



**“Vortex”, or “Cyclonic” Separators use high-energy momentum providing high G-Forces on fluids as they pass through the maintenance free internals. These forces drive liquids & solids against the interior tube wall and create the Vortex which provides superior gas/liquid 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 the Vortex Cluster & Vortex Tube designs have become effective and economical alternatives to large conventional 2-phase & 3- phase separators, filter separators, and conventional vane and mesh separation technologies.

The “Vortex Cluster” is suited for gas dominant, liquid dominant, or liquid/liquid separation. The “Vortex Tube” is best suited for gas dominant gas/liquid separation. Liquid surge and knockout options can also be incorporated into Vortex Tube applications specifically designed to meet customer requirements.

2-phase separation (gas/liquid) is the result of high “G” force being applied on the liquid and a creation of the Vortex which spins the gas. At optimum conditions a liquid entrainment efficiency of 99.9 % removal of solids and liquid particulate down to 1 to 3 micron. This is further enhanced with reduced gas under carry. No Foam, No Additives.

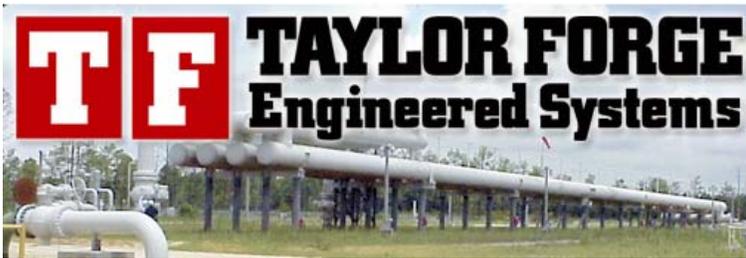
3-phase separation (gas/liquid/liquid) when done with the Vortex Cluster will dramatically improve liquid/liquid separation & provide at optimum conditions a liquid entrainment efficiency of 99.9 % removal of solids and liquid particulate down to 1 to 3 micron. The controlled angular velocity promotes 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.

Lower retention times and dramatically improved separation are the result of fluid control. These designs result in smaller vessels, improved separation, and reduced cost. Increased flow through existing vessel is achieved with a Retrofit of either Vortex Cluster or Vortex Tube. No foam, up to 80 % turndown, and reduced  $\Delta P$  across the vessel.

