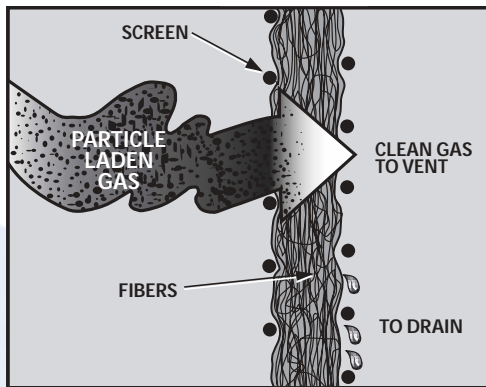


TECHNICAL INFORMATION ON FILTER OPERATION

Fiber bed filters are used to trap, collect and remove liquids and soluble particulate matter suspended in a gas stream. They are also used to collect insoluble solids. Collection can be achieved with an efficiency as high as 99.5% measured on a particle size basis. Air streams and process gases can be made free of pollution or hazard problems and valuable material can be collected even in heavy liquid loading situations.



CONSTRUCTION Filters are typically constructed in annular cylindrical form from 2' to 20' tall. Specially designed cubical filters which give more surface area per unit volume than cylindrical filters are also available. The cylinder is formed by rolled screens of selected metals, FRP or plastics. An outer and inner screen is used. The filter material, selected from a wide range of media, is placed between the two screens to form the fiber bed. The diameter of the fibers, fiber material, and the material's packing density determines the operating parameters of the filter (such as pressure drop, collection rate, gas through-put, etc.). At the screen ends, plates and flanges are attached to permit a variety of mounting and draining methods.

FILTER PROCESS Mist laden gas passes in a horizontal direction perpendicular to one side of the fiber bed and cleaned gas exits from the opposite side. As the particles try to pass through the fiber bed, they are trapped and held by the fibers. The collected particles are coalesced into drops on the filter's fiber surface and drain by gravity. Particles are collected by a combination of impaction, interception and Brownian movement. Collection of particles less than 2 microns is primarily due to the Brownian movement.

The filter units rest on or are suspended from a tube sheet inside a closed tank. Gas flow can be from outside the filter face to the inside or vice versa. Pressure drops will range from 2" to 20" of water column. In a typical application, a pressure drop of

about 7" dry and 10" at saturation is normal. The greater the liquid loading, the higher the pressure drop. About 50 milligrams of liquid per cubic foot produces the average operating pressure drop of 9" to 10".

The amount of gas throughput for a filter is determined by its physical size, required collection efficiency and the allowable pressure drop. A 24" O.D. ten foot tall filter of 99.5% collection rating has about a 1550 ACFM capacity. A 24" square, 10 foot tall cubical filter will have a capacity of 2000 ACFM under the same conditions. Clusters of filters are used to clean large volumes of gas. Exhaust gas stream temperatures are critical and should be low enough to form a liquid mist.

LIFE AND REPLACEMENT Fiber bed filters can have very long service lives if not plugged by insoluble solids. Continuous service of 5, 10 or even 15 years is common in some industries. CECO's "N-SERT X-SERT" Prefilters may be used to collect these insoluble solids and thus lengthen filter life. These devices can be retro-fitted onto any fiber bed filter.

Filter media replacement, using the same cages and hardware, is accomplished by using CECO's exclusive "SITE-PAK" Filter segments. These devices can be used to repack filters at CECO's plant or in the field at the plant site by plant personnel thus eliminating a lengthy, costly return to the filter manufacturer as required by other suppliers. Filters of any design can accept our "SITE-PAK" segments.

