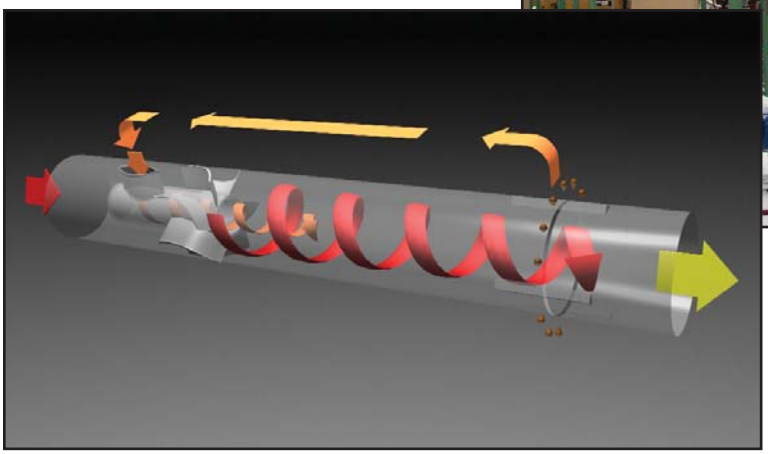
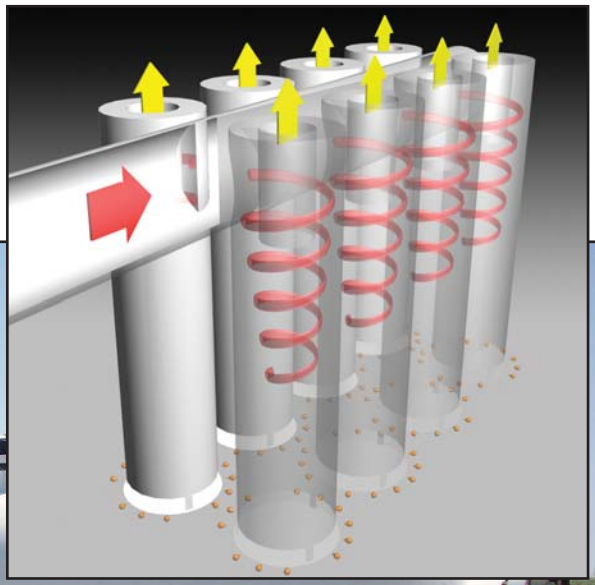
TAYLOR FORGE
ENGINEERED SYSTEMS

Vortex Separation Technologies





Engineered Solutions to Separation Problems

TAYLOR FORGE
ENGINEERED SYSTEMS

Vortex Technology

Internals use the high-energy momentum of fluids to produce a high "G" force which sends the liquids and solids against the Vortex Tube wall and creates a sufficient ΔP between liquid and gas to provide superior separation.

Separation of Gas/Oil/Water mixtures is traditionally accomplished by gravitational settling. Long separation periods of the liquids are the result of close densities and limited separation force. In many cases, the qualities of the separated components may not be as good as desired due to the characteristics of the oily fluid. In recent years Vortex Technology has become an effective and economical alternative.

Vortex Technology is available in two configurations:
Vortex Clusters or
Vortex Tubes.

The VORTEX CLUSTER

The "Vortex Cluster" is suited for gas dominant, liquid dominant, or liquid/liquid separation. Lower retention times and dramatically improved separation are the result of fluid control. This results in a smaller new vessel, improved separation, and increased flow through existing vessel with a Retrofit. No foam, up to 90% turndown.

2-phase separation (gas/liquid) is the result of increased angular velocity, which creates a ΔP between liquid and gas. At optimum conditions a liquid entrainment efficiency of 99.9 % removal of solids and liquid particle. This is further enhanced with reduced gas under carry. No Foam, No Additives.

3-phase separation (gas/liquid/liquid) will dramatically improve liquid/liquid separation. The controlled angular velocity promotes coalescence of smaller -droplets to larger droplets when the inertial force on a droplet is greater than surface tension of a similar droplet. Because of a difference in density, the coalescence is achieved when the higher density droplet goes to the wall. The larger droplets created will then separate when in the quiescent zone of the vessel. Residence time is dramatically reduced. It should be noted that liquid/liquid separation is dependent upon operating oil viscosity.

