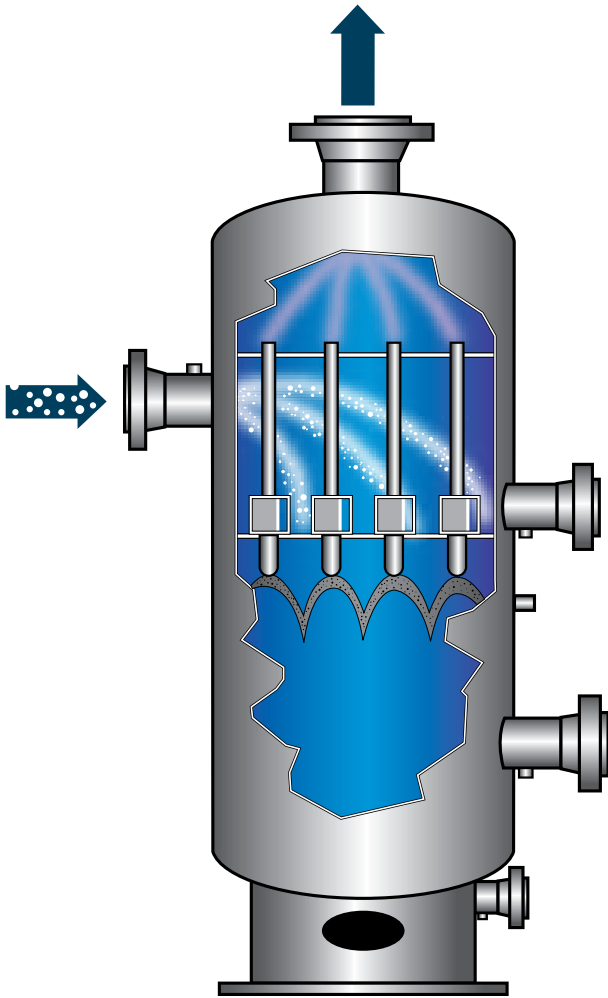


SEE WHAT PEERLESS CAN DO FOR YOU.

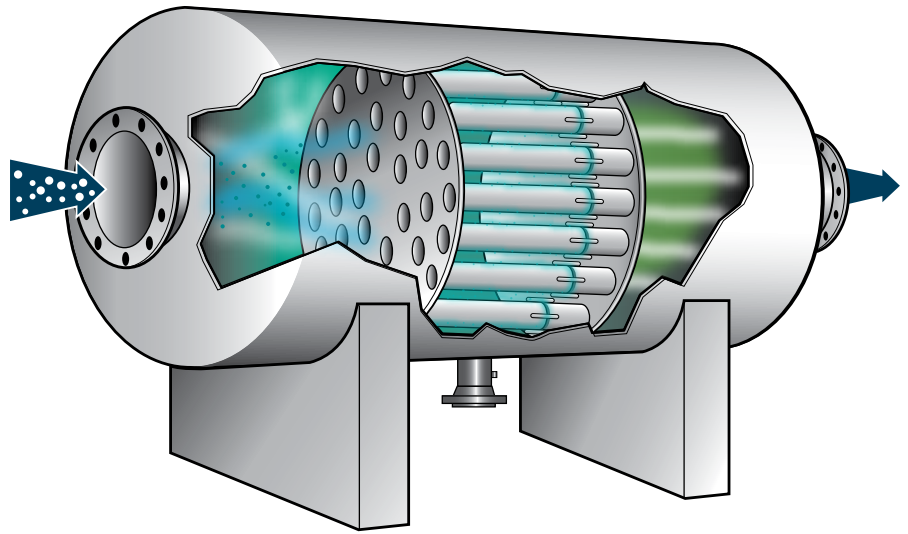
FOR HIGH EFFICIENCY-SEPARATION OF LIQUID
AND SOLID CONTAMINANTS AT LOW COST



MULTI-CYCLONE SCRUBBER

FOR APPLICATIONS REQUIRING
EFFICIENT DUST AND LIQUID REMOVAL.

