APPLICATIONS
- Onshore and offshore oil production facilities — removal of oil and suspended solids from produced water after primary gas-oil-water separation
- Offshore platforms — stormwater sumps for offshore platforms
- Cooling tower sedimentation control — removal of accumulated suspended solids in recycle water
- Water reclamation — water clarification and suspended solids removal
- Bilge water treatment — removal of oils and solids before water is discharged overboard
- Chemical processing plants — liquid-liquid and liquid-solid separation and extraction processes
- Spill prevention systems — containment of accidental oil spills in tank farm and pipeline locations
- Electric utilities — run-off and washwater treatment
- Ballast water treatment — shipboard and onshore treatment of oil tanker ballast water for oil recovery and pollution abatement
- Petroleum refineries — general liquid-liquid and liquid-solid extraction as well as treatment of area run-off and process wastewaters
- Removal of washdown and 20-year storm run-off residue
- Metal fabrication — cutting and cooling oil treatment
- Closed-loop systems maintained free of contaminants

The Schlumberger WEMCO® PACESETTER® separator uses an innovative plate design to remove oil and suspended solids from process streams more effectively and economically compared with other gravity separators. It is distinguished from conventional crossflow separators by its integrated, lattice-type pack structure, which provides excellent strength and rigidity. Influent oil concentrations as high as 800,000 ppm can be reduced to as little as 15 ppm with most suspended solids removed.

Operating principle and key features

PACESETTER separators use a unique two-stage process to remove oil and suspended solids from treated water. First, influent energy is diffused by coalescer and distributor packs, causing small oil droplets to collide and coalesce for easier separation. This is followed by a separator pack of corrugated plates, which provide separate surfaces and flow paths for oil and solids, preventing reentrainment. The removed sludge moves to the bottom of the plates and then drops off into the hopper, where it is discharged intermittently through a blowdown valve.

A common problem in refinery separators is the accumulation of low-density solids at the interface between separated oil and water. Over time, these solids can form a thick rag layer that extends down into the plate pack, inhibiting oil discharge and impairing separation efficiency. The PACESETTER separator can be equipped with a continuous skimming assembly to remove this rag layer accumulation before it can affect the separation process.

Water jets and gas lances positioned around the plate packs allow fouled plates to be cleaned without being removed from the vessel. Water lances are located around the plate pack perimeter and are used with the tank drained to wash accumulated sludge from the plate surfaces. Gas lances are located under the packs and are used with the vessel full, creating turbulence that loosens attached solids.

Performance
- Designed for 100% removal of all oil droplets from 40 to 60 μm and larger per API Design Manual 421
- Individual units for flow rates from 159 m³/d to 15,900 m³/d [1,000 bbl/d to 100,000 bbl/d]
- Influent oil concentrations as high as 800,000 ppm reduced to as little as 15 ppm with most suspended solids removed
- Atmospheric and pressure vessel designs

Aftermarket support
Schlumberger provides site support using a dedicated team of experienced service and project representatives. With strategically located hubs across the globe, this network provides turnkey expertise and support for customers for the duration of a project — from commissioning to operation. From replacement parts and spares, from field service to equipment repair, Schlumberger works to provide the highest-quality support to ensure customers’ satisfaction.
Options and types
We perform computer analysis of influent conditions to determine the optimal plate configuration for each application. The coalescing system is composed of specially designed diagonally corrugated, polypropylene plates that are assembled vertically in packs. We can help you select pack dimensions for each application to ensure appropriate detention time and oil droplet collision opportunities. PACESETTER separators are available in horizontal and vertical and atmospheric or pressurized configurations.

Installation examples
- 103,000-bbl/d operation for Ecopetrol in the Castilla field, Colombia
- More than 20 stormwater sumps for Chevron, Gulf of Mexico
- 100,000-bbl/d operation for Giant Refining, Yorktown, Virginia, USA
- Refinery wastewater treatment

ADVANTAGES
- Highest separation efficiency per given tank volume
- Recovered oil that is virtually water free
- No energy required for separation; inlet hydraulic head only needs to be 6 in more than operating level
- High capacity with liquid detention time normally less than 10 minutes, permitting flow through of large volumes of liquids
- No negative effect from high or fluctuating concentrations of oil or solids in the feed
- Low empty weight, small size, and skid mounting for easy moving to different locations
- No moving parts to keep operating costs low