reid's revenue comes from export to countries such as the Caribbean, Central America, South America, Middle East, Eastern Europe, Africa, and Asia. Some of these projects are financed by Canadian government or International financing institutes. As a Canadian manufacturer, we are eligible for Canadian governmental funding and EDC export credit. We have the capability to handle a large range of projects, from engineering, equipment supply, installation, start-up, to turnkey projects. Let Napier-Reid be your solution for water and wastewater purification.



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