

Filter Module and Filter System Comprising Same

Abstract

A filter module, especially for gas filtration purposes provides an improved ratio of filter area per volume for the filter system comprising the filter module and a high packing density in the filter system. The filter module comprises one or more block-shaped units, each unit comprising a plurality of filter elements and clean gas ducts, and a clean gas collecting and discharge arrangement at the discharge side of the block-shaped unit(s). The filter elements have a longitudinal, porous tubular wall part having an open first end serving as a raw gas inlet and a closed second end, wherein said filter elements are arranged coextensive and in parallel orientation with their tubular wall parts, their open ends being all located on one side of the filter module serving as a feed side thereof. The clean gas ducts are substantially coextensive with, oriented parallel to, and regularly interposed between the filter elements, the clean gas ducts being open at one end forming a clean gas outlet and closed at their opposite end, whereas the closed ends of the clean gas ducts being located at the feed side of the filter module, and whereas their open ends are located adjacent to a discharge side of the filter module opposite to the feed side of the filter module. The open ends of the filter elements and said closed ends of the clean gas ducts form a feed side surface of a block-shaped unit, and the open ends of the clean gas ducts and said closed ends of the filter elements form a discharge side surface of a block-shaped unit. The clean gas collecting and discharge arrangement extends across all of the clean gas outlets of the clean gas ducts of the one or more units, said clean gas collecting and discharge arrangement comprising one or more clean gas channels in fluid communication with said clean gas outlets of the clean gas ducts deflecting and directing the clean gas flow from the open ends of the clean gas ducts in a direction transverse to the vertical of the discharge side surface to a clean gas discharge opening of the filter module.

Fig. 1A