

Water Technologies

# API Oil/Water Separators - A Total System Approach

**SIEMENS**





## A Generation Ahead

In 1937, we partnered with the American Petroleum Institute (API) to develop the industry's first engineered oil/water separator. Today, more than 60 years and a thousand installations later, the API oil/water separator remains the industry benchmark.

### UNMATCHED EXPERIENCE

Our experience in designing, building and providing primary oil/water separation is unmatched in the industry. Our systems recover more reusable oil, require less maintenance and are safer than other systems. We continually improve and upgrade our designs to provide the highest levels of performance and meet all current regulations.

And our collectors and skimmers are suitable for a variety of applications in the petroleum industry, from wastewater treatment to oil product recovery and recycling. Our technologies include the API oil/water separator, the rotoskim slotted skimmer pipe, the oil roll skimmer and other types of skimming equipment.

### API SEPARATORS PROVIDE EARLIER RECOVERY OF REUSABLE OIL

Our API separators treat and remove up to 80 percent of oil from refinery process water and storm run-off. If emulsification is minimal, a greater percentage of oil may be removed. Using our API separators reduces the load on downstream treatment units and recovers more oil before chemical emulsion breakers are added in secondary oil/water separation.

Our API separators are sized according to established API guidelines for gravity separation and collection of separable oil from petroleum industry wastewater. For effective flow distribution we recommend our unique inlet design using dished deflector baffles in place of the more antiquated slotted baffle.

### SLUDGE SCRAPERS REQUIRE LESS MAINTENANCE

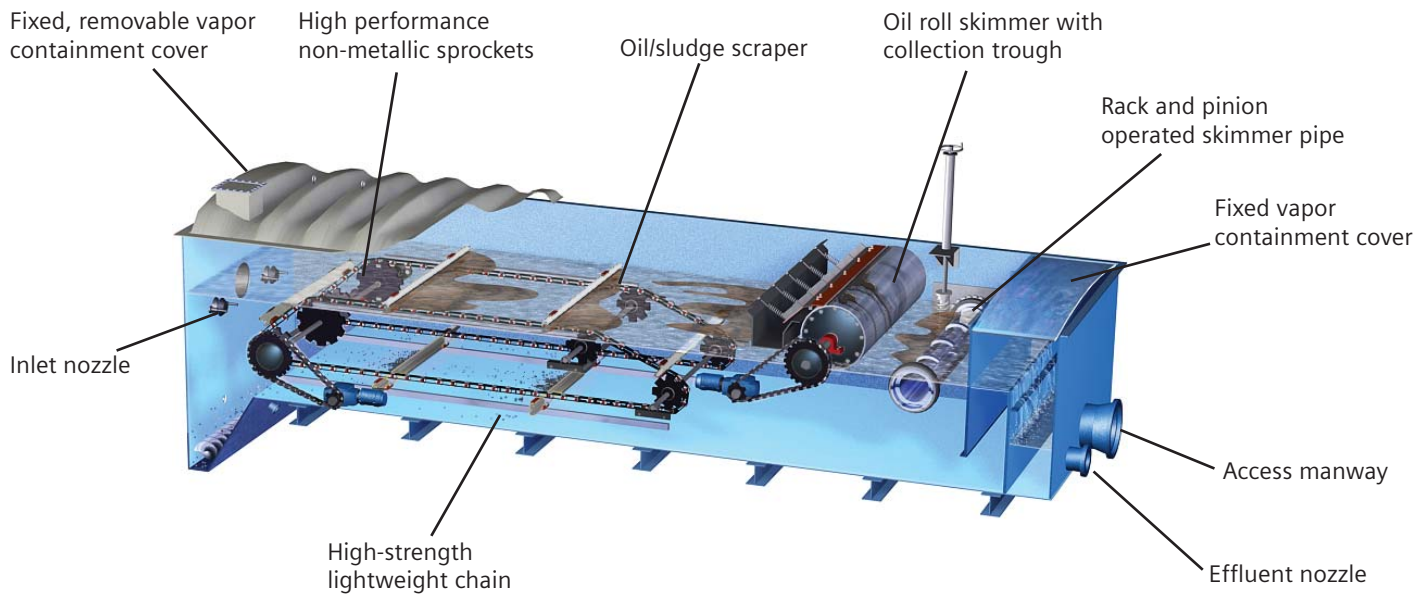
The main reason collector components fail in petroleum applications is because of their inability to remove thick, sticky sludges from sludge hoppers. That is why our sludge collection hoppers, screw conveyors, flushing connections, clean outs, sludge withdrawal piping and sludge pumps have been specially designed for minimal maintenance and operator attention.

