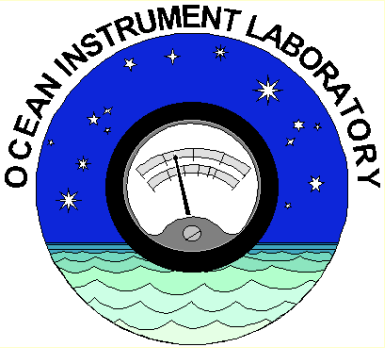
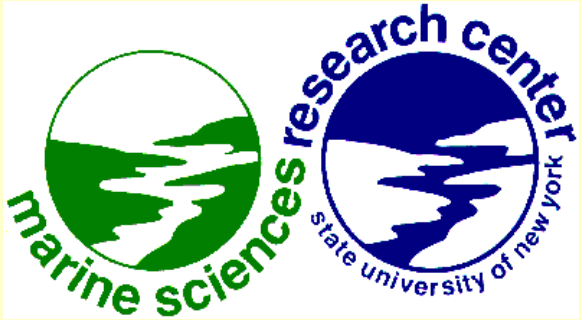
THE MSRC VORTEX DEBUBBLER 1987 - 2006

INMARTECH Symposium • WHOI • 18 November 2006

Thomas C. Wilson, Jr.

Ocean Instrument Laboratory • Marine Sciences Research Center
Stony Brook University • Stony Brook NY 11794 USA
thomas.wilson@stonybrook.edu





STONY BROOK
STATE UNIVERSITY OF NEW YORK

EQUATION 1:


To remove sensor/electronics from water jacket: remove 4 bolts securing end cap to top plate and lift straight up.
Connectors for data I/O, auxiliary A/D sensors, SBE 38 remote temperature sensor, and ground
End cap
Top plate
Out
Fresh water in
Salt water in
Drain
SBE
Water jacket

+

=

BUBBLE SOURCES

- Ingestion/downsweep.
- Cavitation.
- Degassing.

HEAD TANK

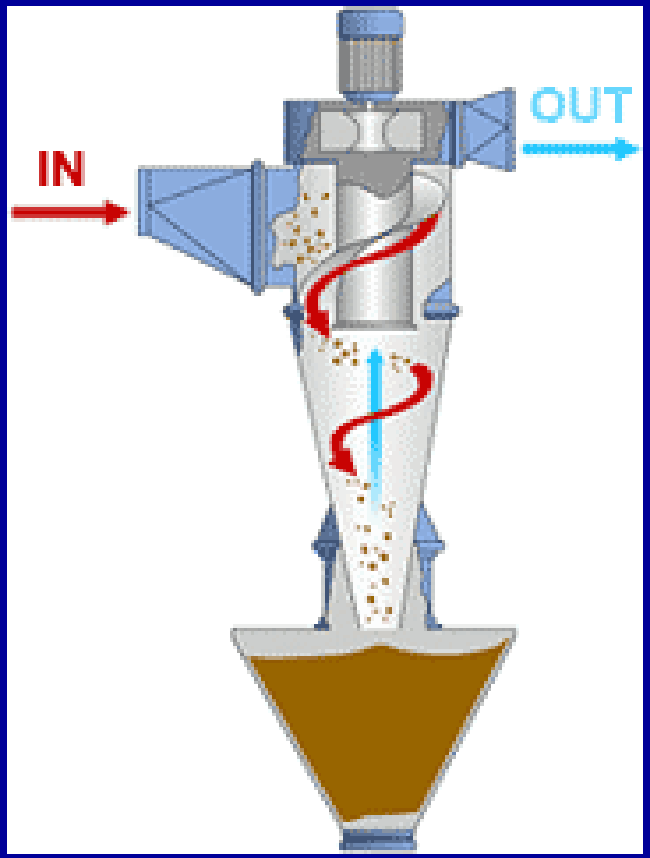
Takes up space.

Heavy.

Slosh problem.