***Taylor Forge Engineered Systems, Inc.***

**Traditionally Dependable  
Tel: (913) 294-5331 [www.tfes.com](http://www.tfes.com)**

**“Demanding Applications Require Unique Capabilities”**

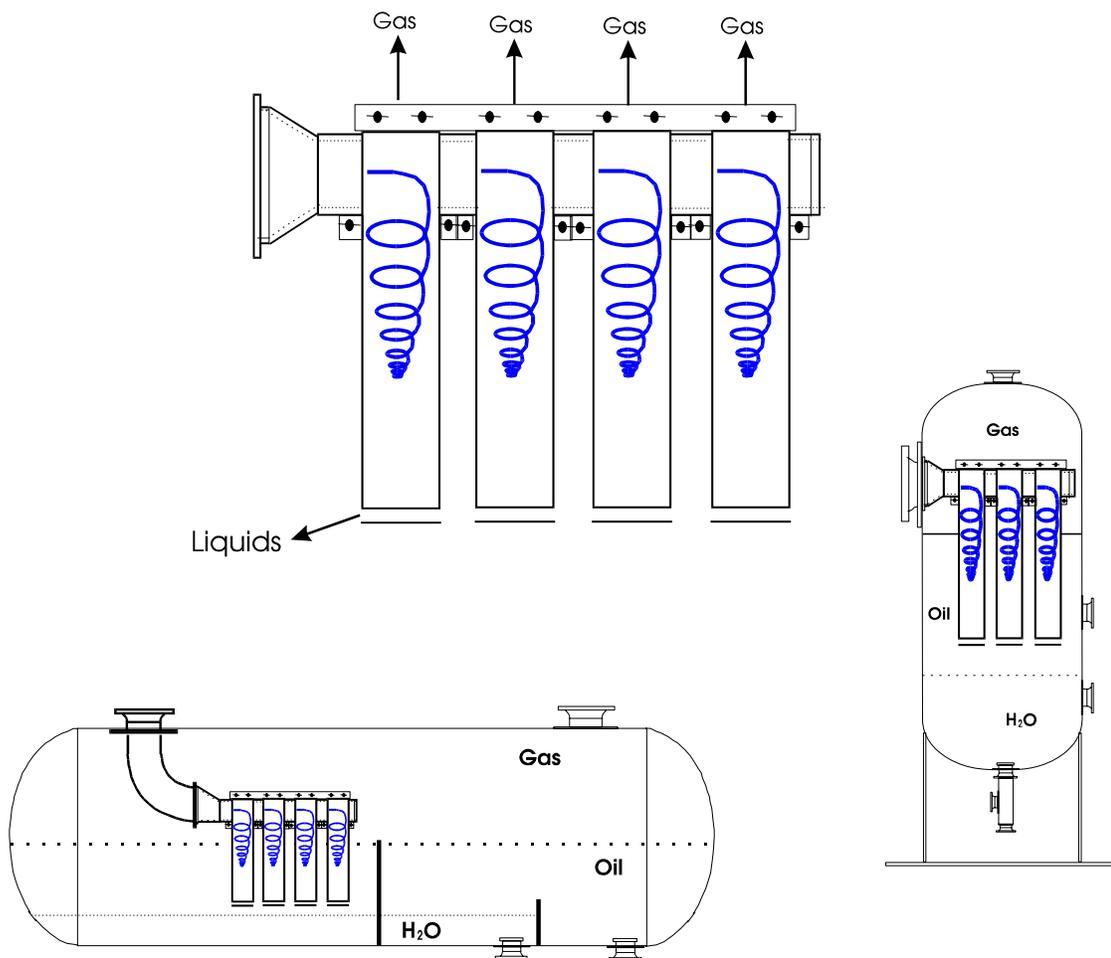


# VORTEX CLUSTER

## Liquid or Gas Dominant Separation

Reduced residence time is the key to Retrofits or New units

Foam Free design



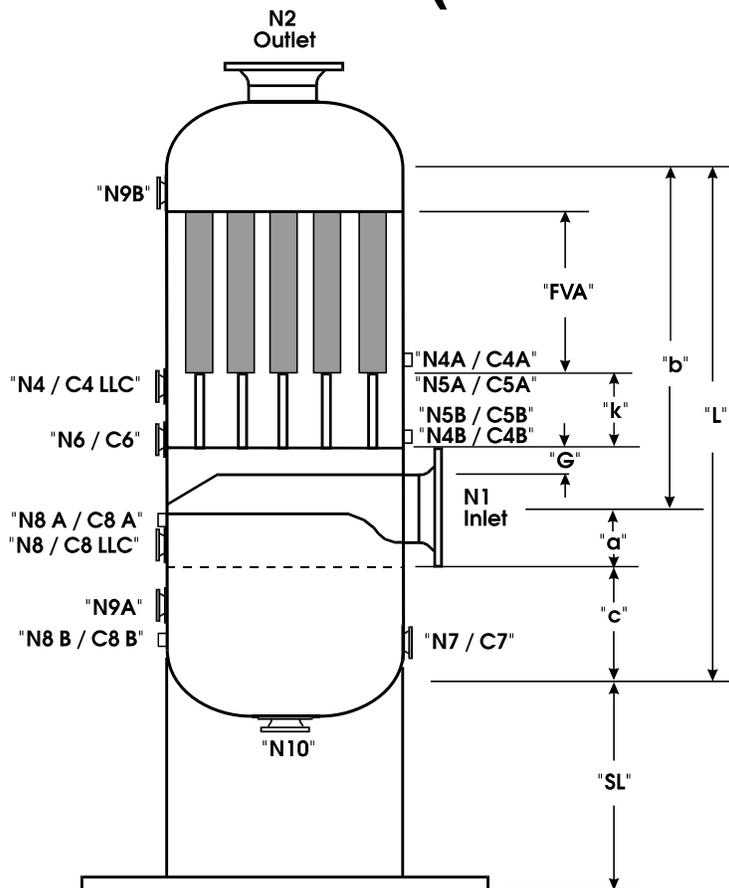
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# Vortex Tube Separator MODEL VVT-M (Knock-out)



Inline Vortex Tube separators or scrubbers will provide at optimum conditions, efficiency of **99.9% removal of solids and free liquids down to 1 to 2 micron.**

The Inline Vortex Tube Surge Knock-out will handle large surges of & pure slugs.

