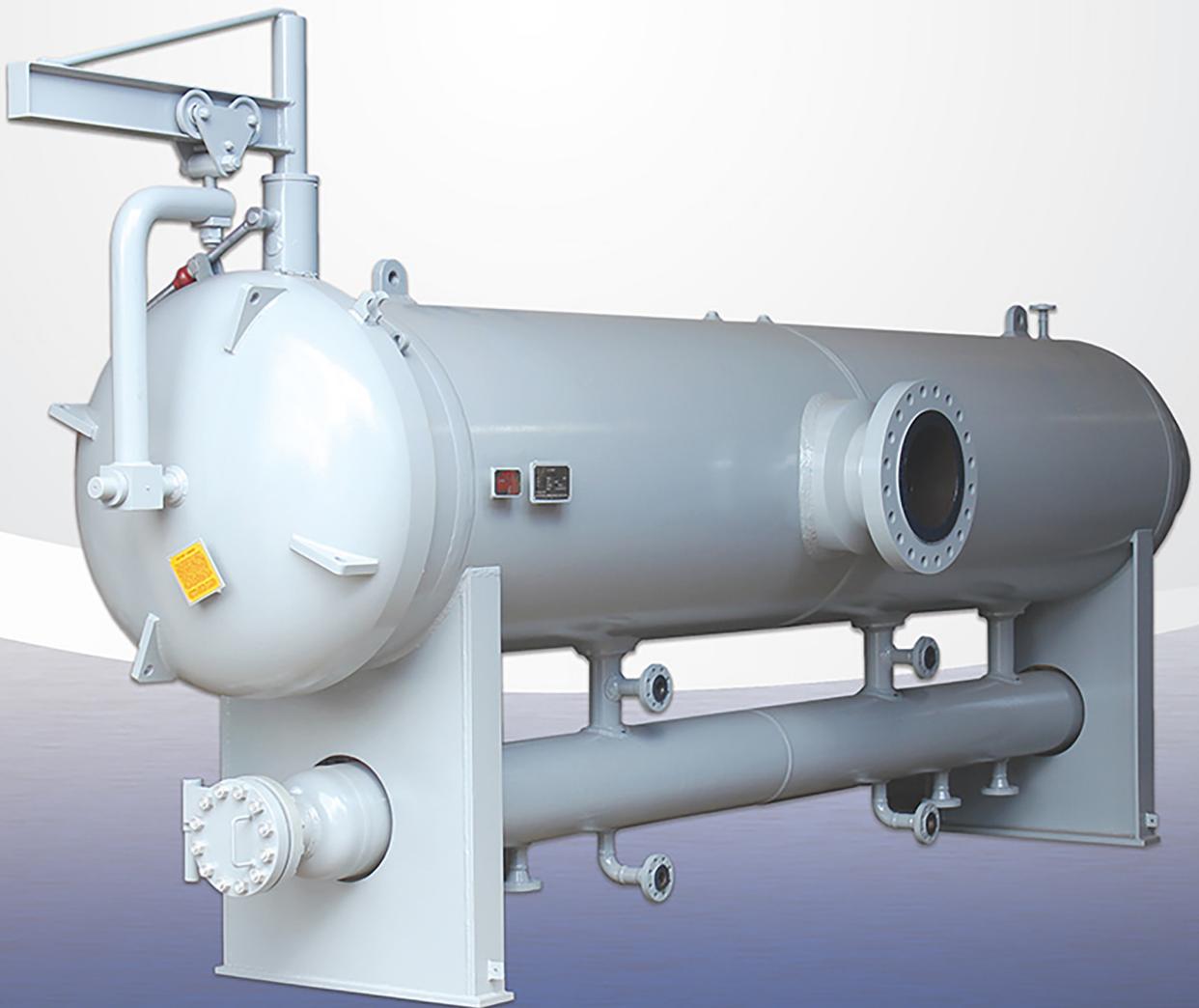




NON-SELF-CLEANING FILTER SEPARATORS



**DESIGNED FOR EFFICIENCY...
ENGINEERED FOR PERFORMANCE.**

DESIGNED FOR EFFICIENCY... EN

While physical laws may be bent, they can never be broken. Neither can truly efficient removal of gas contaminants be achieved without methods which actually take these laws into account. The tools to accomplish this task have been fine-tuned and proven by KingTool Company over the past fifty years. Yet persistent in today's filter-separation marketplace are attempts to defeat nature's laws by trend-led designers who have a penchant for miniaturization, without even a thought about the inevitable trade-off in performance.

KingTool's uncompromising approach toward the design of its filter separators, and indeed toward all of its products, has stood the test of time. Still, as in-house improvements are developed which enhance operation or lessen maintenance for service personnel, they are expeditiously implemented.

