AERATOR FOR SEWER ODOR AND CORROSION CONTROL

Vortex FORCE™
ODOR & CORROSION CONTROL

MUNICIPAL SYSTEMS

- Sewer Forcemain Discharge
- Sewer Wet Wells & Storage Tanks
- Irrigation Ponds
- Wastewater Treatment Tanks

IPEX
by aliaxis

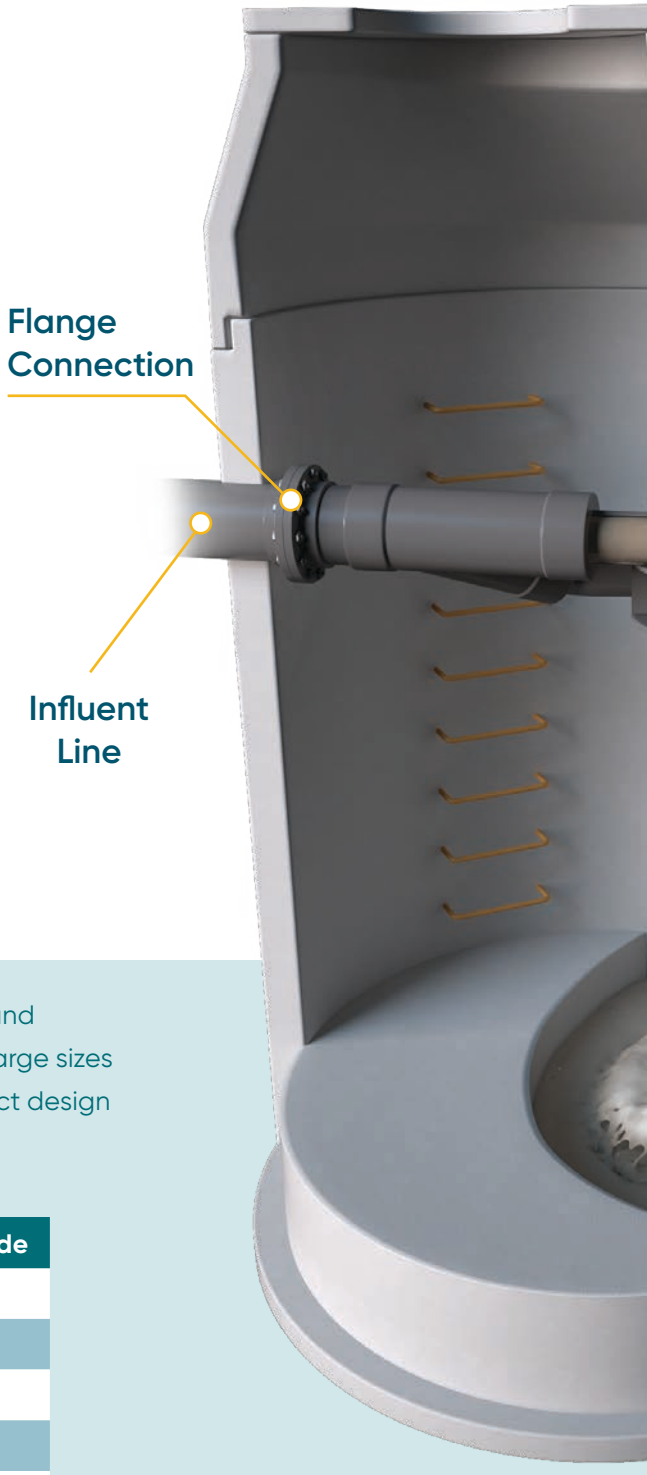
We build tough products for tough environments®

Vortex FORCE™

A NEW SOLUTION FOR ODOR AND CORROSION CONTROL IN FORCEMAINS

Sewage forcemains, wet wells and storage tanks are a constant source of odor complaints. One of the main causes is airborne hydrogen sulfide (H_2S) , which is produced when sewage becomes anaerobic, and turbulent flow releases the noxious gas. This can be an intractable problem requiring the use of expensive chemical feed systems, biofilters and other high maintenance solutions to avoid the inevitable corrosion issues associated with H_2S attack.