The curved vanes of the "Fixed Vane Assembly" spin the inlet stream upon entry into the vortex tube. The resulting **centrifugal action** forces the free liquids to the wall of the tube and along to the circumferential gap. As with vertical units, 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, having passed through the gap, drop out due to gravity and drain to the sump. The recycled gas re-enters the vortex tube and merges once again with the main stream. The clean gas exits the tube thoroughly scrubbed and liquid free.

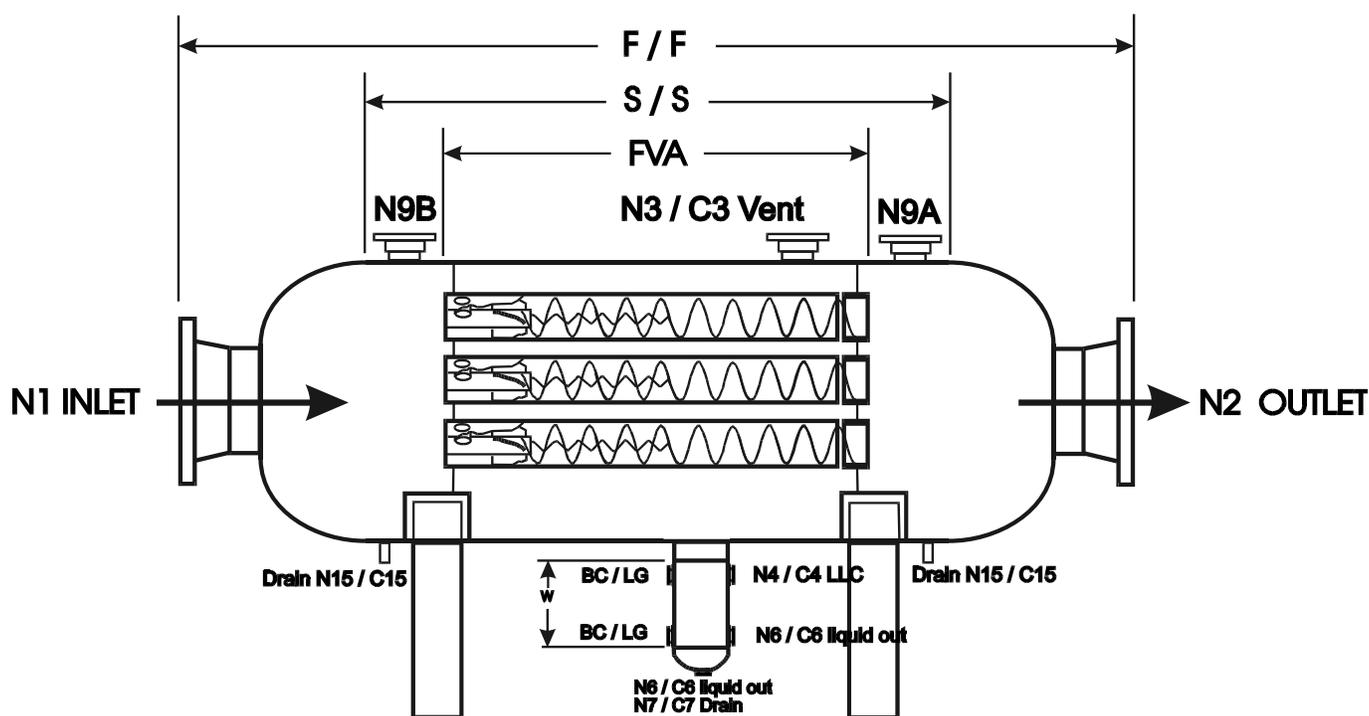
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# Inline Vortex Tube Separator MODEL HVT- M



