Claims:

1. A containment system comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture;

a filter sealing portion disposed in the housing between the inlet and outlet apertures;

a first collar extending from the housing and circumscribing the inlet aperture;

a first bubble-tight damper disposed in the first collar and operable to regulate flow through the inlet aperture circumscribed by the first collar;

a second collar extending from the housing and circumscribing the outlet aperture; and

a second bubble-tight damper operable to regulate flow through the outlet aperture.

2. The containment system of claim 1 further comprising:

a single selectively sealable access aperture formed through the housing; and

a bag-in/bag-out ring extending from the housing and circumscribing the access aperture.

3. The containment system of claim 1, wherein the first bubble-tight damper moves axially relative to a center line of the first collar.

4. The containment system of claim 1 further comprising:

a scan probe disposed in the housing; and

a motion mechanism disposed in the housing configured to displace the scan probe.

5. The containment system of claim 4, wherein the scan probe further comprises:

an elongated member; and

a plurality of sample ports formed in the elongated member.

6. The containment system of claim 4 further comprising:

a plurality of penetrations formed through the housing, at least one of the penetrations being coupled to the scan probe.

7. The containment system of claim 1 further comprising:

an aerosol injection ring disposed in the first collar upstream of the first bubble-tight damper.

8. The containment system of claim 7, wherein the aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radially inward orientation.

9. The containment system of claim 1 further comprising:

an aerosol injection ring disposed in the housing outward of the first collar.

10. The containment system of claim 9, wherein the aerosol injection ring further comprises:

a plurality of holes having a radially inward orientation.

11. The containment system of claim 1, wherein the first bubble-tight damper is disposed in the first collar.

12. The containment system of claim 1, wherein the second bubble-tight damper is disposed in the second collar.

13. The containment system of claim 1, wherein the first and second bubble-tight dampers are configured as at least one of a butterfly damper, a guillotine damper, or an opposed blade configuration.

14. A containment system comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture, the housing confining an interior volume comprising a first region separated from a second region by a sealing portion, the sealing portion configured to provide an air-tight interface with a filter element when disposed in the housing;

a first collar extending from the housing and circumscribing the inlet aperture;

a first bubble-tight damper disposed in the first collar and is operable to regulate flow through the inlet aperture;

a second collar extending from the housing and circumscribing the outlet aperture; and

a second bubble-tight damper disposed in the second collar and is operable to regulate flow through the outlet aperture; and

an aerosol injection ring disposed in the first region of the housing and having a plurality of radially inward oriented aerosol injection holes.

15. The containment system of claim 14, wherein the aerosol injection ring is disposed outward of the first collar and between the first bubble-tight damper and a wall having the inlet aperture formed therein.

16. The containment system of claim 14 further comprising:

a selectively sealable access aperture formed through the housing; and

a bag-in/bag-out ring extending from the housing and circumscribing the access aperture.

17. The containment system of claim 14, wherein the first bubble-tight damper moves axially relative to a center line of the first collar.

18. The containment system of claim 14 further comprising:

a motion mechanism disposed in and coupled to the housing; and

a probe coupled to and selectively displaced by the motion mechanism.

19. The containment system of claim 14, wherein the first and second bubble-tight dampers are configured as at least one of a butterfly damper, a guillotine damper, or an opposed blade configuration.

20. A containment system, comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture, the housing confining an interior volume comprising a first region separated from a second region by a sealing portion, the sealing portion configured to provide an air-tight interface with a filter element when disposed in the housing;

a first collar extending from the housing and circumscribing the inlet aperture;

a first bubble-tight damper disposed in the first collar and operable to regulate flow through the inlet aperture;

a second collar extending from the housing and circumscribing the outlet aperture; and

a second bubble-tight damper operable to regulate flow through the outlet aperture; and

an aerosol injection ring disposed in the first region of the housing and having a plurality of radially inward oriented aerosol injection holes.

CLAIMS

1. A containment system comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture;

a filter sealing portion disposed in the housing between the inlet and outlet apertures;

a first collar extending from the housing and circumscribing the inlet aperture;

a first bubble-tight damper operable to regulate flow through the inlet aperture circumscribed by the first collar;

a second collar extending from the housing and circumscribing the outlet aperture; and

a second bubble-tight damper operable to regulate flow through the outlet aperture.

2. The containment system of claim 1 further comprising:

a single selectively sealable access aperture formed through the housing; and

a bag-in/bag-out ring extending from the housing and circumscribing the access aperture.

3. The containment system of claim 1, wherein the first bubble-tight damper moves axially relative to a center line of the first collar.

4. The containment system of claim 1 further comprising:

a scan probe disposed in the housing; and

a motion mechanism disposed in the housing configured to displace the scan probe.

5. The containment system of claim 4, wherein the scan probe further comprises:

an elongated member; and

a plurality of sample ports formed in the elongated member.

6. The containment system of claim 4 further comprising:

a plurality of penetrations formed through the housing, at least one of the penetrations being coupled to the scan probe.

7. The containment system of claim 1 further comprising:

an aerosol injection ring disposed in the first collar upstream of the first bubble-tight damper.

8. The containment system of claim 7, wherein the aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radially inward orientation.

9. The containment system of claim 1 further comprising:

an aerosol injection ring disposed in the housing outward of the first collar.

10. The containment system of claim 9, wherein the aerosol injection ring further comprises:

a plurality of holes having a radially inward orientation.

11. The containment system of claim 1, wherein the first bubble-tight damper is disposed in the first collar.

12. The containment system of claim 1, wherein the second bubble-tight damper is disposed in the second collar.

13. The containment system of claim 1, wherein the first and second bubble-tight dampers are configured as at least one of a butterfly damper, a guillotine damper, or an opposed blade configuration.

14. A containment system comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture, the housing confining an interior volume comprising a first region separated from a second region by a sealing portion, the sealing portion configured to provide an air-tight interface with a filter element when disposed in the housing;

a first collar extending from the housing and circumscribing the inlet aperture;

a first bubble-tight damper disposed in the first collar and is operable to regulate flow through the inlet aperture;

a second collar extending from the housing and circumscribing the outlet aperture; and

a second bubble-tight damper disposed in the second collar and is operable to regulate flow through the outlet aperture; and

an aerosol injection ring disposed in the first region of the housing and having a plurality of radially inward oriented aerosol injection holes.

15. The containment system of claim 14, wherein the aerosol injection ring is disposed outward of the first collar and between the first bubble-tight damper and a wall having the inlet aperture formed therein.

16. The containment system of claim 14 further comprising:

a selectively sealable access aperture formed through the housing; and

a bag-in/bag-out ring extending from the housing and circumscribing the access aperture.

17. The containment system of claim 14, wherein the first bubble-tight damper moves axially relative to a center line of the first collar.

18. The containment system of claim 14 further comprising:

a motion mechanism disposed in and coupled to the housing; and

a probe coupled to and selectively displaced by the motion mechanism.

19. The containment system of claim 14, wherein the first and second bubble-tight dampers are configured as at least one of a butterfly damper, a guillotine damper, or an opposed blade configuration.

20. A containment system, comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture, the housing confining an interior volume comprising a first region separated from a second region by a sealing portion, the sealing portion configured to provide an air-tight interface with a filter element when disposed in the housing;

a first collar extending from the housing and circumscribing the inlet aperture;

a first bubble-tight damper operable to regulate flow through the inlet aperture;

a second collar extending from the housing and circumscribing the outlet aperture; and

a second bubble-tight damper operable to regulate flow through the outlet aperture; and

an aerosol injection ring disposed in the first region of the housing and having a plurality of radially inward oriented aerosol injection holes.