The Vortex Force is a specially designed aeration device that draws in and powerfully mixes air into sewage flow, transforming the anaerobic conditions that produce odors and oxidizing the H_2S and other odor producing compounds in the sewage flow. By dramatically increasing the dissolved oxygen (DO) content in the sewage flow, the benefits of the Vortex Force extend for a long distance downstream.

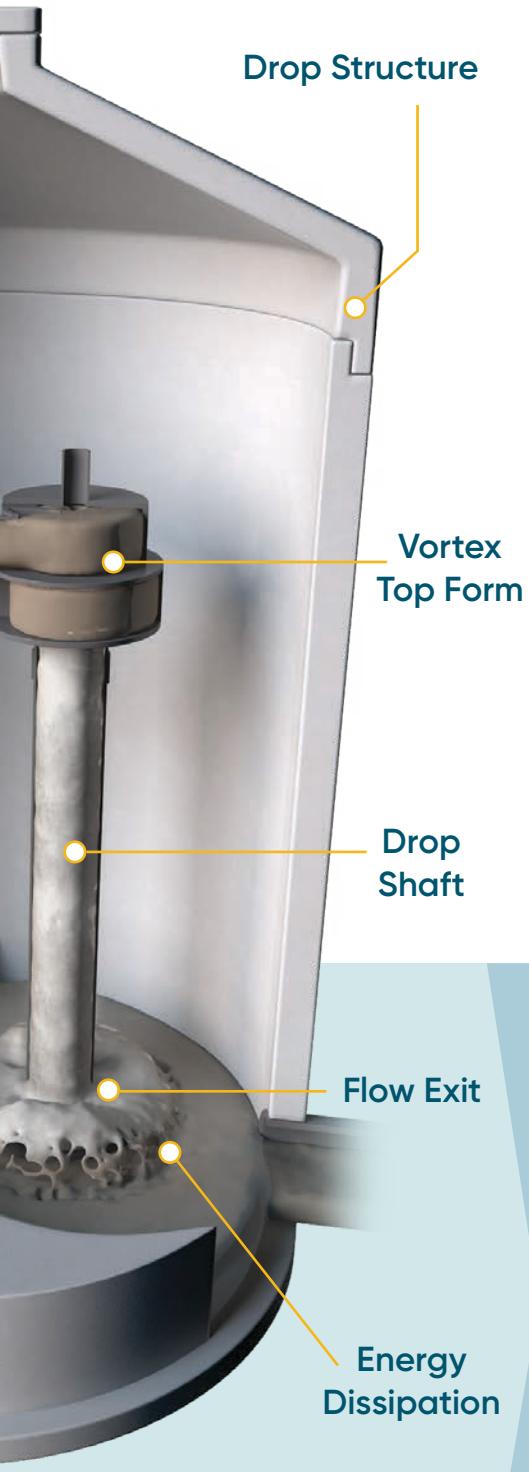


EASILY CONNECTS IN **FIVE SIZES**

The Vortex Force easily connects to your system using simple flanges and supports. It is available in extra small, small, medium, large and extra large sizes covering a wide range of flows from 10 GPM to 5,500 GPM. The compact design can effectively aerate flows with at least a three foot drop.

Sizes	Inlet Diameter	Flow Rate (GPM)	Product Code
Extra Small	2"	10 – 65	113089
Small	4"	125 – 350	113085
Medium	8"	350 – 800	113088
Large	12"	800 – 2,100	113086
Extra Large	20"	2,100 – 5,500	113087

HOW IT WORKS



1 VORTEX TOP FORM

The incoming flow is split into two streams, each being directed into a vortex channel. The upper vortex directs the flow in a clockwise direction while the lower vortex is counter-clockwise.