Inline Vortex Tube separators or scrubbers will provide at optimum conditions, efficiency of **99.9% removal of solids and free liquids down to 1 to 2 micron.**

The curved vanes of the "Fixed Vane Assembly" spin the inlet stream upon entry into the vortex tube. The resulting **centrifugal action** forces the free liquids to the wall of the tube and along to the circumferential gap. As with vertical units, 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, having passed through the gap, drop out due to gravity and drain to the sump. The recycled gas re-enters the vortex tube and merges once again with the main stream. The clean gas exits the tube thoroughly scrubbed and liquid free.

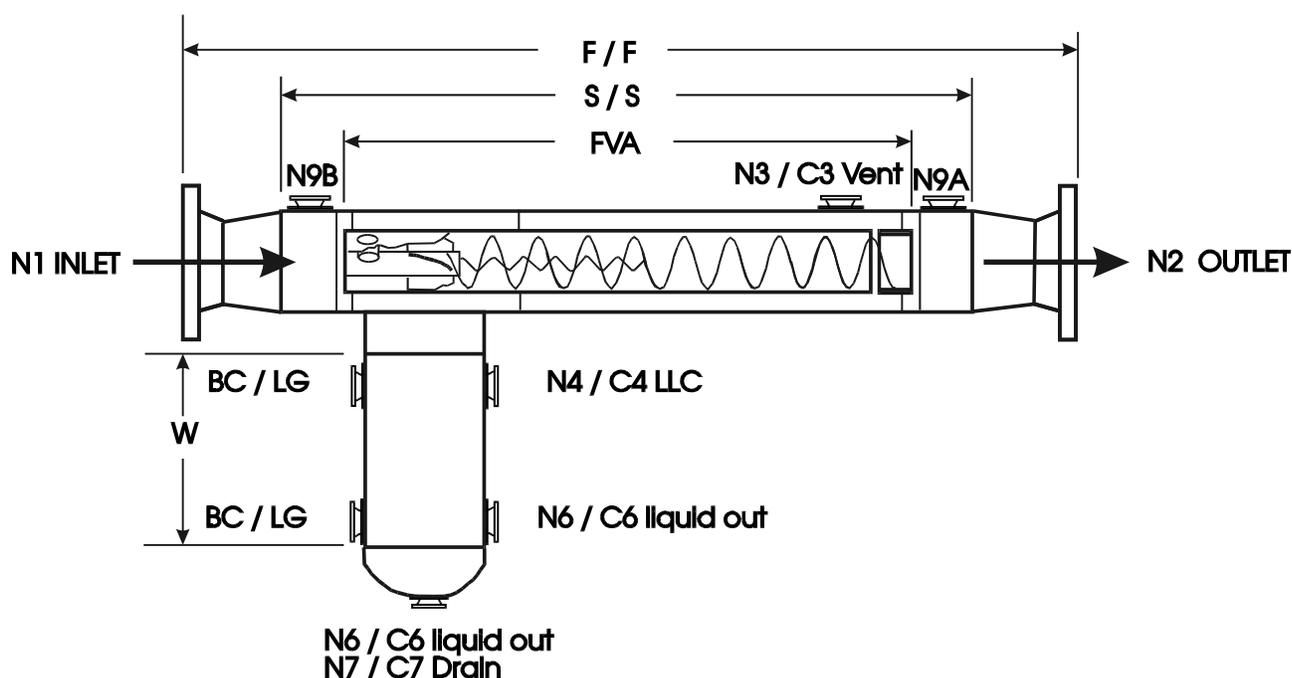
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# Inline Vortex Tube Separator MODEL HVT-S