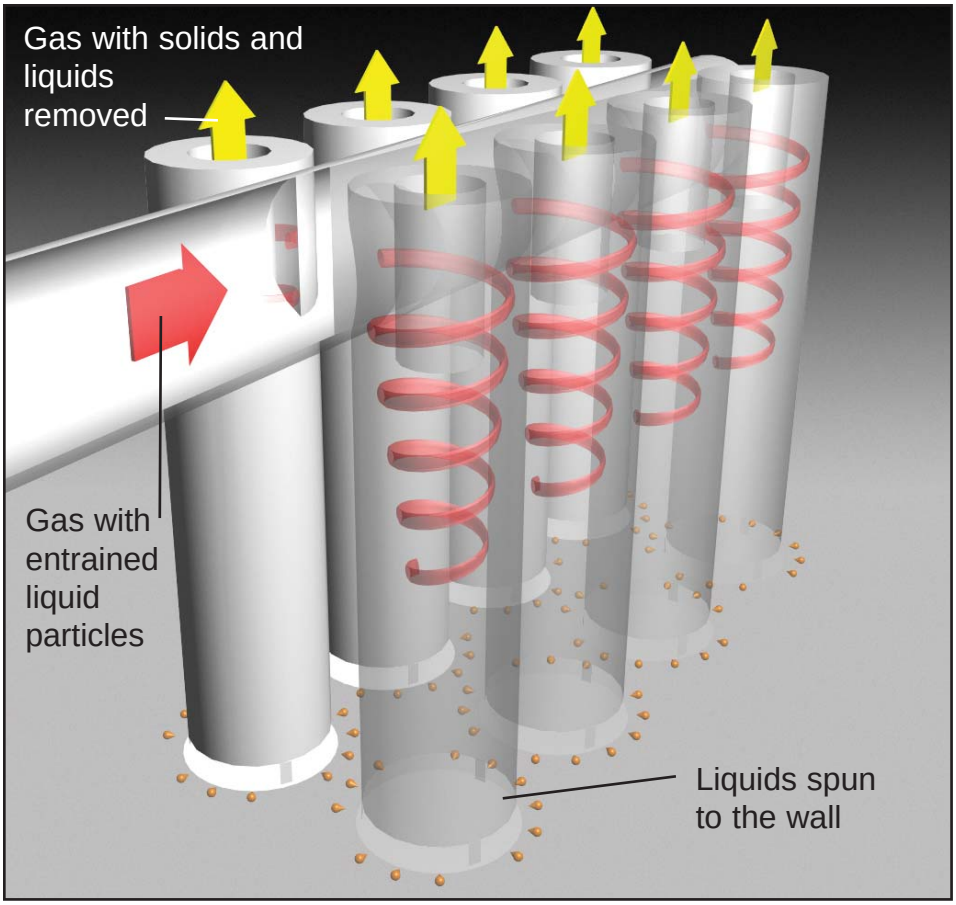
The VORTEX TUBE

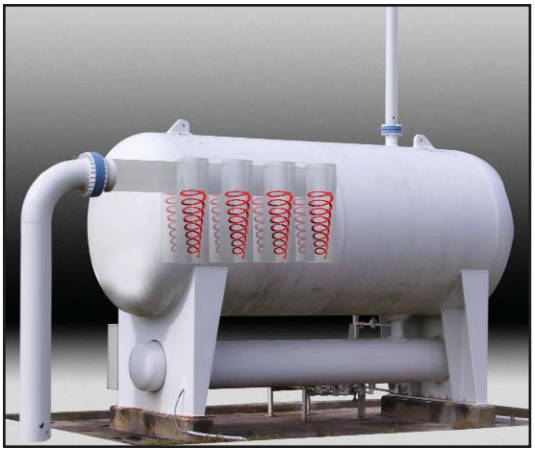
The "Vortex Tube" is suited for gas dominant separation. Curved vanes of the 'Fixed Vane Assembly' use the high-energy momentum of fluids to produce a high "G" force which sends the liquids/solids against the Vortex Tube wall and creates a sufficient ΔP between liquid and gas to provide superior gas/liquid separation.