2 VORTEX DROP SHAFT

The two flows intersect at the drop pipe, creating an area of intense turbulence and mixing where air is drawn in to the device. The turbulence breaks up the air into extremely small bubbles, thus maximizing the surface area of the air in contact with the water, allowing oxygen to quickly diffuse into the flow.

3 ENERGY DISSIPATION POOL

The flow is then discharged to the energy dissipation pool where any air not dissolved into the flow is allowed to bubble out of the flow, and the energy of the discharge is dissipated.

HOW VORTEX FORCE CAN SAVE MUNICIPALITIES MONEY

REDUCED CORROSION EXTENDS SEWER AND WET WELL LIFE

Hydrogen sulfide (H_2S) emissions from forcemain discharges can literally eat through a concrete drop manhole. By oxidizing dissolved H_2S, a Vortex Force Insert in a municipal sewer drop can significantly reduce concrete and metal corrosion, extending sewer life and saving the municipality money.

REDUCES ODOR TREATMENT COSTS

By increasing dissolved oxygen levels in wastewater and oxidizing sulfides and other odorous compounds, the use of a Vortex Force in a drop structure or wet well reduces the need for costly chemical injection, high-maintenance biofilters and air scrubbers.

IMPROVES WASTE WATER QUALITY

Because a Vortex drop structure reduces the odorous and corrosive elements in the flow, a Vortex Force Insert, installed upstream of a treatment plant, can actually improve wastewater quality prior to treatment, reducing treatment costs at sewage plants.

REDUCED MAINTENANCE COSTS

The Vortex Force virtually eliminates the corrosion of concrete and metal sewer components, dramatically reducing municipal maintenance costs of manholes, sewers and pumping stations.

APPLICATIONS

SEWER FORCEMAIN DISCHARGE

Wherever you have a drop from one pipe to another, Vortex drop structures can transform drop manholes from potential maintenance problems into effective aeration devices that control odor and corrosion.

SEWER WET WELLS & STORAGE TANKS

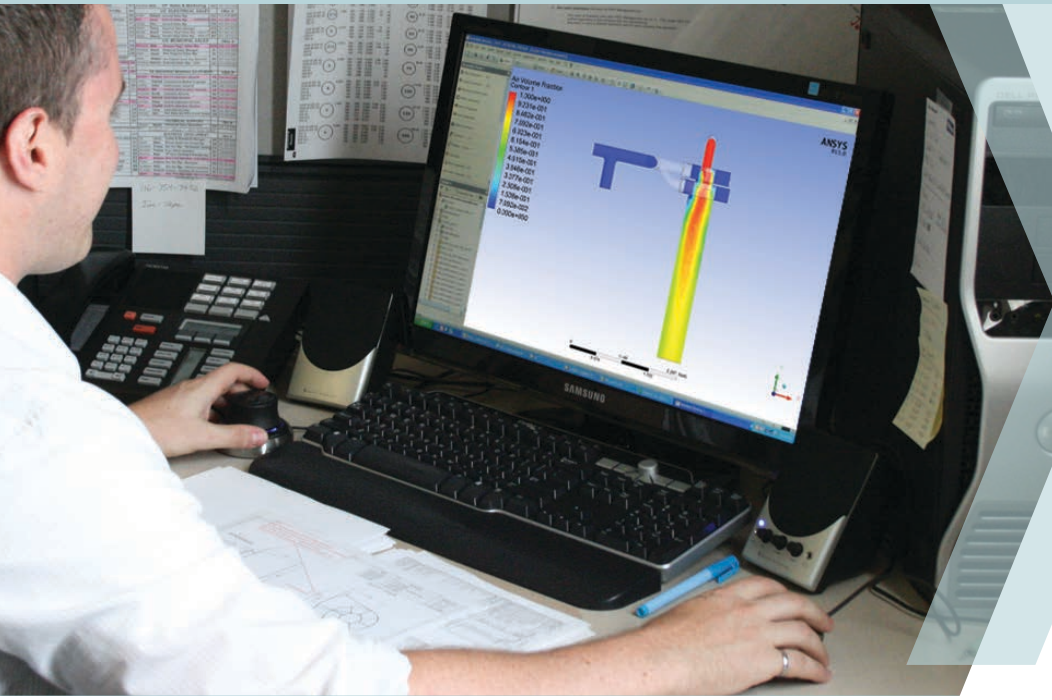
A Vortex Force structure can minimize gas emissions from pumping station wet wells.