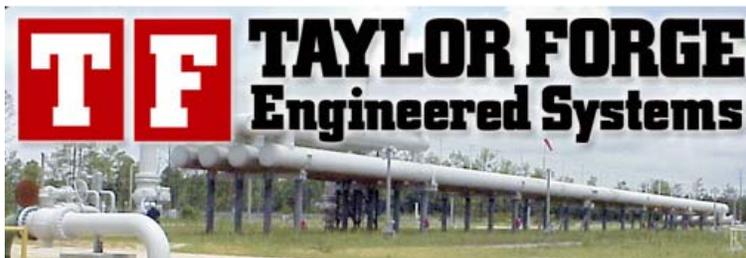
Inline Vortex Tube separators or scrubbers will provide at optimum conditions, efficiency of **99.9% removal of solids and free liquids down to 1 to 2 micron.**

The curved vanes of the "Fixed Vane Assembly" spin the inlet stream upon entry into the vortex tube. The resulting **centrifugal action** forces the free liquids to the wall of the tube and along to the circumferential gap. As with vertical units, 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, having passed through the gap, drop out due to gravity and drain to the sump. The recycled gas re-enters the vortex tube and merges once again with the main stream. The clean gas exits the tube thoroughly scrubbed and liquid free.

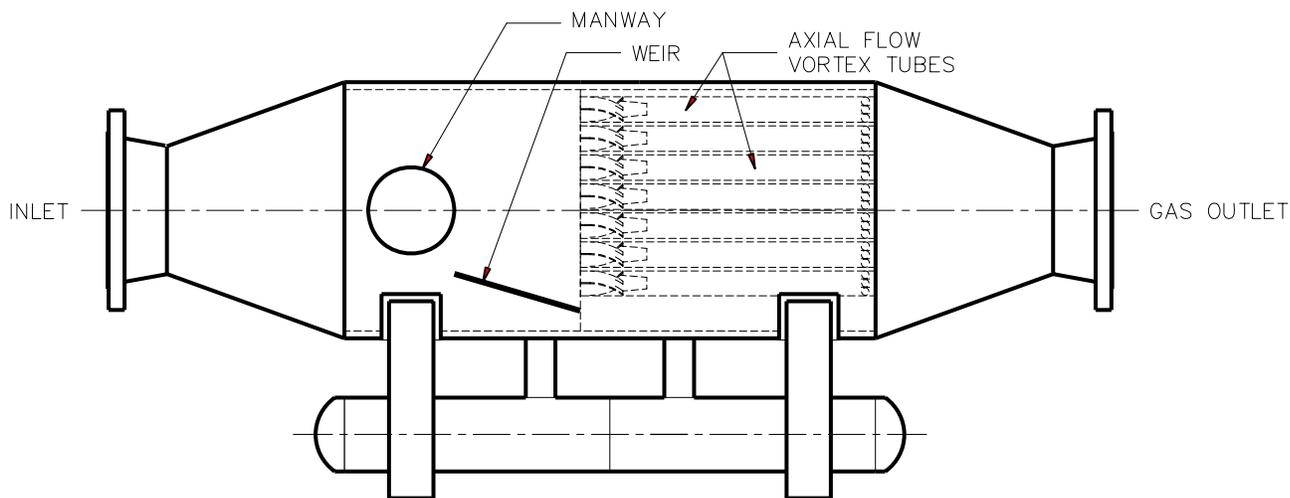
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# Inline Vortex Tube Separator MODEL HVT-M (Surge)



INLINE VORTEX TUBE SCRUBBER  
IVTS/M/SURGE

Inline Vortex Tube separators or scrubbers will provide at optimum conditions, efficiency of **99.9% removal of solids and free liquids down to 1 to 2 micron.**

The Inline Vortex Tube Surge Scrubber will handle large surges of liquid but not pure slugs.

The curved vanes of the "Fixed Vane Assembly" spin the inlet stream upon entry into the vortex tube. The resulting **centrifugal action** forces the free liquids to the wall of the tube and along to the circumferential gap. As with vertical units, 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, having passed through the gap, drop out due to gravity and drain to the sump. The recycled gas re-enters the vortex tube and merges once again with the main stream. The clean gas exits the tube thoroughly scrubbed and liquid free.

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