

VEIRSEP™ Horizontal Flotation System

Our patented VEIRSEP™ horizontal flotation system incorporates several unique technologies to separate oil and various other contaminants from produced water and contaminated wastewater streams. Featuring a compact footprint, the unit is fully automated and can be designed to operate in an atmospheric or pressurized condition. The system is comprised of the SPIRALSEP™ unit, influent free oil knock-out compartment and effluent quiescent compartment, four flotation chambers, an oil collection weir system, DGF pumps for recycling fluid and generating varying micron size air/gas bubbles, as well as all required control and operational accessories.

APPLICATIONS:

- Offshore Produced Water
- Refinery Wastewater Treatment
- Pulp and Paper
- Volatile Organic and H₂S Stripping/Removal
- Industrial Oily Water Treatment

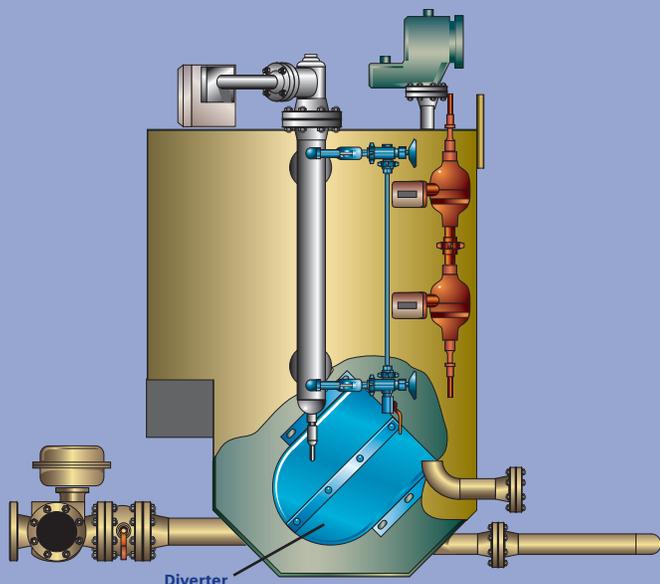
The VEIRSEP™ system offers the greatest contaminate removal efficiency of any other flotation device configuration due to multiple compartments and increased flotation surface area. The increased efficiency of the VEIRSEP™ system results in reduced chemical usage and ensured environmental discharge compliance.

SIEMENS

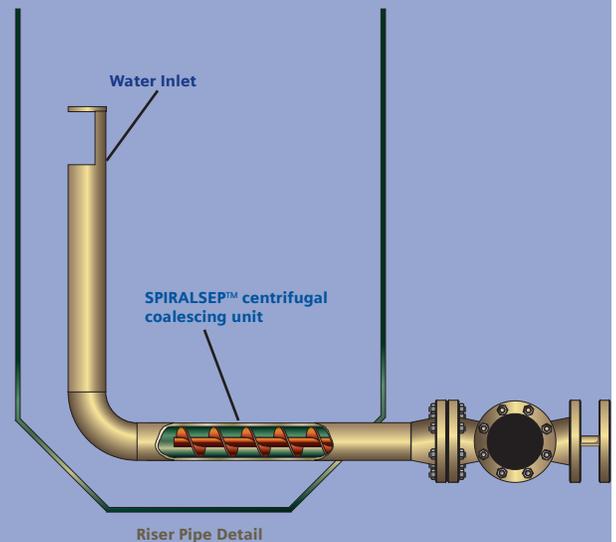


FLOTATION PROCESS

The VEIRSEP™ system incorporates an inlet contaminated water compartment equipped with a SPIRALSEP™ unit that is primarily used as a coalescing device.



Veirsep™ system with cutaway showing the flow diverter used to concentrate the flow in the path of bubbles as well as the manipulation of surface tension to force the float towards the adjustable weir.



