What is claimed:

1. A bean roasting system, comprising:

a roasting drum configured to receive and to thermally roast beans;

an air handling system configured to circulate a first fluid stream through the roasting drum;

a bean cooler configured to receive and cool the beans from the roasting drum; and

an air exit subsystem configured to receive and treat the first fluid stream from the air handling system and a second fluid stream from the bean cooler, the air exit subsystem including:

a heat sink defining a first fluid path and a second fluid path substantially parallel to the first fluid path and including a metal body;

the metal body configured to receive heat from the first fluid path and the second fluid path;

the first fluid path fluidically coupled to the air handling system to receive the first fluid stream from the air handling system;

the second fluid path fluidically coupled to the bean cooler to receive the second fluid stream from the bean cooler; and

a filter fluidically coupled to the first fluid path and the second fluid path.

2. The bean roasting system of claim 1, further comprising a housing defining a housing fluid path that fluidically couples the first fluid path and the second fluid path to the filter and merges the first fluid stream and the second fluid stream to provide a merged fluid stream.

3. The bean roasting system of claim 2, wherein the housing includes an exit fan disposed within the housing fluid path.

4. The bean roasting system of claim 3, wherein, during operation, the merged fluid stream generally traverses the housing fluid path along a lateral Y-axis, then passes into the filter along a vertical Z-axis, and then passes through filters in the filter along a lateral X-axis, the X-axis, the Y-axis, and the Z-axis are mutually orthogonal.

5. The bean roasting system of claim 2, wherein, during operation, the first fluid stream enters the housing along a Y-axis and then traverses along the first fluid path along the Z-axis, the Y-axis and the Z-axis are mutually orthogonal.

6. The bean roasting system of claim 1, wherein, during operation, the first fluid path and the second fluid path direct air streams along a vertical Z-axis.

7. The bean roasting system of claim 6, wherein, during operation, the first fluid path first directs the first fluid stream in a downward direction and then in an upward direction along the Z-axis.

8. The bean roasting system of claim 7, wherein, during operation, the first fluid stream enters the air exit subsystem along a lateral Y-axis before entering the first fluid path, the lateral Y-axis is orthogonal to the vertical Z-axis.

9. The bean roasting system of claim 6, wherein, during operation, the second fluid path directs the second fluid stream in an upward direction along the vertical Z-axis.

10. The bean roasting drum of claim 1, wherein the air handling system includes a blower, the first fluid stream traverses from the blower to the first fluid path during operation.

11. The bean roasting system of claim 1, wherein the heat sink further includes:
a first plurality of fins extending from the metal body into the first fluid path; and
a second plurality of fins extending from the metal body into the second fluid path.

12. The bean roasting system of claim 1, further comprising a controller configured to operate the roasting drum, the air handling system, and the bean cooler.

13. A method of roasting a batch of beans, comprising:
providing a roasting drum;
providing an air handling subsystem;
providing a bean cooler to receive and to cool the batch of beans from the roasting drum;
providing an air exit subsystem configured to receive and treat a first fluid stream from the air handling system and a second fluid stream from the bean cooler, the air exit subsystem including:
a heat sink defining a first fluid path and a second fluid path substantially parallel to the first fluid path, the heat sink including a metal body;
the metal body configured to receive heat from the first fluid path and the second fluid path; and

a filter fluidically coupled to the first fluid path and the second fluid paths;

operating the roasting drum and the air handling system to receive and to thermally roast a batch of beans; and

operating the air exit subsystem to receive and treat the first fluid stream and the second fluid stream, operating the air exit subsystem includes:

passing the first fluid stream through the first fluid path;

passing the second fluid stream through the second fluid path; and

passing the first fluid stream and the second fluid stream to the filter.

14. The method of claim 13, wherein the air exit subsystem includes a housing defining a housing fluid path and contains an exit fan, the method further comprising:

operating the exit fan;

merging the first fluid stream and the second fluid stream into a merged fluid stream within the housing fluid path; and

passing the merged fluid stream to the filter.

15. The method of claim 13, wherein the air exit subsystem includes a housing, the method further comprising:

receiving the first fluid stream into the housing along a Y-axis; and passing, after receiving the first fluid stream into the housing, the first fluid stream from the housing and through the first fluid path along a Z-axis.

16. The method of claim 13, wherein passing the first fluid path primarily extends along a vertical Z-axis, passing the first fluid stream through the first fluid path includes passing the first fluid stream along the Z-axis in a downward direction and then passing the first fluid stream along the Z-axis in an upward direction.

17. The method of claim 13, wherein passing the second fluid path primarily extends along a vertical Z-axis, passing the second fluid stream through the second fluid path includes passing the first fluid stream along the Z-axis in an upward direction.

18. The method of claim 13, wherein the heat sink further includes a first plurality of fins extending from the metal body into the first fluid path, the method further including convectively transferring heat from the first fluid stream into the first plurality of fins and conductively transferring heat from the first plurality of fins to the metal body.

19. The method of claim 13, wherein the heat sink further includes a second plurality of fins extending from the metal body into the second fluid path and the method further including convectively transferring heat from the second fluid stream into the second plurality of fins and conductively transferring heat from the second plurality of fins to the metal body.

20. A bean roasting system, comprising:

a hopper;

a roasting drum;

an air handling system;

a bean cooler;

an air exit subsystem configured to receive and treat a first fluid stream from the air handling system and a second fluid stream from the bean cooler, the air exit subsystem including:

a heat sink defining two parallel fluid paths including a first fluid path and a second fluid path and including:

a metal body;

a first plurality of fins extending from the metal body into the first fluid path;

a second plurality of fins extending from the metal body into the second fluid path;

the metal body configured to receive heat from the first fluid path and the second fluid path;

the first fluid path fluidically coupled to receive the first fluid stream from the air handling system;

the second fluid path fluidically coupled to receive the second fluid stream from the bean cooler; and

a filter fluidically coupled to the first and second air flow paths; and

a controller configured to:

operate the hopper to transfer a batch of beans to the roasting drum;

operate the roasting drum and the air handling system to roast the batch of beans;

operate the bean cooler to receive and cool the batch of beans; and

operate the air exit subsystem to:

treat the first fluid stream to extract heat, water vapor, and effluents; and

treat the second fluid stream to extract heat and effluents.