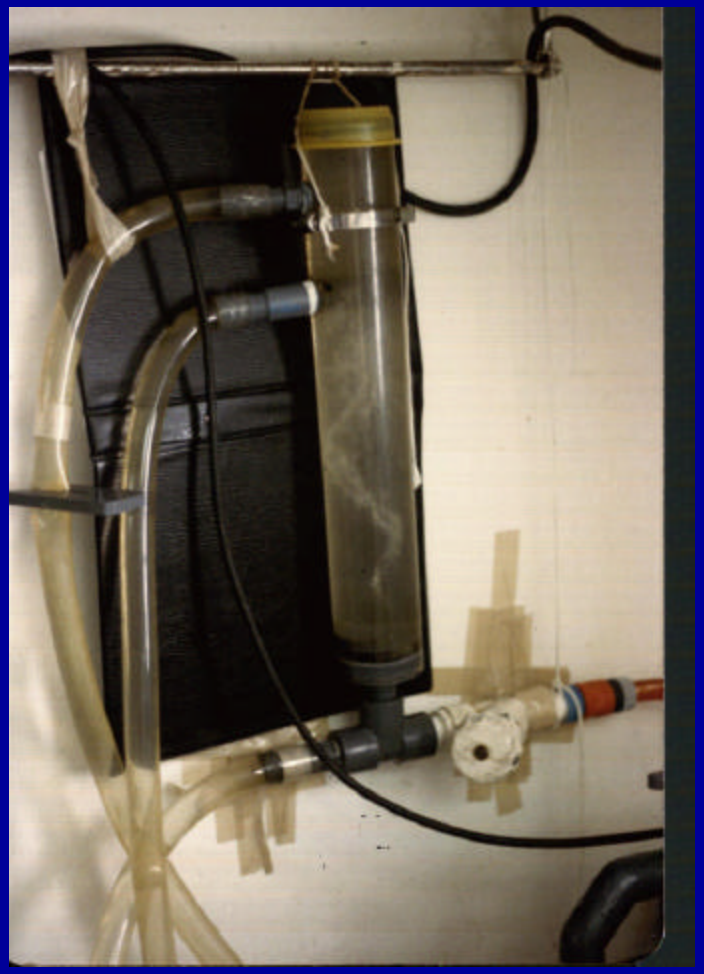
Low pass filtering problem.

CYCLONIC DUST SEPARATOR



Collects sawdust in commercial woodworking.

REVISION A - 1987



Aboard B/O *Garcia del Cid* in Western Mediterranean.

Classic R&D prototype: string, hose clamps, tape, core tube, & re-purposed office supplies.

Located over wet lab sink because it leaked like a sieve:

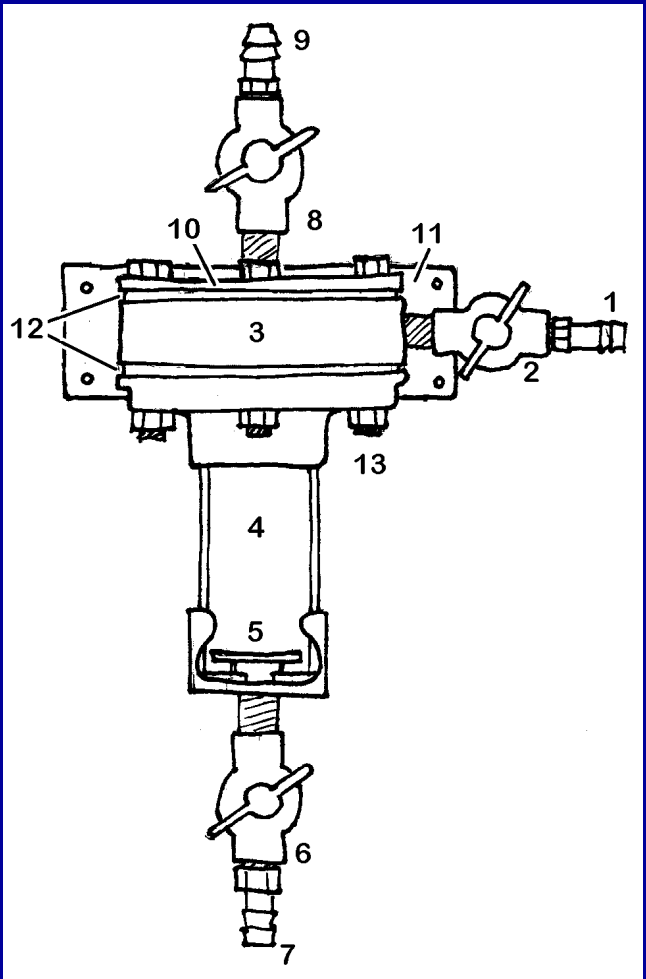
BUT IT WORKED.
(...just look at that vortex!)

REVISION B - 1988

Huntington Harbor / Oyster Bay Long Island.

String and tape are gone.
Leaks less, rusts more,
essentially impossible to clean.