- CONSTANT ΔP REGARDLESS OF LOADING
- MAINTENANCE FREE
- GUARANTEED PERFORMANCE
- BUILT TO ASME CODE AND INTERNATIONAL STANDARDS



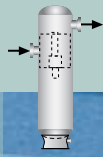
HORIZONTAL OR VERTICAL SWIRL TUBE SEPARATOR

FOR LIQUID REMOVAL AND FOR SMALL INSTALLATION
FOOT-PRINT APPLICATIONS.

TYPICAL APPLICATIONS:

- DISTRIBUTION SYSTEMS
- MAINLINE TRANSMISSION STATIONS
- INDUSTRIAL PROCESS APPLICATIONS
- GAS GATHERING SYSTEMS
- PETROCHEMICAL PLANTS
- SLUG CATCHING
- ABSORPTION PROCESSES
- RECIP COMPRESSOR PROTECTION

MULTI-CYCLONE SCRUBBERS



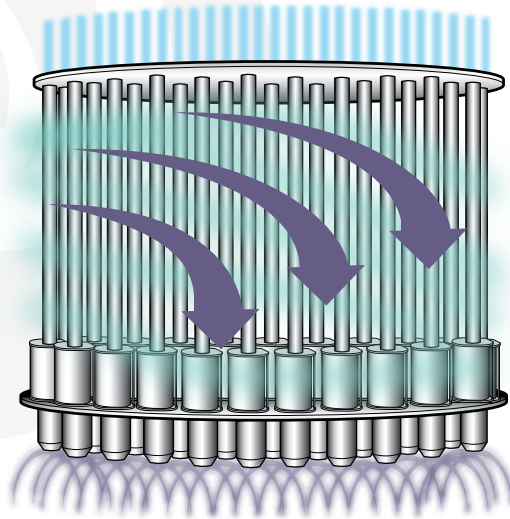
HORIZONTAL OR VERTICAL, PEERLESS HAS THE RIGHT CONFIGURATION TO FIT YOUR APPLICATION.



TWO PEERLESS MULTI-CYCLONE SCRUBBERS INSTALLED AT A METERING STATION IN WESTERN CANADA. TYPICAL NATURAL GAS FLOW THROUGH THESE 78" DIAMETER VESSELS IS 2.5 BILLION STANDARD CUBIC FEET PER DAY.

MULTI-CYCLONE BENEFITS

- High-efficiency liquid and solid removal
- A wide range of flows
- Intermittent flow spikes capacity
- Maintenance free
- Fixed or removable cyclone bundles
- 2" or 4" diameter cyclones available

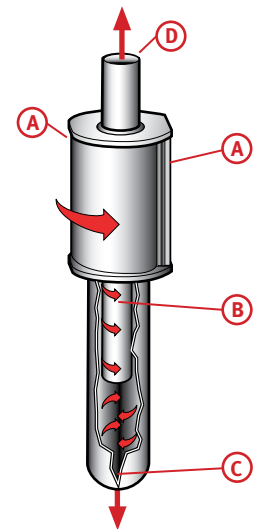


PEERLESS USES MULTIPLE, SMALL-DIAMETER CYCLONES ARRANGED IN PARALLEL TO ACHIEVE SEPARATION OF SMALL AND LARGE SIZE PARTICLES. DEPENDING UPON THE APPLICATION, A BANK OF CYCLONES MAY CONTAIN AS MANY AS 200. SELECTION OF 2" OR 4" DIAMETER CYCLONES WILL DEPEND UPON THE SYSTEM GAS FLOW RATE.

MULTI-CYCLONE PRINCIPLE OF OPERATION

Multi-Cyclone Scrubbers use centrifugal force to effectively remove solid particles and liquids from gas without moving parts.

- (A) Dirty gas enters the Cyclone Tube tangentially at two locations.
- (B) The tube housing forces the gas into a cyclonic flow pattern. Centrifugal force throws solids and liquids against inner cyclone tube wall.
- (C) Solid and liquid particles drain down the cyclone tube walls and collect at bottom.
- (D) Clean gas flows down and then up through the center annulus and exits at the top.