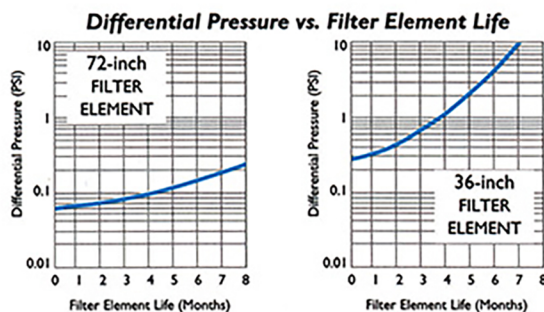
KingTool began building its filter-separator line with the idea of optimization by utilizing its own ingenious, concentric circle filter element arrangement. It was then, and remains even today, unique in its field. The advantage of this arrangement is that it accommodates the largest number of filter elements for any given vessel size. Added to this was the KingTool Vane Mist Extractor, the most effective impingement-type liquid particle removal device ever used in gas separation systems. The results were the most efficient Non-Self-Cleaning Filter Separators in the industry. This has not changed.

KingTool
COMPANY

Making Separator Systems work for their money.

One of the most important factors in the overall efficiency of a filter separator, and one which is largely ignored, is the length of the filter elements. Their length affects such things as filter life, pressure drop, and coalescing effectiveness. So, instead of the 36-inch long filter elements used in competitive units, KingTool employs 72-inch long elements as standard throughout its line of horizontal

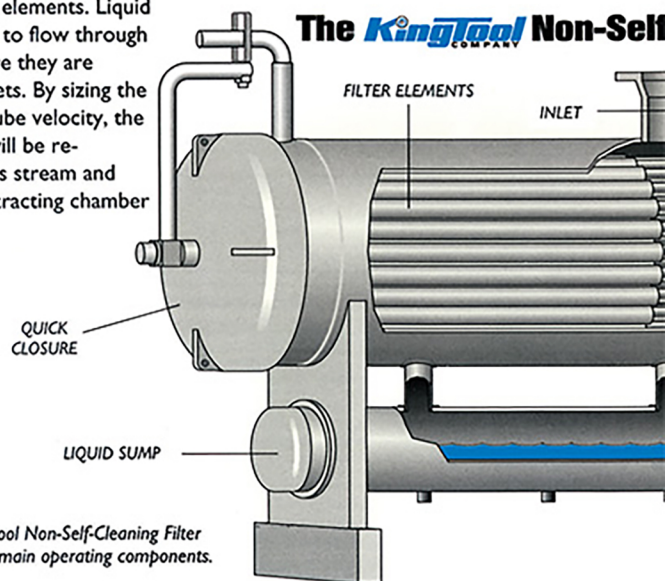
Non-Self-Cleaning Filter Separators. As shown below, the longer 72-inch filter elements have a much lower average pressure drop than the 36-inch elements, plus a substantially longer service life. Additionally, 72-inch filters have a decided advantage in coalescing area and volume. On the other hand, the shorter 36-inch filter elements lead to more frequent change-outs and higher operating costs.



As the solid particles traveling in the gas stream accumulate on the filter elements over time, the differential pressure will increase due to the restriction of gas flow. The diagrams illustrate the comparison of 36-inch and 72-inch filter element lengths in terms of element life.

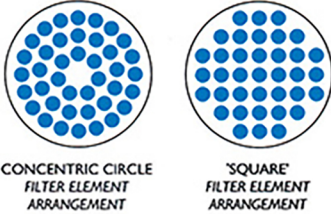
Gas is filtered during normal operation by flowing from outside of the filter elements and passing through to the inside surface. Solid particles (dirt, mill scale, slag, etc.) are collected on the outside and inside surfaces of the replaceable filter elements. Liquid particles are allowed to flow through the filter media where they are coalesced into droplets. By sizing the unit to control the tube velocity, the coalesced droplets will be re-entrained into the gas stream and move to the mist extracting chamber of the vessel.

A KingTool Impingement-Type Vane Mist Extractor is used in the Non-Self-Cleaning Filter Separator. It is sized to control the gas velocity required to remove the coalesced liquid droplets from the gas stream. Liquid collected



Typical standard KingTool Non-Self-Cleaning Filter Separator featuring its main operating components.

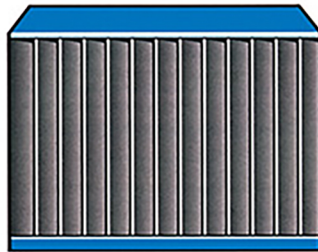
AN OPTICAL ILLUSION...?



If you think there might be more "dots" in the circle on the right, then you are wrong! Surprisingly, KingTool's unique concentric circle arrangement of the filter elements can accommodate a greater number of elements than competitive units' "grid" format. In large filter separators, the difference is quite substantial, yielding an increase in the number of filters in the twenty percent range.