REVISION G SCHEMATIC

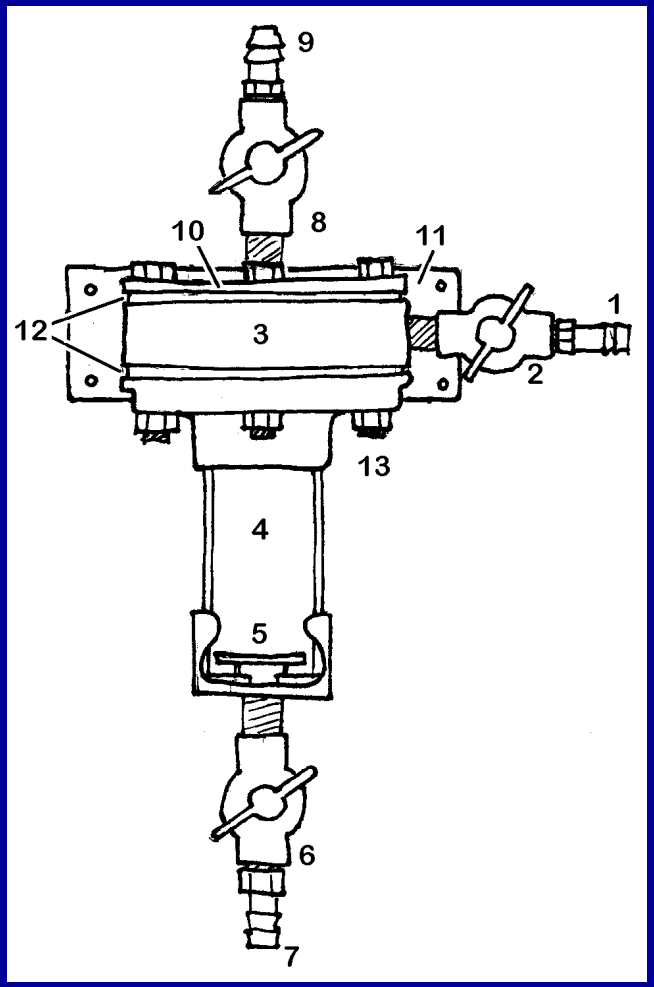


(Vortex chamber cut away
to show baffle plate)

1: input, 2: input valve,
3: injector plate,
4: vortex chamber,
5: output baffle plate,
6: output valve,
7: output, 8: waste valve,
9: waste exhaust,
10: top plate, 11:mounting plate,
12: upper and lower gaskets,
13: clamping bolts.

(image by HandCAD 1.0)

TWO STANDARD SIZES



3 inch diameter, internal volume ca. 1 liter. Design flow rate 18 - 24 liters per minute (4.75 - 6.35 gpm). Recommended for instruments such as the Seabird SBE21 thermosalinograph.

2 inch diameter, internal volume ca. 0.5 liter. Design flow rate 9 to 12 liters per minute (2.4 - 3.2 gpm). Recommended for instruments such as the Seabird SBE45 thermosalinograph.

Other sizes (1.5 - 6 inch diameter) by custom order.

ABOUT 78 DEBUBBLERS BUILT TO DATE

most still in service

Antarctic Support Associates
Bermuda Biological Station
Bigelow Laboratory
Chand, LLC.
Chem-Free Purification
Duke University
ExplorOcean Technology (UK)
Lamont-Doherty Earth Observatory
LUMCON
MBARI
Moss Landing Marine Labs
Naval Oceanographic Office
Naval Research Laboratory
NERC Southampton (UK)
NIWA (New Zealand)
NOAA AOML
Oregon State University
Raytheon Polar Services
NATO SACLANT (Italy)
Scripps Institute of Oceanography
Sea Education Association
Sea-Bird Electronics
SKB nv (Belgium)
Skidaway Institute of Oceanography
University of Delaware
University of Miami
University of Rhode Island
University of South Florida
University of Texas
University of Washington
University of Puerto Rico
US Coast Guard
WET Labs
WHOI

INSTALLATION ON R/V *WECOMA*

INSTALLATION ON M/V *P.T.BARNUM*

SoundScience project

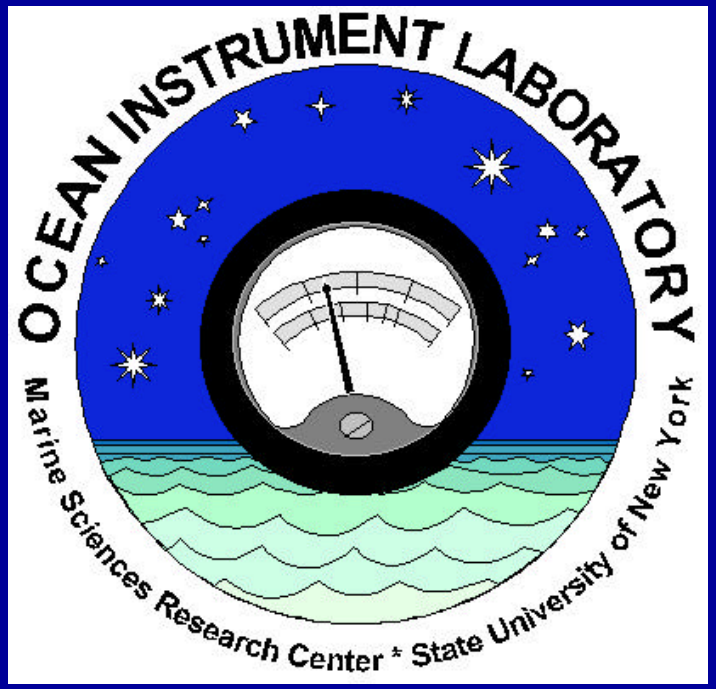
an instrumented ferry crossing Long Island Sound.

marine sciences research center
state university of new york

LATEST REVISION H

Bottom plate can be removed by hand for easier cleaning.
Retrofit available for many earlier units.

Thank you!



Thomas.wilson@stonybrook.edu