CLAIMS

1. A filter for filtering particulates from a fluid stream, the filter comprising:

a non-conductive filter element, the filter element extending along a longitudinal axis between a first end and a second end, the filter element having an inner surface defining an interior passage and an outer surface defining an outer surface area, the filter element including a filter medium made from electrically non-conductive material;

a first end cap and a second end cap, the first end cap and the second end cap respectively secured to the first end and the second end of the filter element to form a fluid tight seal therebetween, wherein at least one of the first end cap and the second end cap defines an opening therethrough in fluid communication with the interior passage of the filter element; and

a wrap, the wrap secured to at least the filter element, the wrap comprising a strip having a wrap length and a wrap width, the wrap length being greater than the wrap width,

wherein the wrap comprises a conductive layer comprising an electrically-conductive material and a carrier layer made from a material different from the electrically-conductive material, the conductive layer having a conductive layer width, and the carrier layer having a carrier layer width, the conductive layer width being equal to or less than the carrier layer width, the conductive layer being secured to the carrier layer such that the conductive layer is disposed laterally within, or aligned with, the carrier layer, and wherein the wrap is helically wrapped around the filter element to form a plurality of helical windings along the longitudinal axis such that at least forty percent of the outer surface area is covered by the conductive layer,

wherein the helical windings are in spaced relationship to each other to define a gap between adjacent helical windings, the wrap being helically wrapped around the filter element along a helix angle, the helix angle being non-parallel to a transverse plane perpendicular to the longitudinal axis, the gap having a gap width measured along an axis perpendicular to the helix angle, and wherein the conductive layer width is greater than forty percent of the sum of the conductive layer width and the gap width.

2. The filter according to claim 1, wherein the conductive layer has a sheet resistance less than 50 kΩ/sq.

3. The filter according to claim 1 or claim 2, wherein the conductive layer has a grab tensile strength of at least 90N along the wrap length.

4. The filter according to any one of claim 1 to claim 3, wherein the electrically-conductive material of the conductive layer comprises a permeable nonwoven nylon impregnated with at least one of carbon and an electrically-conductive polymer.

5. The filter according to any one of claim 1 to claim 3, wherein the electrically-conductive material of the conductive layer comprises an electrically-conductive metal.

6. The filter according to claim 1, wherein the conductive layer width is in a range between: (1) half the carrier layer width and (2) the carrier layer width.

7. The filter according to claim 1, wherein the carrier layer is connected to the filter element to resist radially outward expansion of the filter element, and the carrier layer has a grab tensile strength of at least 90N along the wrap length.

8. The filter according to claim 7, wherein the material of the carrier layer comprises a permeable nonwoven polyester.

9. The filter according to claim 7 or claim 8, wherein the electrically-conductive material of the conductive layer comprises a permeable spunbonded nylon impregnated with at least one of carbon and an electrically-conductive polymer.

10. The filter according to any one of claim 1 to claim 3, the filter medium comprises at least ninety-nine percent glass fiber by weight.

11. The filter according to any one of claim 1 to claim 3, wherein the filter medium has a basis weight of at least 3 gpsf and a specific surface area of at least 4 m^2/ft^2.

12. The filter according to any one of claim 1 to claim 3, wherein the filter medium has a first side and a second side, and wherein the filter element includes a first drainage layer

disposed on the first side of the filter medium and a second drainage layer disposed on the second side of the filter medium, wherein at least one of the first drainage layer and the second drainage layer comprises a polymeric mesh.

13. A fluid filter assembly for filtering particulates from a fluid stream, the fluid filter assembly comprising:

a housing, the housing defining a first port, a second port, and a filter chamber, the first port and the second port in communication with the filter chamber such that a fluid flow path is defined between the first port and the second port through the filter chamber;

a filter according to claim 1;

wherein the filter is positioned within the filter chamber of the housing such that the filter is interposed between the first port and the second port along the fluid flow path and such that the filter element is electrically connected to the housing.

14. A method of filtering particulates from a fluid stream, the method comprising:

passing the fluid stream through a filter element of a filter according to claim 1, the fluid stream having a conductivity less than 50 pS/m, the filter element being extending along a longitudinal axis between a first end and a second end, the filter element having an inner surface defining an interior passage and an outer surface defining an outer surface area;

electrically connecting a wrap to ground, the wrap secured to at least the filter element, the wrap comprising a strip having a wrap length and a wrap width, the wrap length being greater than the wrap width, wherein the wrap comprises a conductive layer comprising an electrically-conductive material, and the wrap is wrapped around the filter element such that at least forty percent of the outer surface area is covered by the conductive layer.