VANE MIST EXTRACTOR

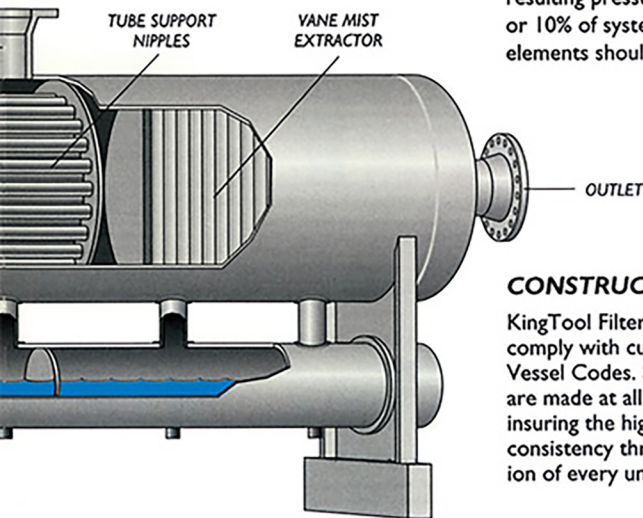
The KingTool Vane Mist Extractor, well-known for its performance and reliability, is specified in all KingTool Non-Self-Cleaning Filter Separators. The Vane Mist Extractor, unlike most competitive units, is not mounted across the vessel, but longitudinally. This results in more impingement area and, thereby, more total liquid particle removal. The vane is also not as prone to plugging or metal fatigue as a mesh pad or limited turndown of centrifugal devices.



by the vanes flows down to the bottom of the vessel and into the liquid sump. The sump is a dual-compartment chamber. Gas entering the vessel is often carrying liquids in a mist form and also some liquids heavy

enough to drop out once the velocity is reduced inside the vessel. This liquid is conveniently drained into the first section of the sump to eliminate its passing through the filter elements. Solid particles collected by the filter elements will eventually begin to restrict the gas flow. When the resulting pressure drop reaches 10 PSI or 10% of system pressure, the filter elements should be changed.

Non-Self-Cleaning Filter Separator



CONSTRUCTION

KingTool Filter Separators are built to comply with current ASME Pressure Vessel Codes. Stringent quality checks are made at all stages of fabrication, insuring the highest level of quality and consistency throughout the construction of every unit.

SIZING FACTORS

The gas flow rate, operating pressure, and operating temperature are important factors in sizing filter separation equipment, but they are not the only ones employed by the KingTool Company. Many years of experience and accumulated data, combined with advanced analysis techniques, enable KingTool to accurately design equipment specifically for your service. Unless otherwise instructed, sizing is based on worst-case conditions.

DESIGN FLEXIBILITY

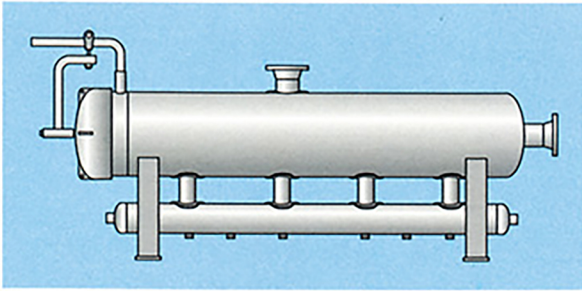
The area available for filter separation equipment is occasionally limited. KingTool can usually design a unit to meet given space requirements, or at least furnish available options. Vessel orientation can be varied and the inlet and outlet nozzles can be configured in several different ways.

FILTER ELEMENTS

Since the filter elements are the heart of the filter separator, their construction is of utmost importance. KingTool's filter elements are built in-house, constructed of select fiberglass, secured by a sturdy metal structure, and sandwiched between two different types of cloth to ease handling and prevent fiberglass migration. Gaskets, which are hydrocarbon liquid and water resistant, are used to assure a good seal and prevent by-passing.

QUALITY

KingTool Company is dedicated to producing the industry's finest filter separation equipment with an uncompromising commitment to quality, thus insuring our customers many years of reliable service.

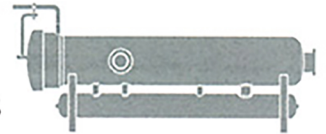


KingTool Filter Separators are utilized in the gas, oil, and petrochemical industries in a variety of applications that include:

- **LONG DISTANCE TRANSMISSION PIPELINES**
- **FIELD GATHERING PIPELINES**
- **COMPRESSOR STATIONS**
- **ELECTRIC POWER GENERATING PLANTS**
- **GAS PROCESSING PLANTS**
- **EXOTIC MASS FLOW METERING STATIONS**
- **PETROCHEMICAL PLANTS**

In addition to the Non-Self-Cleaning Gas Filter Separator described in this publication, KingTool manufactures and supplies the complete range of gas processing equipment, including:

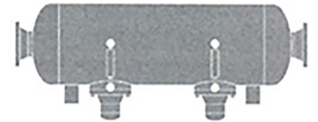
**SELF CLEANING
REVERSE FLOW
MIST COALESCERS
& FILTER-SEPARATORS**



**HORIZONTAL
& VERTICAL
SEPARATORS**



**OIL BATH GAS
SEPARATOR-
SCRUBBERS**



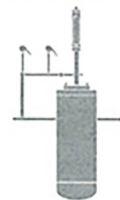
**HORIZONTAL &
VERTICAL UTILITY
GAS FILTERS &
FILTER SEPARATORS**



**LINE SEPARATORS
& FILTERS**



**NATURAL GAS
ODORIZERS**



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