

# PACKED VESSELS

**PV**



## SEAWATER FILTRATION FOR MARINE SCRUBBERS

AN ECONOMICAL AND EFFECTIVE  
METHOD FOR REMOVING SOLID  
PARTICLES IN THE 10 MICRON RANGE AT  
HIGH CAPACITIES



**PV36**  
PACKED VESSEL

## VIRTUALLY NO MAINTENANCE REQUIRED

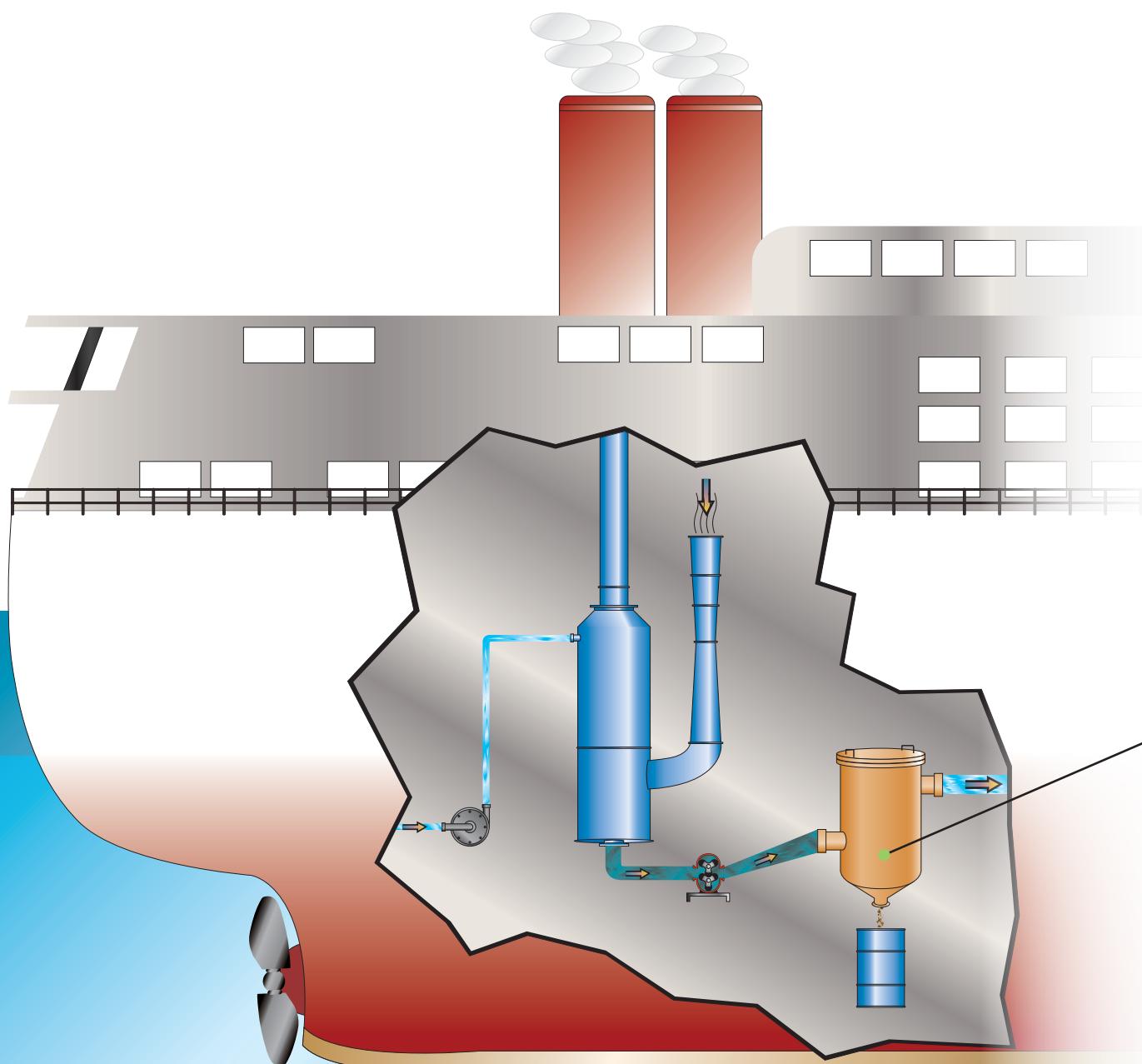
### SWECO PACKED VESSELS

Tough emissions regulations set forth by the IMO make exhaust gas scrubbers very important to both new build ships and retrofits. In addition to sulfur reduction, these regulations regulate the turbidity and hydrocarbon content of seawater returned to the oceans.

SWECO Packed Vessel Hydrocyclone Systems remove most particles larger than 10 microns, and help reduce the hydrocarbon content. The use of hydrocyclones can lower the capital, operating, and maintenance costs of a solids-separation system. Installation is straight-forward, as the hydrocyclone system is shipped assembled. Reliable operation of the system only

requires a consistent feed at a steady pressure. The only moving parts are the feed pump and the slurry itself. Energy costs are much lower than those of a large centrifuge and the maintenance, when needed, is much simpler and easier to accomplish.

