Claims

1. A catalytic filter system comprising a filtration vessel having a fluid inlet and a fluid outlet, a separation wall provided in the interior of said filtration vessel and a plurality of filter candles;
wherein said separation wall divides said interior into a raw gas chamber and a clean gas chamber;
wherein said separation wall comprises a plurality of openings designed to sealingly accommodate said plurality of filter candles;
wherein said fluid inlet is arranged in fluid communication with said raw gas chamber upstream of said plurality of filter candles;
wherein said fluid outlet is arranged in fluid communication with said clean gas chamber downstream of said plurality of filter candles; and
wherein said filter system comprises a first catalytic medium which is accommodated in said clean gas chamber downstream of said filter candles and upstream of said fluid outlet.

2. The catalytic filter system of claim 1, wherein said filter candles comprise a catalyst.

3. The catalytic filter system of claim 1 or 2, wherein said filter candles comprise an outer filter membrane upstream of the filter element.

4. The catalytic filter system of any one of claims 1 to 3, further comprising a second catalytic medium downstream of said first catalytic medium and upstream of said clean gas outlet.

5. The catalytic filter system of any one of claims 1 to 4, wherein said first and/or second catalytic medium comprises a filter element the average pore size of which being about equal to or larger than the average pore size of the filter candles.

6. The catalytic filter system of any one of claims 1 to 5, wherein said plurality of filter candles are pending from said separation wall and extending from the separation wall into the raw gas chamber.

7. The catalytic filter system of any one of claims 1 to 6, wherein the first and/or second catalytic medium is provided in the form of a safety fuse.

8. The catalytic filter system of any one of claims 1 to 7, further comprising a blow back device accommodated in said clean gas chamber.

9. The catalytic filter system of claim 8, wherein said blow back device is positioned in the clean gas chamber upstream of the first catalytic medium.

10. The catalytic filter system of any one of claims 1 to 9, wherein the vessel includes a detachable upper housing part which is connected to the lower main part of the vessel downstream of the separation wall.

11. The catalytic filter system of claim 10, wherein said detachable housing part is designed to accommodate the first and/or second catalytic medium.

12. The catalytic filter system of any one of claims 1 to 11, wherein the first catalytic medium and the optional second and any further catalytic medium comprises a catalytic element in the form of a catalytic fixed bed, a fiber mat, a foamed structure and/or a honeycomb structure.

Claims

1. A catalytic filter system (10; 120) comprising a filtration vessel (12; 122) having a fluid inlet (24; 134) and a fluid outlet (26; 136), a separation wall (14; 124) provided in the interior of said filtration vessel (12; 122) and a plurality of filter candles (22; 132);
wherein said separation wall (14; 124) divides said interior into a raw gas chamber (16; 126) and a clean gas chamber (18; 128);
wherein said separation wall (14; 124) comprises a plurality of openings (20; 130) designed to sealingly accommodate said plurality of filter candles (22; 132);
wherein said fluid inlet (24; 134) is arranged in fluid communication with said raw gas chamber (16; 126) upstream of said plurality of filter candles (22; 132);
wherein said fluid outlet (26; 136) is arranged in fluid communication with said clean gas chamber (18; 128) downstream of said plurality of filter candles (22); and wherein said filter system (10; 120) comprises a first catalytic medium (30; 138) which is accommodated in said clean gas chamber (18; 128) downstream of said filter candles (22; 132) and upstream of said fluid outlet (26; 136),
characterized in that said system (10; 120) optionally further comprises a second catalytic medium (139) downstream of said first catalytic medium (138) and upstream of said clean gas outlet (136), and in that said first and/or second catalytic medium (30; 138; 139) comprises a filter element the average pore size of which being about equal to or larger than the average pore size of the filter candles (22; 132).

2. The catalytic filter system of claim 1, wherein said filter candles (22; 132) comprise a catalyst.

3. The catalytic filter system of claim 1 or 2, wherein said filter candles (22; 132) comprise an outer filter membrane upstream of the filter element.

4. The catalytic filter system of any one of claims 1 to 3, wherein said plurality of filter candles (22; 132) are pending from said separation wall (14; 124) and extending from the separation wall (14; 124) into the raw gas chamber (18; 128).

5. The catalytic filter system of any one of claims 1 to 4, wherein the first and/or second catalytic medium (30; 138; 139) is provided in the form of a safety fuse.

6. The catalytic filter system of any one of claims 1 to 5, further comprising a blow back device (28; 142) accommodated in said clean gas chamber (18; 128).

7. The catalytic filter system of claim 6, wherein said blow back device (28; 142) is positioned in the clean gas chamber (18; 128) upstream of the first catalytic medium(30; 138).

8. The catalytic filter system of any one of claims 1 to 7, wherein the vessel (122) includes a detachable upper housing part (140) which is connected to the lower main part of the vessel downstream of the separation wall (124).

9. The catalytic filter system of claim 8, wherein said detachable housing part (140) is designed to accommodate the first and/or second catalytic medium (138; 139).

10. The catalytic filter system of any one of claims 1 to 9, wherein the first catalytic medium (30; 138) and the optional second (139) and any further catalytic medium comprises a catalytic element in the form of a catalytic fixed bed, a fiber mat, a foamed structure and/or a honeycomb structure.