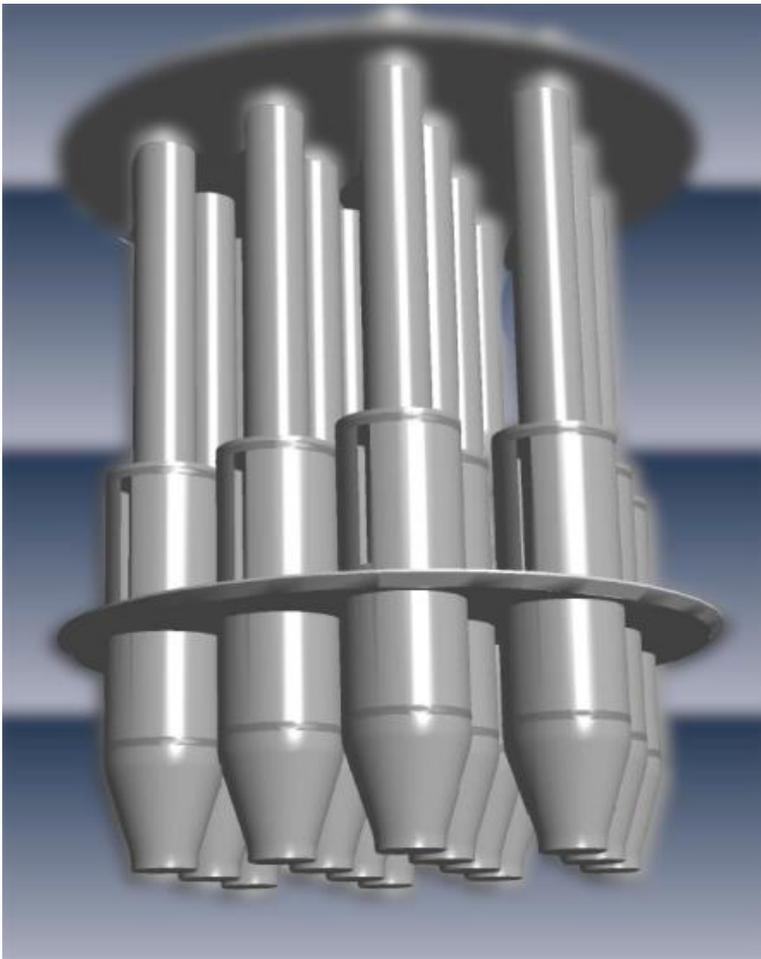


Black Powder Solutions



KMCE™ MULTICYCLONES

- EFFECTIVE SOLIDS REMOVAL
- UNIQUE REMOVABLE DESIGN

KSME™ SWIRLTUBES

- EFFECTIVE LIQUIDS REMOVAL
- UNIQUE REMOVABLE DESIGN



CYCLONE GAS CLEANING TECHNOLOGY THAT WORKS FOR YOUR APPLICATION

Our standard 3" **KMCE Multi Cyclone Elements** have been developed as a cost-effective and easily maintained solution for the problem of removing dry solids from gas streams, including pipe scale, sand, black powder and other corrosion products. KMCE Cyclones can also directly handle small amounts of liquid mist effectively, removing >99% of contaminants across a wide turndown range. KMCE Multicyclones are removable for easier maintenance and repair.

Now widely specified in the process industries, Axial Flow Cyclones have become the preferred method for liquid mist removal at high pressures or in compact / high flow separators. Over 20,000 of **KIRK's KSME Swirltubes** are in service world-wide, cleaning gas containing liquid mist, and frequently contaminated with solids. Benefits include a low pressure drop combined with excellent removal efficiency, whilst also being removable for maintenance.