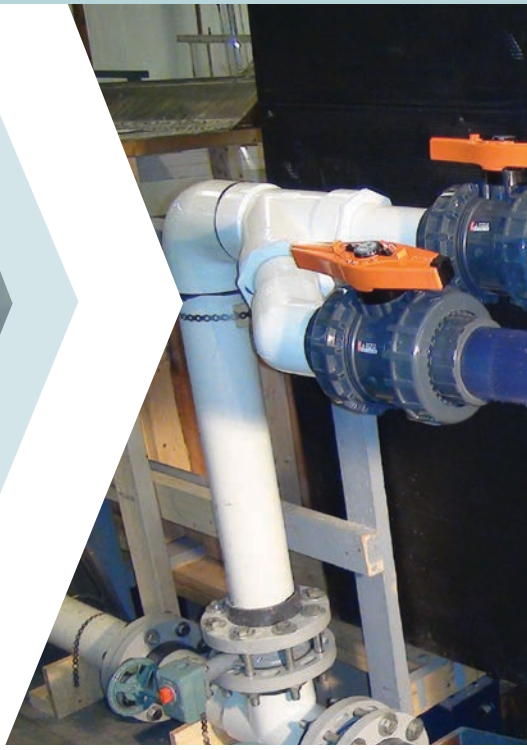
IRRIGATION PONDS

The Vortex Force can quickly aerate irrigation ponds to prevent stagnant pools and odorous smells.

WASTEWATER TREATMENT TANKS

The Vortex Force can meet the various needs for aeration and mixing performance in municipal and industrial wastewater treatment, lagoons, oxidation ditches and equalization basins.





TYPICAL PROJECT FLOW FOR A VORTEX FORCE INSERT

STEP 1 FLOW RATE

Determine the peak flow rate of your system.

STEP 2 DROP HEIGHT

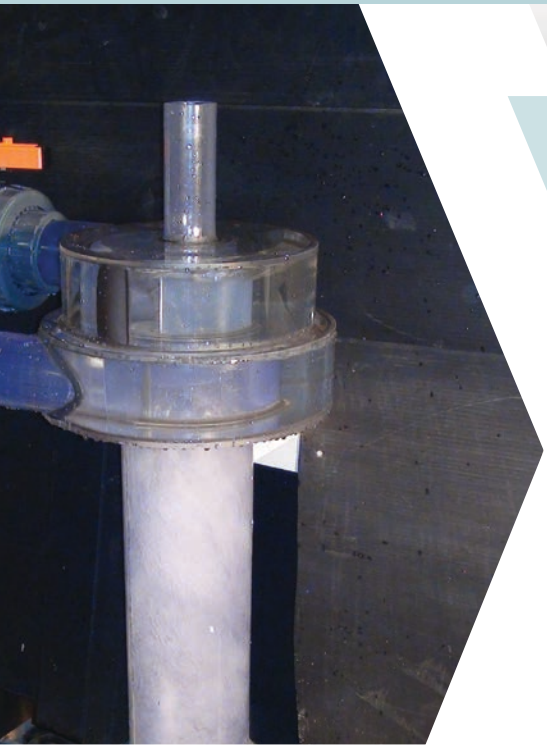
Determine the drop height. To operate effectively, a Vortex Force requires a minimum 3ft drop.