VEIRSEP™ SYSTEM

| Model No | Vessel Flow Rate | | Vessel Weight | | Water | | | Veirsep | | Length Ft.-In/CM |
|----------|------------------|------|---------------|------------------|-------------|--------------|--------------|------------------|-----------------|------------------|
| | GPM | BPD | Dry lbs/KG | Operating lbs/KG | Inlet In/CM | Outlet In/CM | Outlet In/CM | Height Ft.-In/CM | Width Ft.-In/CM | |
| 1MV | 30 | 1M | 9260/4200 | 11380/5162 | 4/122 | 4/122 | 2/61 | 5'6"/168 | 5'0"/152 | 14'0"/427 |
| 3MV | 90 | 3M | 10340/4690 | 20300/9208 | 4/122 | 4/122 | 2/61 | 6'6"/198 | 7'0"/213 | 14'0"/427 |
| 5MV | 150 | 5M | 11000/4990 | 24625/11170 | 6/183 | 6/183 | 3/91 | 7'6"/229 | 7'6"/230 | 16'0"/488 |
| 7.5MV | 220 | 7.5M | 22325/10127 | 38986/17684 | 6/183 | 6/183 | 4/122 | 8'11"/272 | 9'6"/305 | 20'6"/625 |
| 10MV | 300 | 10M | 22500/10206 | 42350/19210 | 8/244 | 8/244 | 4/122 | 9'6"/290 | 10'0"/305 | 23'1"/704 |
| 15MV | 440 | 15M | 23600/10705 | 65450/29688 | 8/244 | 8/244 | 4/122 | 11'0"/335 | 10'0"/305 | 24'0"/732 |
| 20MV | 580 | 20M | 25250/11453 | 73150/33181 | 8/244 | 8/244 | 4/122 | 12'0"/366 | 10'6"/320 | 26'0"/792 |
| 25MV | 750 | 25M | 30480/13826 | 79380/36007 | 8/244 | 8/244 | 4/122 | 12'6"/381 | 10'6"/320 | 27'0"/823 |
| 30MV | 880 | 30M | 34820/15794 | 100340/45514 | 10/305 | 10/305 | 6/183 | 13'0"/396 | 10'6"/320 | 33'0"/1006 |
| 40MV | 1200 | 40M | 45515/20645 | 140550/63753 | 10/305 | 10/305 | 6/183 | 14'0"/427 | 13'1"/399 | 36'4"/1107 |
| 50MV | 1500 | 50M | 47800/21682 | 149400/67767 | 10/305 | 10/305 | 6/183 | 14'6"/442 | 14'0"/427 | 38'0"/1158 |
| 75MV | 2200 | 75M | 59500/26989 | 165950/75274 | 10/305 | 10/305 | 6/183 | 14'6"/442 | 14'0"/427 | 46'0"/1402 |
| 100MV | 2900 | 100M | 70400/31933 | 210266/95376 | 12/366 | 12/366 | 8/244 | 14'1"/429 | 15'0"/457 | 48'0"/1463 |
| 150MV | 4400 | 150M | 100540/45605 | 264520/119986 | 12/366 | 12/366 | 8/244 | 16'6"/503 | 16'0"/488 | 54'0"/1646 |

VEIRSEP-PTM™ SYSTEM

| Model No | Vessel Flow Rate | | Vessel Weight | | Water | | | Oil | | Veirsep-P | | Length Ft.-In/CM |
|----------|------------------|------|---------------|------------------|-------------|--------------|--------------|------------------|-----------------|------------------|-----------------|------------------|
| | GPM | BPD | Dry lbs/KG | Operating lbs/KG | Inlet In/CM | Outlet In/CM | Outlet In/CM | Height Ft.-In/CM | Width Ft.-In/CM | Height Ft.-In/CM | Width Ft.-In/CM | |
| 5MV | 150 | 5M | 21220/9625 | 31520/14297 | 6/183 | 6/183 | 3/91 | 9'8"/295 | 9'6"/290 | 20'7"/627 | | |
| 7.5MV | 220 | 7.5M | 23000/10433 | 46000/20865 | 6/183 | 6/183 | 4/122 | 10'0"/305 | 9'6"/290 | 22'6"/686 | | |
| 10MV | 300 | 10M | 25000/11340 | 57200/25946 | 8/244 | 8/244 | 4/122 | 10'6"/320 | 9'6"/290 | 25'0"/762 | | |
| 15MV | 440 | 15M | 26200/11884 | 66340/30092 | 8/244 | 8/244 | 4/122 | 12'4"/376 | 10'0"/305 | 27'0"/823 | | |
| 20MV | 580 | 20M | 31800/14424 | 76780/34827 | 8/244 | 8/244 | 4/122 | 13'0"/396 | 11'6"/351 | 28'0"/853 | | |
| 25MV | 750 | 25M | 37850/17169 | 83500/37875 | 8/244 | 8/244 | 4/122 | 13'6"/411 | 11'6"/351 | 29'0"/884 | | |
| 30MV | 880 | 30M | 43560/19759 | 89600/40642 | 10/305 | 10/305 | 6/183 | 13'6"/411 | 11'0"/335 | 30'0"/914 | | |
| 40MV | 1200 | 40M | 48750/22113 | 135000/61236 | 10/305 | 10/305 | 6/183 | 13'8"/417 | 11'0"/335 | 37'0"/1128 | | |
| 50MV | 1500 | 50M | 53340/24195 | 195120/88506 | 10/305 | 10/305 | 6/183 | 16'10"/513 | 13'0"/396 | 42'6"/1295 | | |
| 75MV | 2200 | 75M | 54250/24608 | 218750/99224 | 10/305 | 10/305 | 6/183 | 17'7"/536 | 13'0"/396 | 45'0"/1372 | | |
| 100MV | 2900 | 100M | 75120/34074 | 245375/111301 | 12/366 | 12/366 | 8/244 | 13'9"/419 | 16'6"/503 | 49'6"/1509 | | |
| 150MV | 4400 | 150M | 110500/50122 | 275000/124738 | 12/366 | 12/366 | 8/244 | 15'0"/457 | 19'0"/579 | 70'0"/2134 | | |