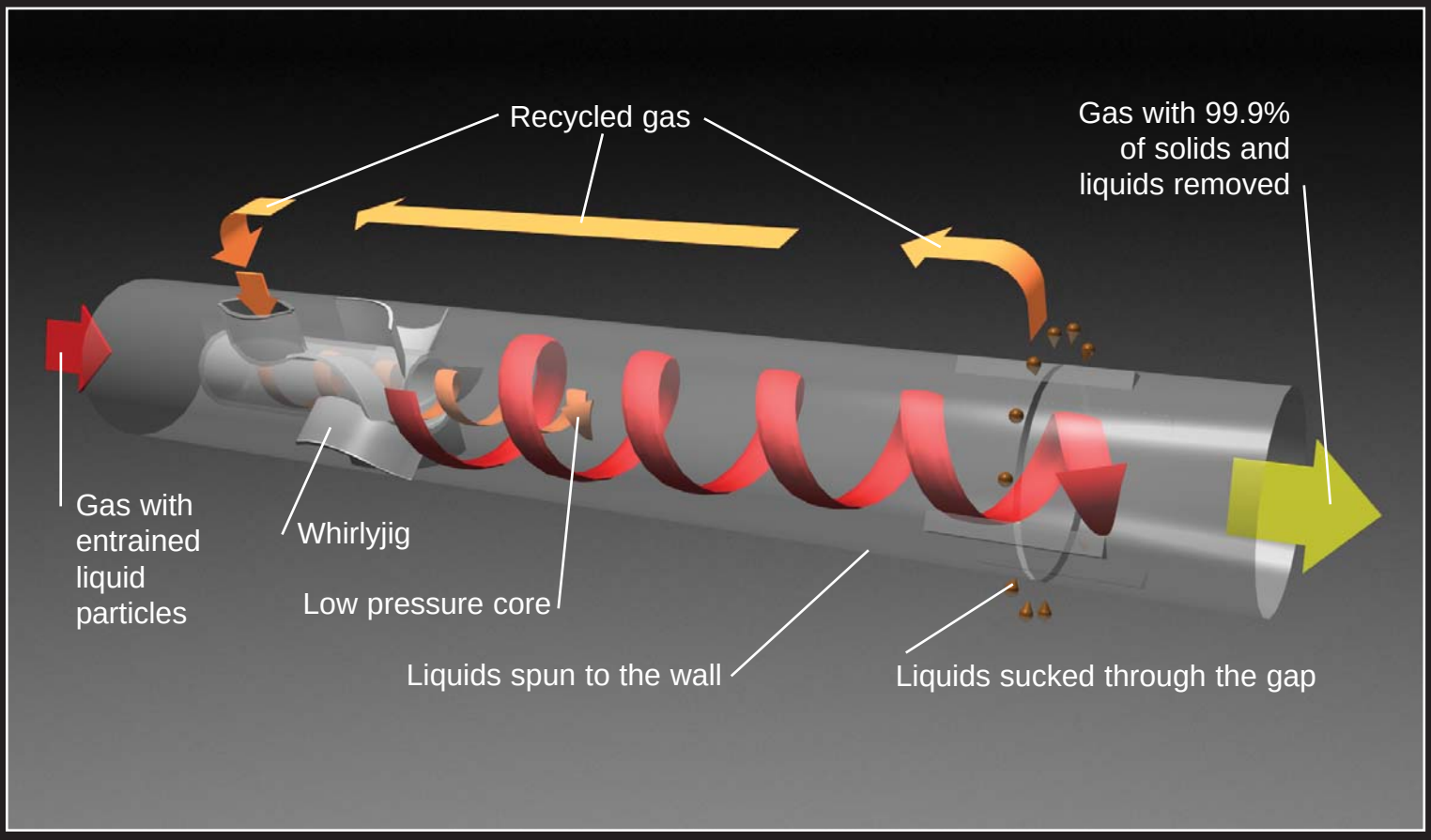
The curved vanes of the 'Fixed Vane Assembly' or as is commonly know as 'Whirlyjig' spin the inlet stream upon entry into the vortex tube. The resulting cyclonic action forces the free liquids and solids to the wall of the tube and flowing to the circumferential gap. The liquids and solids are sucked through the gap together with a portion of the gas stream, into the annulus between the vortex tube and the body shell. The low-pressure core of the vortex creates suction at the gap. This suction or Recycle is achieved by means of a single port from the "Fixed Vane Assembly" into the annulus. The liquids / solids, having passed through the gap, drop out due to gravity and drain to the sump. The Vortex Tube then has the gas re-enter thru the Recycle Port and merge once again with the main stream. The result is thoroughly scrubbed and liquid free gas exiting the scrubber.