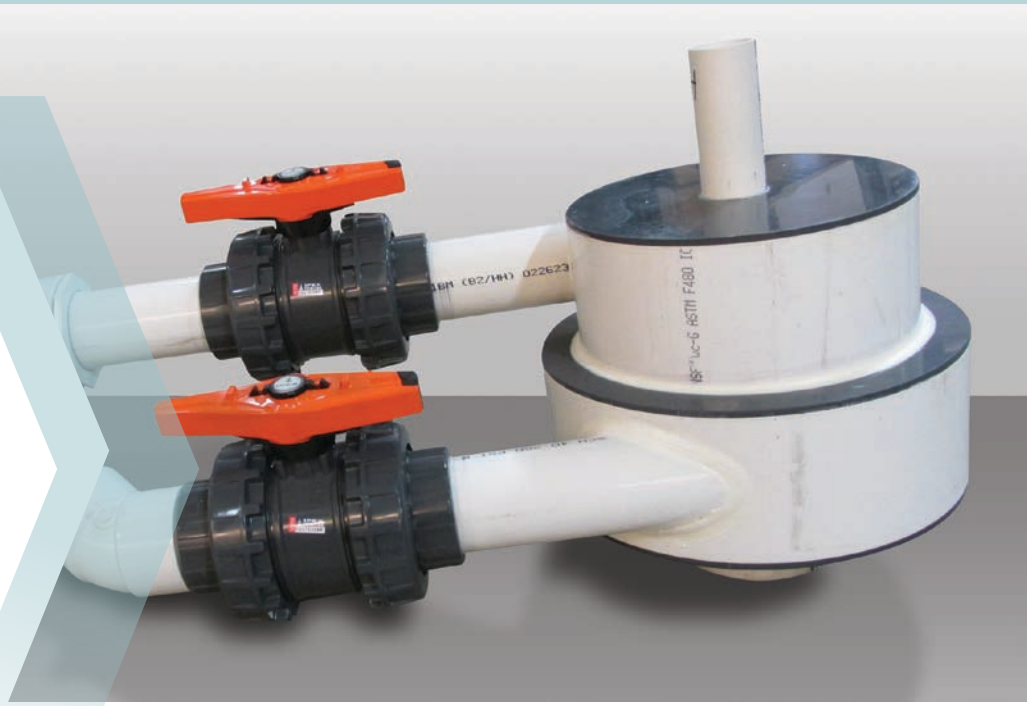
STEP 3 SIZE SELECTION

After determining the flow rate of your system, select the size of unit that is best suited to the installation. If your flow falls outside the specified range, call us at 1-800-463-9572 for custom options.

STEP 4 SHIPMENT & INSTALLATION

Once the order has been placed, the Vortex will be shipped to the jobsite along with a full set of detailed installation instructions.





RESEARCH AND DEVELOPMENT

The Vortex Force concept was developed by Dr. Eugene Natarius, inventor of the revolutionary Vortex Flow Drop Structure. The Vortex Force is specially designed for applications that are difficult for a standard Vortex Flow device – high velocity flows, minimal drop heights and low flows from small diameter pressure pipes.

The Vortex Force has been extensively analyzed by some of the leading fluid dynamics experts in North America including Dr. Bryan Karney and Dr. Ahmad Malekpour of the University of Toronto. In addition to computer modelling and optimization, full scale physical testing has been carried out at Northwest Hydraulic Labs in Vancouver, British Columbia.

As a final qualification, a Vortex Force prototype was installed in a challenging septic tank application in Barriere, British Columbia. Nearby neighbors were constantly complaining about the extreme odor issues and demanded a solution. The Vortex Force was installed to help oxygenate the 37,000 gallons of septic sewage. After only 1 hour of operation, the dissolved oxygen concentration was increased from 0 mg/L to 5 mg/L and eliminated the odors.

SALES AND CUSTOMER SERVICE

IPEX USA LLC.
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ipexna.com

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the world's largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial process piping systems
- Electrical systems
- Telecommunications and utility piping systems
- Irrigation systems
- Industrial, plumbing and electrical cements
- PVC, CPVC, PP, PVCO, ABS, PEX, FR-PVDF, NFRPP, FRPP, HDPE, PVDF and PE pipe and fittings (1/2" to 60")

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A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.

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