Packed Vessel designs for highly acidic slurries offer long service life with very little maintenance. Unique composite 25mm hydrocyclones are closely packed inside the vessel, producing a thickened waste sludge which can be discharged once or twice daily to a waste receiver.



## REMOVES PARTICULATES GREATER THAN 10 MICRON

### FEATURES

- Removal of most particulate greater than 10 microns from seawater for Cyclone Separator package
- Requires virtually no regular maintenance
- Composite Cyclones are highly resistant to corrosion
- Extremely compact
- No moving parts
- Requires 2 to 3 bar of feed pressure
- Available in diameters from 4 - 52 inches (102 - 1321mm) with capacities between 12 - 3600 gpm (3 - 817m<sup>3</sup>/h)

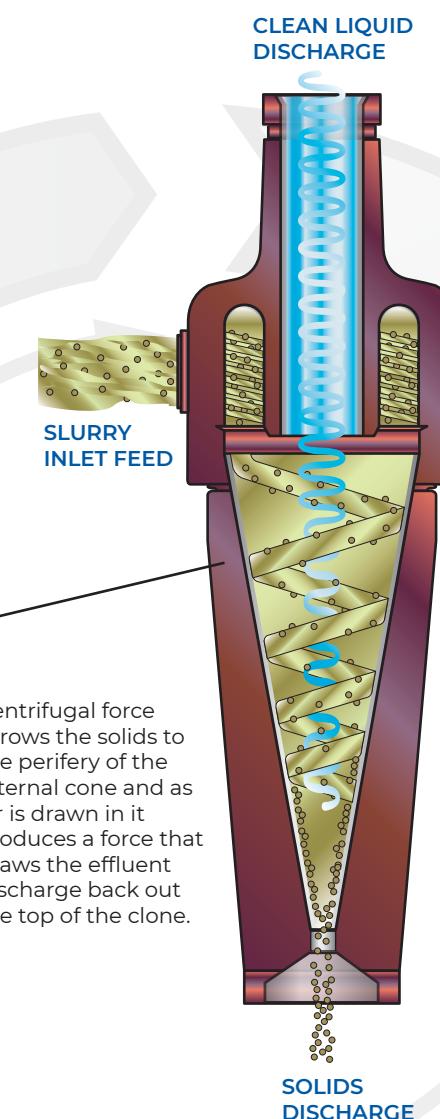
### BENEFITS

- Low maintenance costs, minimal upkeep costs
- Minimal floor space required
- Easily retrofittable to current systems
- No chemical or filter cartridges required



### PRINCIPLE OF OPERATION

A hydrocyclone has no moving parts and achieves solid/liquid separation by virtue of a pressure drop across the unit. A slurry is forced under pressure into the inlet section of the liner via a tangential inlet port. This, together with narrow cyclone diameter, causes the fluid to spin at high velocity which creates a high g radial acceleration field. The solid particles, being the denser phase, are forced outwards to the hydrocyclone inner wall. Here, through internal hydrodynamic forces, the solids are ejected from the apex of the cyclone while the liquid exits counter currently via an axial port adjacent to the inlet. The separated solids can be discharged directly. Where the discharge of liquid with the solids is to be minimized, the solids can be collected in an accumulator for settling. The accumulator can then be periodically purged of concentrated solids without interrupting the operation of the hydrocyclone system.



# PACKED VESSEL SPECIFICATIONS

CLONE DIAMETER	NUMBER OF CLONES	CUTPOINT IN MICRONS	*CAPACITY RANGE	PRESSURE PSI
1-INCH (25mm)	2 - 600	4 - 15 $\mu$ m	12 - 3600 gpm (3 - 817m <sup>3</sup> /h)	25 - 50
PV14	PV36	PV48		
DIAMETER: 14-IN (356mm) NO. CLONES: 32 CAPACITY: 192 GPM (44m <sup>3</sup> /h)	DIAMETER: 36-IN (914mm) NO. CLONES: 275 CAPACITY: 1650 GPM (375m <sup>3</sup> /h)	DIAMETER: 48-IN (1219mm) NO. CLONES: 550 CAPACITY: 3300 GPM (750m <sup>3</sup> /h)		
				

\*CAPACITIES MAY VARY DEPENDING UPON THE APPLICATION

**SWECO® HYDROCYCLONE SYSTEMS** provide an economical and effective method for removing solid particles in the 10 micron range from various slurries. Hydrocyclones typically make finer separations than are practical with screening separators and at significantly higher capacities. In many applications cyclones can be used in place of centrifuges, providing the desired result at lower cost.



Manufacturers worldwide  
rely on SWECO

We span five continents with 9 manufacturing and support facilities and over 100 sales and service representative offices. So, wherever you are, be assured that SWECO – the global leader in screening technology – is there when you need us.