Peerless Cyclone Tube

Innovative Designs
Cost-Effective Retrofits
Guaranteed Performance

PERFORMANCE GUARANTEE – MULTI-CYCLONE

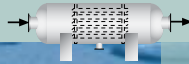
SOLIDS REMOVAL EFFICIENCIES:

- 100% of 8-micron particles
- 99% of 6- to 8-micron particles
- 90% of 4- to 6-micron particles
- 85% of 2- to 4-micron particles

LIQUID REMOVAL EFFICIENCIES:

- Outlet gas will contain less than 0.10 gallon of entrained liquid per million standard cubic feet of gas passed through the separator
- 100% of all droplets 8-microns in diameter and larger

SWIRL TUBE SEPARATORS



USE THE TWO-STAGE PEERLESS EXTRACTION DESIGN TO MAXIMIZE LIQUID HANDLING.



A 96" DIAMETER PEERLESS SWIRL TUBE SEPARATOR INSTALLED IN A GAS GATHERING SYSTEM. TYPICAL FLOW IS 3 BILLION STANDARD CUBIC FEET OF GAS PER DAY.

SWIRL TUBE BENEFITS

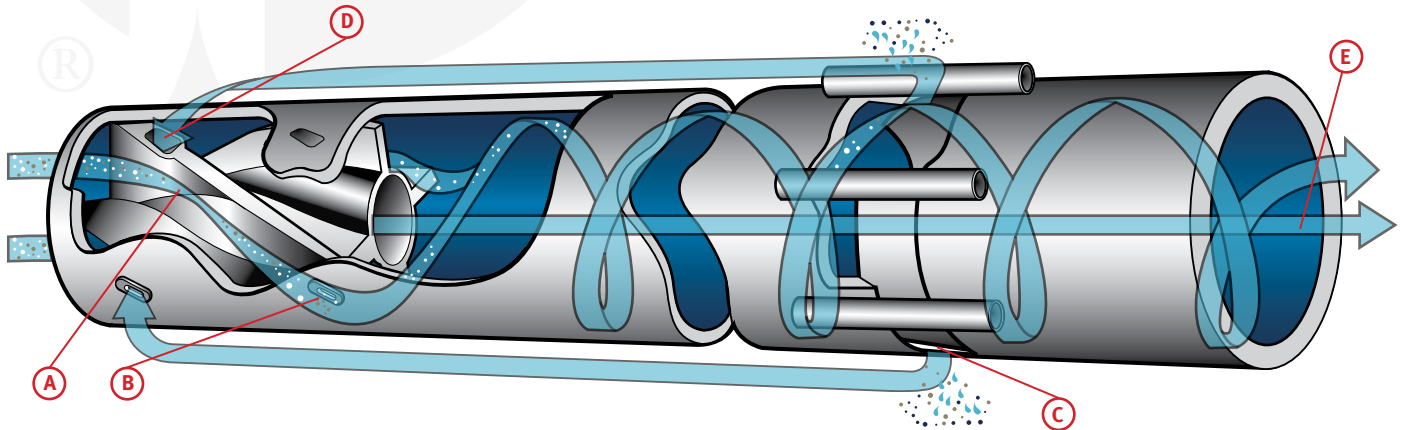
- High-efficiency removal of entrained liquid
- Maintenance free
- Increased liquid handling
- No moving parts

SWIRL TUBE PRINCIPLE OF OPERATION

Swirl tubes create inertial forces on the entrained liquid as it passes around the inlet helicoid.

- (A) Contaminated gas enters the swirl tube where centrifugal forces are imposed on the flow.

- (B) Liquids are thrown out of the gas flow and against walls of the swirl tube
- (C) Liquids fall out of swirl tube at the primary extraction slots
- (D) Minor amounts of gas exiting at the primary extraction slots are directed back through the swirl tube through side openings to repeat the separation process.
- (E) Clean gas exits the swirl tube.