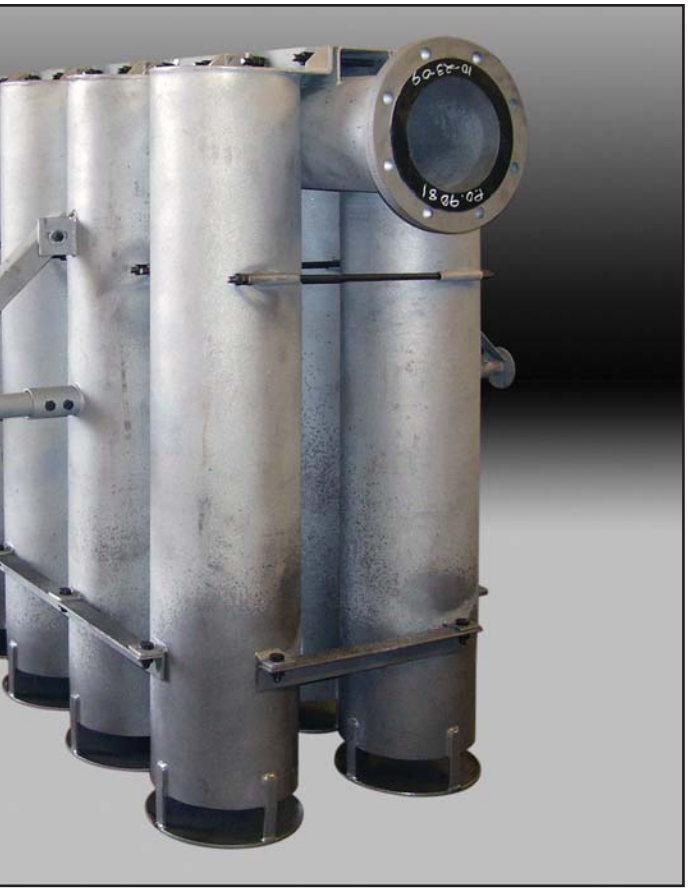
Vortex Tubes may be Horizontal or Vertical in design. They may also be designed to handle surges of liquid / solids in our Vertical or Horizontal Knock-outs.

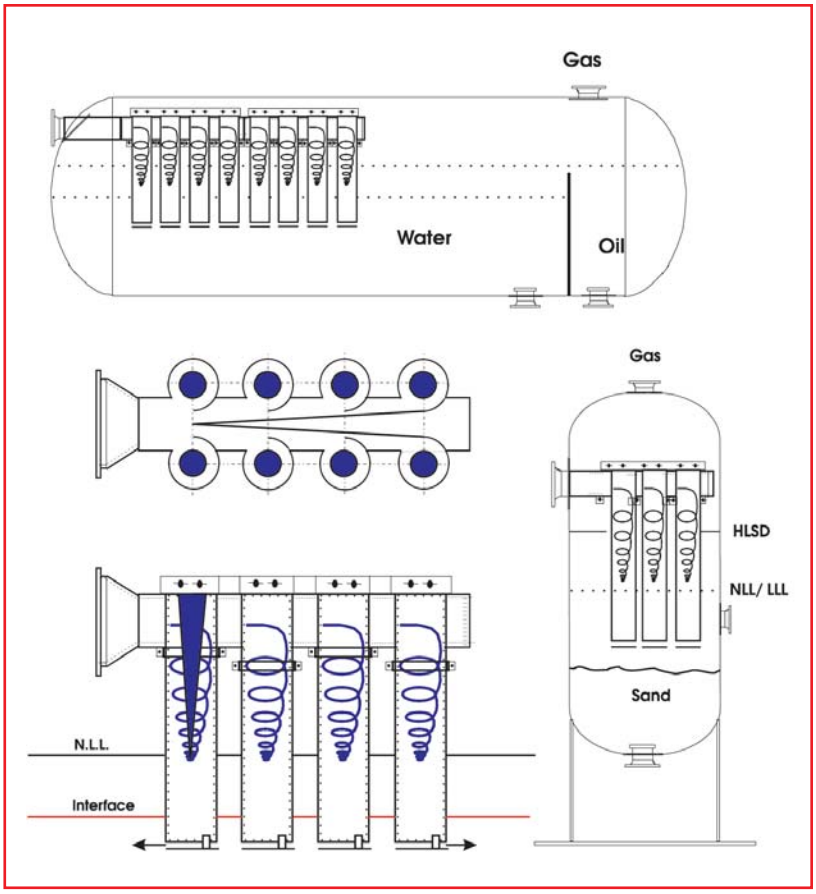
The liquid sump / boot may be vertical (typical on single tube horizontal separators and non surge horizontal separators) or a horizontal sump / boot used when surges are being designed for. The sump / boot in the vertical separators is located below the Vortex Tube section.

