



# OIL/WATER SEPARATORS

Innovative and effective system for oil removal  
from rain water and industrial wastewater



Waste water treatment  
specialists.  
Since 1994.

## SEPKO – a fundamental decision

There are many human activities where oil products are used. It is almost impossible in practice to avoid oil spills into the wastewater. To save the nature the use of modern and effective oil separation technology is necessary.

ENEKA UAB has a long term experience in manufacturing of oil/water separators. A very first our oil/water separator was installed in 1996. This plant is still operating properly!

Our customers have already evaluated the efficiency and reliability of our oil/water separators. We are glad to have a many permanent customers (oil and construction companies) who are installing our plants during many years.

SEPKO is a Class I coalescing separator according European standard EN 858-1. After treatment with our separator the residual oil content in water lower than 5 mg/l is achieved.

Applications of SEPKO oil/water separators:

- rainwater run-off from gasoline stations, parking areas, road terrains etc.
- process wastewater from car washes, industrial applications etc.

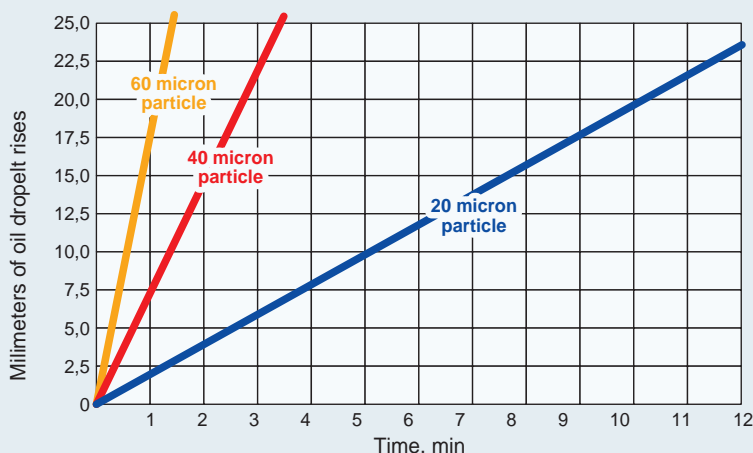
SEPKO has no moving parts, requires little service, and is designed to treat the effluent water in the most effective way. Furthermore, our separator is equipped with unique coalescing technology which has established as the most efficient gravitational oil separation material on the market. The coalescing media has also a high degree of resistance to plugging caused by dirt, sludge and biological growth.

## The principles of oil separation

Most physical mixtures of oil and water will separate by gravity eventually. Oil has a lower specific gravity than water, and it will eventually float to water's surface. Nevertheless, the

separation of small oil droplets can take a very long time and also requires the tanks with huge volumes (see chart below).

**OIL DROPLET RISE DISTANCE VS. TIME FOR VARIOUS OIL DROPLET SIZES**



The relationship between oil droplet size and its rise velocity is described by the Stokes' Law:

$$V_R = \frac{g}{18} (\rho_w - \rho_o) d^2$$

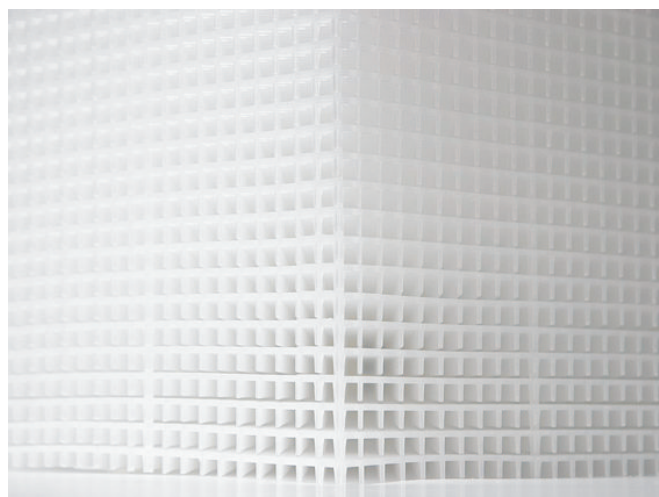
- $V_R$  – oil droplet rise velocity (m/s)
- $g$  – gravitational constant (9,81 m<sup>2</sup>/s)
- $\rho_w$  – viscosity of water (0,001 kg/ms)
- $\rho_w$  – density (kg/m<sup>3</sup>) of the water
- $\rho_o$  – density (kg/m<sup>3</sup>) of the oil
- $d$  – diameter of the oil droplet (m)

## Coalescing material – efficiency guaranteed

As can be derived from the Stokes' law, there is quadratic relationship between the rise velocity and droplet size – twice bigger droplet rises up four times faster. So, the main object of an oil/water separator is to increase the droplet size as quickly as possible, thereby decreasing the size and cost of the separator. The features of the SEPKO separators system are all designed for this purpose.