Our most common sludge scraper design uses a 4-shaft chain and flight collector mechanism. In this configuration, flights are conveyed by carrying chain running across four sets of shafts and sprockets – two sets at the top of the tank and two at the bottom. Combinations of 2-shaft and 3-shaft collectors are also available.

The flights skim oil from the surface of the water to the effluent end of the separator for removal on a continuous basis. As the flights reach the effluent end of the tank, they travel to the bottom where they move sludge to the hoppers at the influent end of the tank. Here the sludge is pumped to disposal systems, or recovered in coking operations.

*Our sludge scrapers are designed using high-strength, non-metallic components to resist damage caused by corrosion, temperature and abrasion.*





### OIL ROLL SKIMMERS DELIVER RELIABLE OIL REMOVAL

Our oil roll skimmers ensure safe and efficient removal of collected oils, even when visual observation is not possible. The operation is continuous, independent of oil depth in the API separator and requires no operator attention or adjustment.

Manufactured from hand-selected schedule 40 stainless steel pipe, the skimmer has a highly machined surface finish. This creates a much larger surface area and provides surface tension properties to gather more oil. Machining also provides a flat surface for the doctor blade to run on, ensuring complete contact of the blade with the pipe. This is essential for oil removal capacity and doctor blade longevity. High volumetric flows of oil can also be removed with the slotted skimmer pipe, although this method will remove excess water with the oil. Depending on the slop oil system to be used for recovery of this product, additional water may be acceptable.

### FIXED CONTAINMENT COVERS RETAIN VAPORS MORE EFFECTIVELY

We use fixed vapor containment covers on API oil/water separators to reduce odors and volatile organic compound (VOC) emissions to the surrounding airspace. The covers are elevated from the oil/water surface to enclose all of the oil skimming equipment, creating a vapor space that is blanketed with nitrogen gas to maintain a non-explosive environment, and to provide enhanced oil skimming.

Access hatches allow inspection of the skimming equipment, effluent weir and effluent chamber. The cover gasket, made of a special long-life material compatible with the environment, provides a positive seal by nature of its compressibility. Fixed covers of

high-performance fiberglass or steel are provided for enclosing the API separator to ensure vapor and odor containment. Fiberglass panels are mounted to the tank flange with bolts or cast stainless steel clamps that compress the sealing material for positive control of hydrocarbons.

### PERFORMANCE, SAFETY AND DURABILITY

Over the years, we've come to thoroughly understand API separator applications and specific needs of the customer and the equipment. This experience, coupled with our commitment to customer satisfaction, results in smooth project execution, safe operation and efficient, long-term process performance.

Our API separator design has been risk-assessed, assuring safe operation. Safety considerations include:

- Above ground, steel tankage for double-containment and visual leak detection for hazardous sludge and wastewater.
- Vapor-tight covers to contain harmful and regulated VOCs.
- Specially designed, high-strength, non-metallic collector components for corrosion, temperature and abrasion resistance.
- Stainless steel on all wearing metallic components for reduced corrosion.
- Deflagration vents, flame arrestors and more.



Our fixed VOC containment cover systems reduce the risk of explosions by using an inert gas, such as nitrogen, instead of air.



For further information  
please contact:

Siemens  
Water Technologies  
P.O. Box 1604  
Waukesha, WI 53187  
Tel: 262.547.0141  
Fax: 262.547.4120  
[petroleum.water@siemens.com](mailto:petroleum.water@siemens.com)  
[www.siemens.com/water](http://www.siemens.com/water)



*Backed by over 65 years of continuous experience providing new, innovative and cost-effective wastewater treatment solutions, Siemens is uniquely equipped to handle all of the environmental solutions that petroleum and petrochemical companies require. From hazardous material control to safety, we set the industry standards and, at the same time, reduce operating costs through component upgrades, equipment retrofits and wastewater recycle/reuse.*

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

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