SWIRL TUBE SEPARATOR

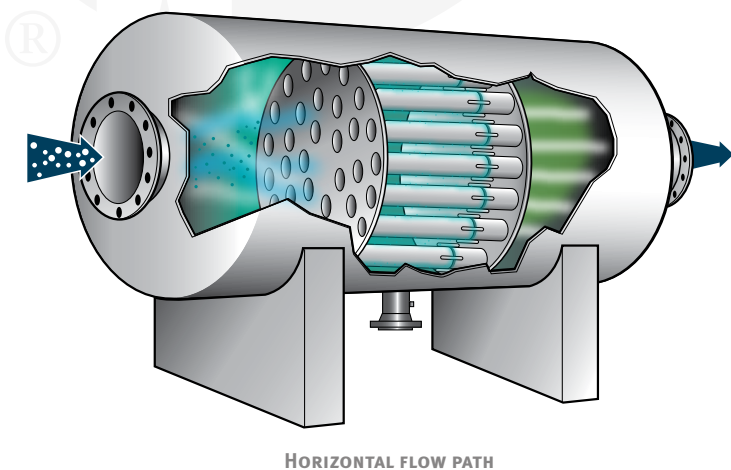
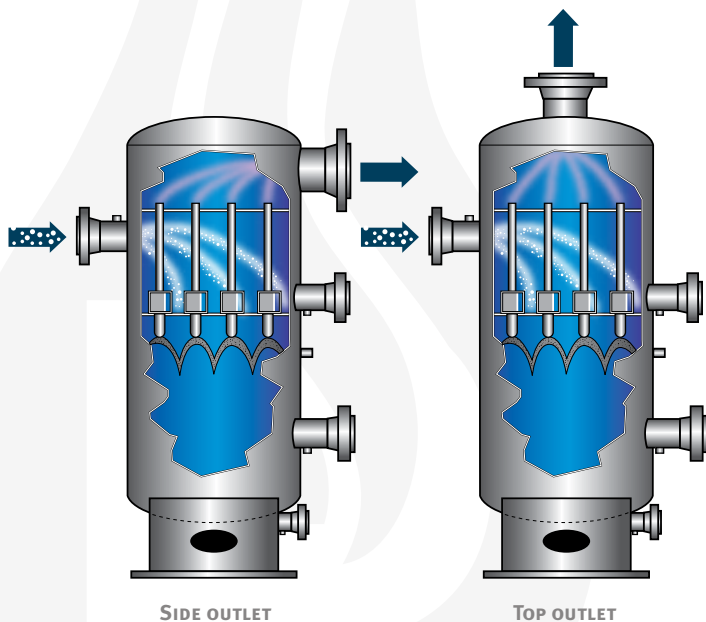
SWIRL TUBES CAN BE INSTALLED IN EITHER VERTICAL OR HORIZONTAL CONFIGURATIONS WITHOUT AFFECTING THE PERFORMANCE OF THE SYSTEM.

PERFORMANCE GUARANTEE – SWIRL TUBE

LIQUID REMOVAL EFFICIENCIES:

- Outlet gas will contain less than 0.10 gallon of entrained liquid per million standard cubic feet of gas passed through the separator
- 100% of all droplets 8-microns in diameter and larger
- 99% of 4- to 6-micron droplets
- 98% of 2- to 4-micron droplets

CONSULT PEERLESS FOR YOUR SEPARATION, RETROFIT, AND SPARES REQUIREMENTS.



PEERLESS MULTI-CYCLONE SCRUBBER DESIGN FEATURES

Peerless Multi-Cyclone Scrubbers are constructed to resist many years of abrasive wear and be rugged enough to withstand a wide variety of gas stream applications. In erosive gas applications, the critical parts of Peerless Cyclone Tubes may be constructed of erosion-resistant steel alloys.

Peerless Multi-Cyclone Scrubbers require no maintenance and have a comparatively low initial cost. Vertical and horizontal configurations are available.

PEERLESS SWIRL TUBE SEPARATOR DESIGN FEATURES

Peerless Swirl Tube Separators provide superior performance across an array of applications including condensate removal from gas streams, entrainment removal following a distillation or absorption process, and removal of liquid from inter-stage and final discharge stages in reciprocating compressors.

An aerodynamically designed helicoid maximizes the inertial force utilized to remove entrained liquids. The two-stage liquid extraction system with a gas recycle stream is designed to maximize the liquid handling requirements of this unique system. It is the key to high-efficiency, low-cost separation.