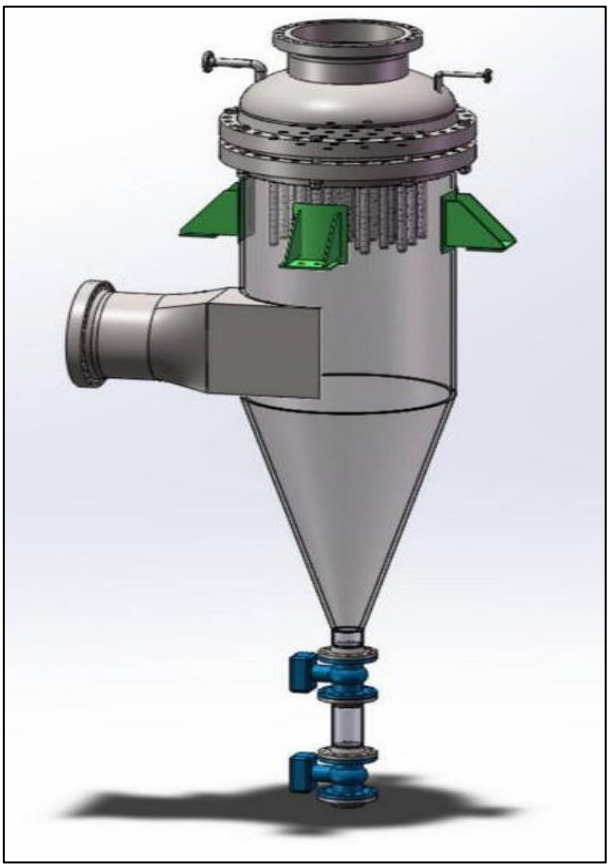
High Temperature Gas Filtration System

With the introduction of reliable, high temperature filter media, there has been increasing interest in high temperature filtration. The Hot gas filter usually filters at the operating temperature higher than 260℃（500°F）, and the traditional filter medium is not used anymore in such high temperature gas. Initially developed for electric power generation, this technology is now receiving considerable attention from process industries.



The industrial pulse hot gas filter developed by Saifilter Company is mainly used to provide solutions in the fields of the utilization of waste heat utilization, from industrial high temperature flue gas and the purification and recovery of high-temperature gas. Because filter medium adopts composite metal fiber to directly purify the high temperature gas, remove the collected dust particles from the surface of the filter elements effectively, this process is usually carried out when the hot gas industrial dust collector is running online, It does not interrupt or interfere with the technological process except for very small pressure peaks (or "overpressures").

Features and Benefits

- Stable filtration performance at low pressure drops
- Permanenty temperature-resistant up to 450° C
- Excellent filtration efficiency
- Easy access to the filter elements for installation and maintenance
- Filiter element mounting from the clean gas side
- High flexibility in filter design
- Compact design, high ratio of filter surface per volume

Typical Applications

- Dedusting of exhaust fumes from combustion processes
- Dedusting of exhaust fumes from melting furnaces
- Separation of solids from hot gas process
- Dedusting of gases from pyrolysis in a oxygen-free atmosphere
- Pneumatic conveyance of hot materials or at high temperatures

Saifilter Filtration Technology Co., Ltd.
Tel: 86-13069384151
Email: info@ saifilter. com

Filter Elements

The main equipment in the hot gas filter system is the filter element. Their performance has a significant impact on the efficiency of high temperature gas and the cost of the whole life cycle. Our design optimization:

- **strength**
- **permeability**
- **high filtration efficiency to remove coke from syngas and provide downstream protection.**

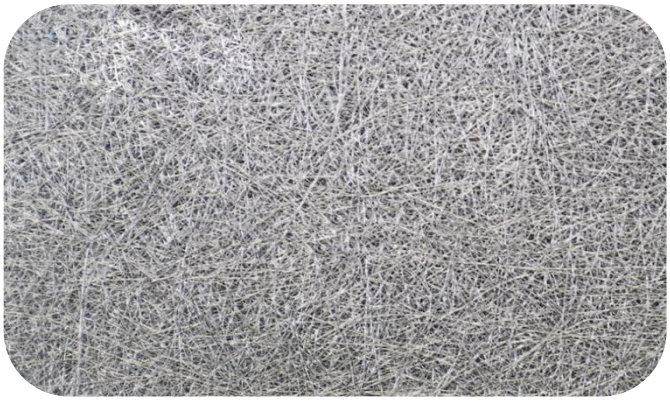
The chemical and physical properties of the filter media can be changed to resist the influence of the operating environment and to maximize the service life of the filter. The filter element is subject to constant and regular reverse pressure conditions, as the pulse will remove the dust cake formed

The filter media used for high temperature filtration can be distinguished by structure, composition, and operational behavior. Saifilter high temperature filters use a fiber matrix or a woven structure from either or metal materials.

Besides this standard, commercially available media we have developed a special filter structure for specific customer needs. Sintered metal fiber filter elements show a particularly high capture efficiency.

Available Media and Materials

Sintered Metal Fibre



Sintered Metal Fibre

- High permeability for forward flow and reverseflow cleaning.
- Excellent cleanability, particularly in pulsed jetoperation.
- Pleatable, offering a higher filtration area perelement.
- Efficiency performance up to HEPA level(99.99% @ 5μm) with standard materials.

Sintered Metal Mesh

Sintered Metal Mesh

- Available in a wide range of mesh sizes separation ratings.
- Offers precise aperture sizing.
- Smooth surface structure for ease of filter cake release.
- Sintered, composite mesh structure that combines high strength with filtration performance

Working Principle

Critical to the on-going operation of the filter elements is the efficacy of the pulsejet blowdown cleaning system. Saifilter has consistently promoted the use of the pulsejet blowdown cleaning systems in all high temperature applications as the most effective in-situ online cleaning system.

The filter media, as a permeable barrier or partition, provides the surface upon which a permeable filter cake develops. This filter cake increases in thickness with time and provides an increased filtration efficiency whilst also increasing the differential pressure. The differential pressure; which is a function of the selected media, the cake thickness, particle size distribution and compressibility; can be monitored and used to control the application of the pulsejet cleaning system. The pulsejet system provides a highly directed sonic pulse of clean process gas into the filter elements providing the expanding pressure front to fluidise and release the filter cake. The agglomerated contaminant settles within the vessel and is available for removal.

Pulsejet gas is generally clean process gas, but nitrogen, air, argon and superheated steam can also be considered depending upon acceptability to the process, availability and suitability as regards the pulsejet requirements.

Pulsejet Valves

The delivery of the pulsejet gas is provided via the action of a pulsejet valve. The pulsejet valve operates reliably over hundreds of thousands of sub-second cycles under conditions of high pressure and high temperature. The valves are high speed actuation metal seated trunnion-mounted ball valves which have a cycle time between 0.25 and 0.85 seconds. The operation of the valve causes a high velocity (sonic) pulse to be initiated that is delivered through the pulsejet pipework to the primary nozzle.

The pulsejet valves selected by Saifilter for our operating principle have a proven capability and are critical to the effective operation of the High temperature dust filtration system.