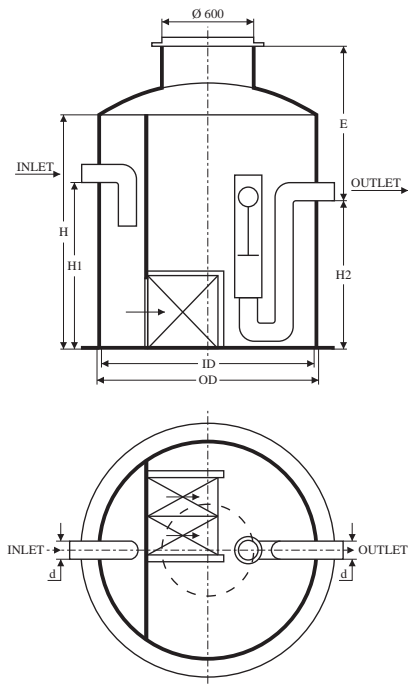
Advantages of the coalescing material:

- Special oleophilic (oil attractive) polypropylene which provides years of trouble-free service.
- Oil droplet's rising distance is reduced to 6 mm. Shorter distance means lesser rise time traveled to coalesce, which can result in better removal rates.
- Coalescing surface is more than 4 times larger as other commonly used media.
- Resistance against plugging by solid particles due to self cleaning design.
- 99,99+ % removal of free and dispersed oil regardless of micron size.



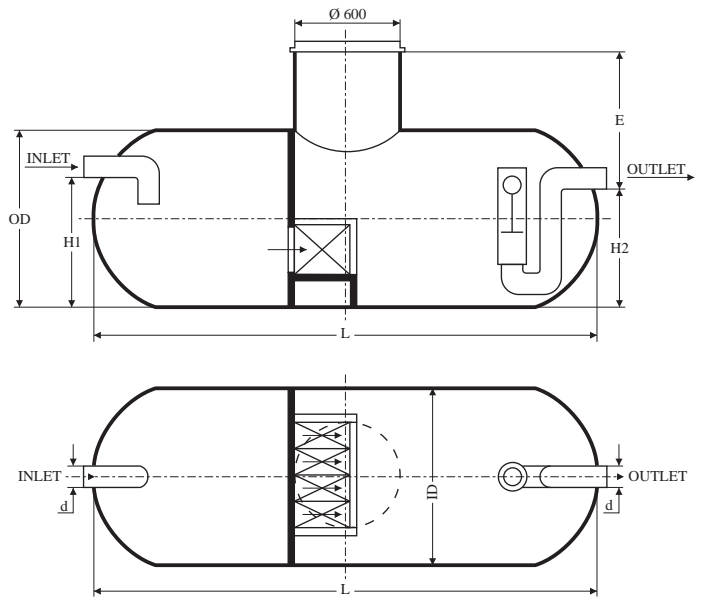
## SEPKO fits for every application

We manufacture oil/water separators in nominal sizes NS = 1,5 ... 100 l/s. SEPKO can be also supplied with integrated sludge traps – all in one! According to the application the volume of the sludge trap is chosen from three different sizes: 100 x NS, 200 x NS or 300 x NS. The drawings below display SEPKO separators excluding sludge traps. Dimensions for information only.