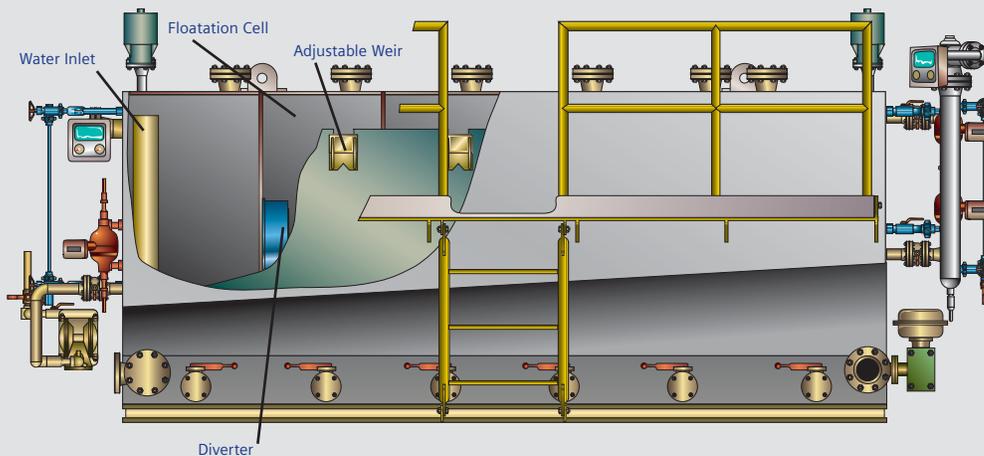
The second cell contains an optional coalescing pack section, where small oil droplets attach themselves (coalesce) with larger particles, greatly reducing the quantity of polyelectrolyte needed. The four central flotation cells (chambers) receive an injection of fluid laden with micro fine air/gas bubbles, which adhere to the oil particles, allowing the difference in gravity to carry the oil/gas mixture to the surface. The flotation gas bubbles are generated by a

number of different methods including DGF, eductor or sparge tubes. Our DGF technology method uses our patented pump system to create micro fine bubbles. This system utilizes a dual sided impeller that pulls both water and gas into the pump where it is mixed and fine bubbles are discharged into the vessel at an accelerated rate. The DGF technology allows for instantaneous adjustments in bubble size resulting in greater adaptability to changing water chemistry characteristics.

The last cell allows any remaining entrained gas to be released, which results in treated water ready for discharge. Automatic level control systems maintain the correct amount of water in the unit at all times to ensure optimal skimming. Each cell is equipped with an adjustable weir for skimming oil and a bottom drain for removing solids.

DESIGN OPTIONS

- Pressurized (VEIRSEP-PTM) or Atmospheric (VEIRSEP™)
- ASME Code or Non-Code Construction
- DGF, Eductor or Sparge Tube Flotation Design
- Coalescing Pack constructed of Polypropylene or Stainless Steel (VEIRSEP-PLUS™)
- Client can determine controls, tie in locations and safety controls
- VEIRSEP™ systems can be packaged with our other units for final polishing



The information provided in this literature 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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