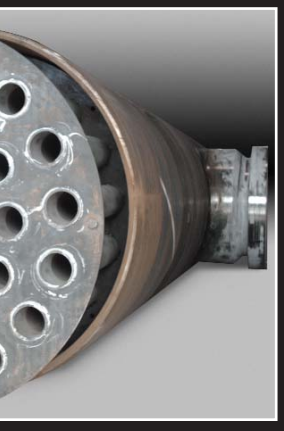

Gas with solids and liquids removed
Gas with entrained liquid particles
Liquids spun to the wall



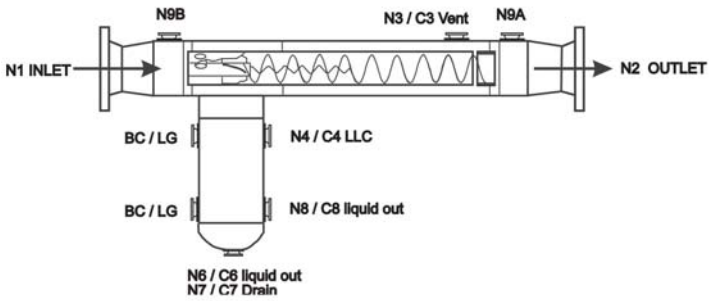

Recycled gas
Gas with 99.9% of solids and liquids removed
Gas with entrained liquid particles
Whirlyjig
Low pressure core
Liquids spun to the wall
Liquids sucked through the gap

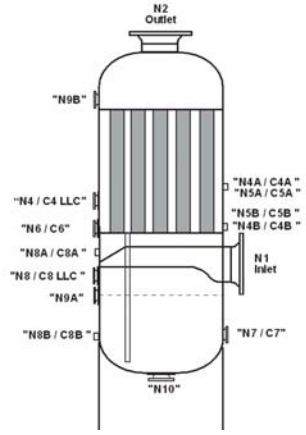






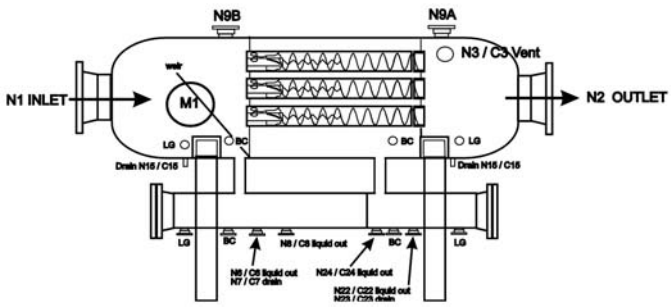
MODEL HVT-S



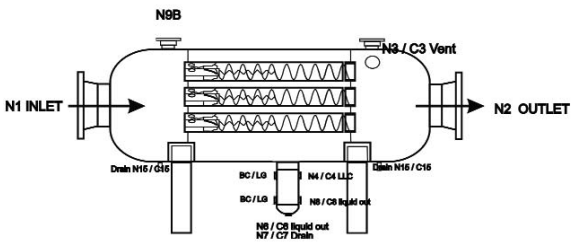


MODEL VVT-M

MODEL HVT- M (Surge)



MODEL HVT-M



Slug Catcher (Modularized for Shipping)

Slug Catchers

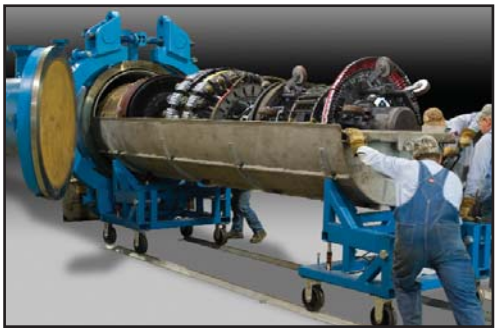
Pressure Vessels (Steam Drum)

NASA Pressure Vessels (A3 Test Stand)

Extruded Outlets (Air Grid Hub and Arm)

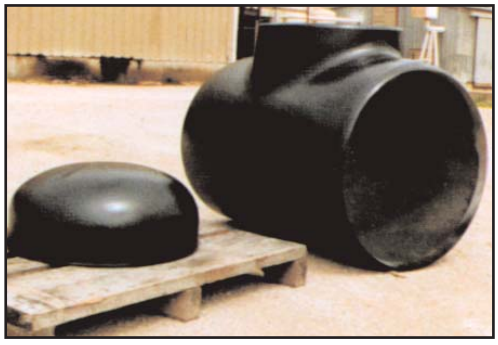
Cooler Headers

12,000 psi Y-70/Y-80 Scraper Trap Skid



Scraper Traps & Trays

High Yield and Nuclear Tees and Caps



Vortex Technology Separators

www.tfes.com

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Traditionally Dependable

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