SEPKO VERTICAL EXECUTION

Type	Flow rate, l/sec	OD, mm	ID, mm	L, mm	H1, mm	H2, mm	DN, mm
SEPKO-1,5	1,5	1330	1200	1000	950	1540	150
SEPKO-2	3	1330	1200	1000	950	1540	150
SEPKO-6	6	1550	1400	1000	950	1540	150
SEPKO-10	10	1550	1400	1300	1200	1650	200



SEPKO HORIZONTAL EXECUTION

Type	Flow rate, l/sec	OD, mm	ID, mm	L, mm	H1, mm	H2, mm	DN, mm
SEPKO-15	15	1550	1400	2600	1200	1150	200
SEPKO-20	20	1550	1400	3400	1200	1150	200
SEPKO-30	30	1550	1400	4800	1150	1100	250
SEPKO-40	40	2220	2000	3300	1700	1650	300
SEPKO-50	50	2220	2000	4000	1700	1650	300
SEPKO-65	65	2220	2000	5100	1700	1650	300
SEPKO-80	80	2220	2000	6200	1700	1650	300
SEPKO-100	100	2220	2000	7600	1700	1650	300

## Operation

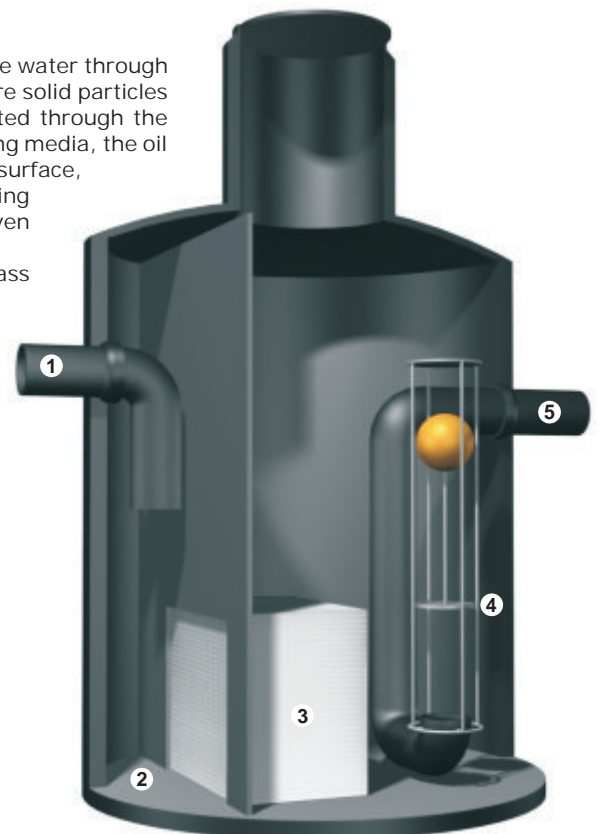
Oily water influent is introduced into the separator tank under surface of the water through the inlet pipe (1). The water comes to the first primary settling section (2) where solid particles and bigger oil droplets will be removed by gravity. Afterwards water is directed through the coalescing media (3). As water passes horizontally through the pack of coalescing media, the oil droplets rise vertically until they contact the media. By contacting the oleophilic surface, the oil particles are captured and they coalesce with other particles becoming larger. As the process continues, bigger oil droplets will be formed and driven upward by gravity until they reach the water surface.

As solid deposits accumulate on the coalescing media they increase in mass and eventually slough off into the sump. This self cleaning feature reduces the frequency of required cleanings.

Treated water is discharged through outlet pipe (5).

Oil accumulated on the water surface is removed during maintenance of the separator or collected in a separate tank by skimmers.

SEPKO is equipped with an automatic closure device (4), which is calibrated to float in water and to sink in oil. This floating valve closes water outlet when the amount of accumulated oil on the water surface has reached the maximum level.



As an option for measuring of accumulated oil layer we supply an automatic warning device type LS-2 (oil alarm). If oil storage is full, the device is actuating alarm signal. Oil alarm device type LS-2 can be used to control pumps or closing valves.



## Reliable construction

The body of oil/water separator is made of double-wall PE material which is very resistant against the external loads. The main advantage of this rigid material is that SEPKO can be mounted deep in the ground without any additional concrete reinforcements etc. This means that the installation cost of

separator and time consumption are reduced significantly.

Oil/water separators can be delivered not only in PE tanks but also as set of internal parts for installation to concrete tanks in-situ. This application is mostly used for big separators with flow rate more than 100 l/s.

*SEPKO vertical execution  
Flow rates 1,5 to 10 l/s*



*SEPKO horizontal execution  
Flow rates 15 to 100 l/s*



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