



VortexFLOW™

SX Series Tools

Tools for Advanced Fluid Movement

vortextools.com

The Science Behind VortexFlow™ SX Tools

VortexFlow™ SX tools are based on the latest breakthroughs in fluid dynamics. The technology employed in the tools has been used with great success in other industries for several years. After thorough DOE sponsored field and lab testing, VortexFlow™ is proud to be able to offer this breakthrough for use in oil and gas applications.

How The VortexFlow™ SX Technology Works

Almost any flow that travels through a pipe is turbulent and disorganized. This disorganization uses flow energy and is less efficient as it travels through the pipe. In the case of multi-phase flows, the disorganization problem is compounded by denser fluids falling out of the flow and settles on the bottom of the pipe (accumulated fluids in pipelines) or becomes attached to the pipeline walls (in the case of paraffin buildup).

The SX tool takes a disorganized single or multi-phase flow and creates an organized "vortex" flow. This designed flow has three main benefits:

The flow is more organized, resulting in less wasted energy and greater efficiency. Lab and field tests have shown that this effect alone can increase efficiency (reduce operating pressures) by 5 to 10%.

The SX tools create a boundary layer on the inner wall of the pipe that acts as a cushion. This reduces friction and helps to reduce accumulation of paraffin or scale on pipe walls.

The spiral action of the vortex flow picks up and moves fluids that have accumulated in pipes over time. Accumulated fluids are swept into the flow and transported downstream. By sweeping the lines and removing stagnant water in low spots we help mitigate line freezing and corrosion.



Appalachian Basin VortexFlow™ SX Gathering Line Installation with Spool

VortexFlow™ SX Means Value

The VortexFlow™ SX tool offers a variety of ways to quickly capture significant benefits. Available case studies provide all of the details and specifics of exactly how the VortexFlow™ SX tools can be of benefit. The goal at VortexFlow™ is to help our Customers realize significant economic and operational value.

A pipeline operator in Colorado installed a 10" SX tool and saw pipeline pressures drop, throughput increase and completely eliminated the need for line pigging.

A well operator in Pennsylvania installed tools on several gas wells resulting in lower line pressures and a 30% increase in production.

An operator in New Mexico installed tools ranging in size from 4" to 12" on a gathering system resulting in significantly lower line pressures and increased production.

SX Tool Specifications

500 psi Tools

2000 psi Tools

Pipe Steel Black Plate Weld Specs Hydro Tested	Ansi Schedule 40 A36 Grade Steel ASME B31.3 Yes	ANSI Schedule 80 A36 Grade Steel ASME B31.3 Yes
Connections Availability Standard Pipe Threading Flanged using ANSI class flanges Beveled for welding	Yes Yes ** not recommended	Yes Yes ** not recommended
Standard Sizes Sizes Available for Immediate Manufacture	2", 2.5", 3", 4", 6", 8", 12" 2" to 36"	2", 2.5", 3", 4", 6", 8", 12" 2" to 36"

**** This connection method is not recommended as some of the weld material will protrude inside the pipe, potentially disrupting the "vortex" flow as it is created.**

Corrosion Resistant Coating:

Corrosion resistant coating can be applied to the inner walls of the tool. VortexFlow™ utilizes Ceram-Kote™ 2000, effective at fighting corrosion and abrasion up to a temperature of 225F.



Tool Installation

Installation of VortexFlow™ SX tools is relatively simple. The installation is made with the following methods:

Installation at 90° in the line. In flowlines, the tool is generally installed in the run from the wellhead to the separator. In other applications, any 90° turn in the line will meet installation requirements. A pig launching tool is available for lines that require pigging capabilities.

SXI (inline) tools are available to install directly with the current flowline.

San Juan Basin VortexFlow™ SXPL

We recommend that the "vortex" flow created by the tool be given a long, straight run immediately downstream of the installation. In addition, any objects that protrude into the line downstream of the VortexFlow™ SX tool should be removed. We also recommend that the number of other lines feeding into a line where the VortexFlow™ SX tool is installed be minimized wherever possible; as any additional flows entering the "vortex" flow have the potential to disrupt the flow organization.

Call VortexFlow™ today (720.227.0350) to learn how we can help create value for your company.

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