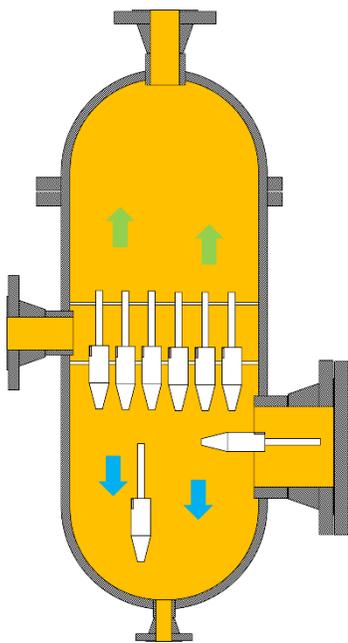
practical
solutions

Black Powder Solutions

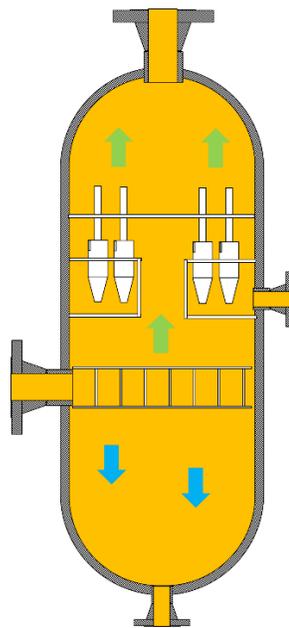


Black powder is an industry name for the abrasive, reactive particulate contamination present in all gas and hydrocarbon fluid transmission lines. It ranges from light brown to black, and the mineral makeup varies per production field around the world. Presently the majority of measures employed to deal with black powder are reactive not proactive. For gas pipe lines, traditional solutions consist of cartridge filter elements manufactured from paper, fiberglass, or polymer media with various capabilities to reduce black powder levels. These technologies are inefficient because they plug quickly and require costly change outs resulting in reduced production. These solutions cause flow restriction that add stress on the pumping or compressor systems requiring increased horse power to maintain flow.

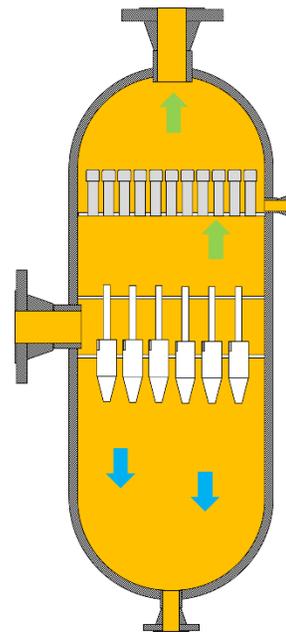
Modern solutions to the removal problem fall into two areas: Cyclone Separators and Magnetic Separators. Cyclone separators are well proven in service, removing down to 5-10 microns and providing maximum on-stream uptime. Magnetic systems require regular change-over just like filters, albeit without the replacement cost. KIRK specialises therefore in cyclone systems.



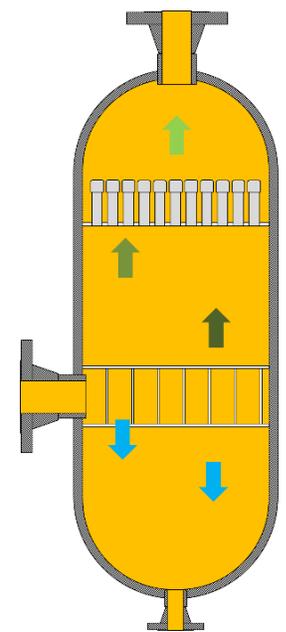
KMCE Multicyclones are installed between 2 seal plates and can be partially or wholly removable. They cope well with small quantities of entrained liquid mist.



To handle occasional liquid slugs or high liquid loads, KMCE Multicyclones can be arranged in a 2 stage set-up.



KMCE Multicyclones can be followed by Axial Cyclones where moderate liquid loads are expected to be continuous, along with solids contamination.



KSME Axial Cyclones on a simple deck can be used to cater for lighter solids loadings with continuous liquid mist.