CLAIMS:

1. A filter assembly for use in an electronic enclosure, the filter assembly comprising:

a media structure defining an open front face, a closed rear face, and an internal recess between the open front face and closed rear face, wherein the open front face is configured to be positioned upstream of the closed rear face with respect to airflow within the electronic enclosure;

a scrim material forming at least a portion of the media structure; and

an electrostatic material disposed within the internal recess of the filter assembly, the electrostatic material at least partially covering the scrim within the internal recess;

carbon beads disposed within the internal recess; and

a substantially flat sheet of filter media coupled to the media structure at a weld area, wherein the substantially flat sheet of filter media is disposed over the open front face of the media structure to define a cavity between the media structure and the substantially flat sheet of filter media.

2. The filter assembly of claim 1, wherein the scrim material comprises a woven material.

3. The filter assembly of claim 1, wherein the scrim material comprises a non-woven material.

4. The filter assembly of claim 1, wherein the scrim material comprises polypropylene fibers.

5. The filter assembly of claim 1, wherein the scrim material has a permeability of between about 100 ft./min. at 0.5 inches of water and about 800 ft./min. at 0.5 inches of water.

6. The filter assembly of claim 1, wherein the electrostatic material comprises polypropylene fibers.

7. The filter assembly of claim 1, wherein the electrostatic material comprises acrylic fibers.

8. The filter assembly of claim 1, wherein the electrostatic material comprises a mixed fiber medium comprising polypropylene and acrylic.

9. The filter assembly of claim 1, wherein the electrostatic material has a permeability of between about 250 ft./min. at 0.5 inches of water and about 750 ft./min. at 0.5 inches of water.

10. The filter assembly of claim 1, wherein the electrostatic material has a filtering efficiency of about 20 % to about 99.99 % for 20 to 30 micron particulate contaminants.

11. The filter assembly of claim 1, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

12. The filter assembly of claim 1, wherein the internal recess of the filter assembly has an internal surface area that is at least 3 times the area at the open front face.

13. The filter assembly of claim 1, wherein the filter assembly comprises a recirculation filter disposed within a housing of a disk drive, and the filter assembly is oriented to filter airflow induced by the rotation of one or more disks within the disk drive housing.

14. A filter assembly for use in an electronic enclosure, the filter assembly comprising;

a first sheet containing a scrim layer and a media layer, wherein the first sheet is substantially flat and the media layer comprises triboelectric media;

a second sheet containing a scrim layer and a media layer, wherein the second sheet is substantially concave;

a cavity defined by the first sheet and the second sheet; and

an adsorbent material positioned within the cavity, wherein the adsorbent material comprises carbon beads.

15. The filter assembly of claim 14, wherein the permeable filter media has a permeability of between about 250 ft./min. at 0.5 inches of water and about 750 ft./min. at 0.5 inches of water.

16. The filter assembly of claim 14, wherein the triboelectric media comprises a mixture of polypropylene fibers and acrylic fibers.

17. The filter assembly for use in an electronic enclosure of claim 14, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

18. The filter assembly for use in an electronic enclosure of Claim 14, wherein the second sheet substantially retains its shape.

19. The filter assembly for use in an electronic enclosure of Claim 14, wherein the first sheet and the second sheet define a weld area around the border of the filter assembly, wherein the first sheet is coupled to the second sheet in the weld area.

CLAIMS:

1. A filter assembly for use in an electronic enclosure, the filter assembly comprising:

a media structure defining an open front face, a closed rear face, and an internal recess between the open front face and closed rear face, wherein the open front face is configured to be positioned upstream of the closed rear face with respect to recirculated airflow within the electronic enclosure,

wherein the media structure comprises:

a scrim material forming at least a portion of the media structure; and

an electrostatic material at least partially covering the scrim within the internal recess;

carbon beads disposed within the internal recess; and

a substantially flat sheet of filter media coupled to the media structure at a weld area, wherein the substantially flat sheet of filter media is disposed over the open front face of the media structure to define a cavity between the media structure and the substantially flat sheet of filter media.

2. The filter assembly of claim 1, wherein the scrim material comprises a woven material.

3. The filter assembly of claim 1, wherein the scrim material comprises a non-woven material.

4. The filter assembly of claim 1, wherein the scrim material comprises polypropylene fibers.

5. The filter assembly of claim 1, wherein the scrim material has a permeability of between about 100 ft./min. at 0.5 inches of water and about 800 ft./min. at 0.5 inches of water.

6. The filter assembly of claim 1, wherein the electrostatic material comprises polypropylene fibers.

7. The filter assembly of claim 1, wherein the electrostatic material comprises acrylic fibers.

8. The filter assembly of claim 1, wherein the electrostatic material comprises a mixed fiber medium comprising polypropylene and acrylic.

9. The filter assembly of claim 1, wherein the electrostatic material has a permeability of between about 250 ft./min. at 0.5 inches of water and about 750 ft./min. at 0.5 inches of water.

10. The filter assembly of claim 1, wherein the electrostatic material has a filtering efficiency of about 20 % to about 99.99 % for 20 to 30 micron particulate contaminants.

11. The filter assembly of claim 1, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

12. The filter assembly of claim 1, wherein the internal recess of the filter assembly has an internal surface area that is at least 3 times the area at the open front face.

13. The filter assembly of claim 1, wherein the filter assembly comprises a recirculation filter disposed within a housing of a disk drive, and the filter assembly is oriented to filter airflow induced by the rotation of one or more disks within the disk drive housing.

14. A filter assembly for use in an electronic enclosure, the filter assembly comprising;

a first sheet containing a scrim layer and a media layer, wherein the first sheet is substantially flat and the media layer comprises triboelectric media;

a second sheet containing a scrim layer and a media layer, wherein the second sheet is substantially concave;

a cavity defined by the first sheet and the second sheet; and

an adsorbent material positioned within the cavity, wherein the adsorbent material comprises carbon beads.

15. The filter assembly of claim 14, wherein the permeable filter media has a permeability of between about 250 ft./min. at 0.5 inches of water and about 750 ft./min. at 0.5 inches of water.

16. The filter assembly of claim 14, wherein the triboelectric media comprises a mixture of polypropylene fibers and acrylic fibers.

17. The filter assembly for use in an electronic enclosure of claim 14, wherein the internal recess of the filter assembly has an internal surface area that is at least 2 times the area at the open front face.

18. The filter assembly for us in an electronic enclosure of Claim 14, wherein the second sheet substantially retains its shape.

19. The filter assembly for us in an electronic enclosure of Claim 14, wherein the first sheet and the second sheet define a weld area around the border of the filter assembly, wherein the first sheet is coupled to the second sheet in the weld area.