CLAIMS

1. A system for managing the removing contaminants from gaseous streams, such as an exhaust stream, the system comprising:
a combustion system producing an exhaust stream;
a tempering air system comprising:
a housing forming an interior region;
one or more cooling components disposed within the interior region, each of the one or more cooling components configured to:
receive at least a portion of the exhaust stream;
draw a cooling stream based on at least the portion of the exhaust stream, wherein the draw of the cooling stream relies on the Venturi effect and/or Bernoulli's principle based on a velocity of at least the portion of the exhaust stream;
mix the cooling stream with at least the portion of the exhaust stream to form a mixed stream, wherein a temperature of the mixed stream is lower than a temperature of at least the portion of the exhaust stream; and
an exhaust treatment system configured to receive the mixed stream and to remove one or more contaminants from the mixed stream, and further comprising:
one or more sensors configured to measure temperature, wherein one of the one or more sensors is disposed between the one or more cooling components and the exhaust treatment system;
a regulator configured to adjust a volume of cooling stream drawn into one of the one or more cooling components;
a control unit in communication with the one or more sensors and the regulator; wherein the control unit is configured to:
obtain temperature measurements from the one or more sensors:
determine whether the temperature measurements are within a threshold; and
transmit a notification to the regulator to adjust the volume of cooling stream drawn into one of the one or more cooling components.

2. The system of claim 1, wherein the cooling stream is predominately atmospheric air.

3. The system of claim 1, wherein the one or more cooling components comprise two or more cooling components configured to operate in parallel with each other.

4. The system of claim 1, wherein the one or more cooling components comprises a first cooling component and a second cooling component configured to operate in series with each other,

wherein the first cooling component is configured to:
receive at least the portion of the exhaust stream;
draw a first cooling stream based on at least the portion of the exhaust stream;
mix the first cooling stream with at least the portion of the exhaust stream to form a first mixed stream, wherein a temperature of the first mixed stream is lower than a temperature of at least a portion of the exhaust stream; and
the second cooling component is configured to:
receive at least the portion of the first mixed stream;
draw a second cooling stream based on at least the portion of the first mixed stream;
mix the second cooling stream with at least the portion of the first mixed stream to form a second mixed stream, wherein a temperature of the second mixed stream is lower than the temperature of at least the portion of the first mixed stream.

5. The system of claim 1, wherein the one or more cooling components comprise an eductor.

6. The system of claim 1, wherein the one or more cooling components comprise:
one or more body portions that forms a passage for at least the portion of the exhaust stream to pass through; and
one or more valves configured to:
block the cooling stream in the closed position; and
pass the cooling stream in the open position.

7. The system of claim 1, wherein the one or more cooling components comprise:
one or more body portions that forms a passage for at least the portion of the exhaust stream to pass through; and
one or more dampers configured to:
block the cooling stream in the closed position; and
pass the cooling stream in the open position.

8. The system of claim 1, wherein the tempering air system further comprising one or more flow divert components disposed within the interior region and upstream of the one or more cooling components, each of the one or more flow divert components configured to divert the flow path of at least the portion of the exhaust stream into the one or more cooling components.

9. The system of claim 1, wherein the tempering air system further comprising one or more mixing components disposed within the interior region and downstream of the one or more cooling

components, each of the one or more mixing components configured to divert the flow path of at least the portion of the exhaust stream to interact with the cooling stream.

10. The system of claim 9, wherein the one or more mixing components comprises one or more of a perforated sheet, a screen, a filter and any combination thereof.

11. The system of claim 1, wherein the exhaust treatment system is comprised of a catalyst, SCR, oxidation catalyst, NSCR or any combination thereof.

12. The system of claim 1, wherein a temperature of the mixed stream provided to the exhaust treatment system is in the range between 356.85° C. and 426.85° C.

13. The system of claim 1, wherein the each of the one or more cooling components rely solely on pressure differentials to draw the cooling stream.

14. The system of claim 1, wherein each of the one or more cooling components have an upstream cross sectional area of a flow passage through the cooling component that is smaller than a downstream cross sectional area of the flow passage as measured along the direction of the exhaust stream passing through the cooling component.

15. A process for removing contaminants from an exhaust stream, the process comprising:
a) passing at least a portion of an exhaust stream through a cooling component;
b) drawing a cooling stream into the cooling component based on at least the portion of the exhaust stream passing through at least a portion of the cooling component, wherein drawing the cooling stream relies on the Venturi effect and/or Bernoulli's principle based on a velocity of at least the portion of the exhaust stream;
c) mixing the cooling stream with at least the portion of the exhaust stream to form a mixed stream, wherein a temperature of the mixed stream is less than a temperature of at least the portion of the exhaust stream; and
d) passing the mixed stream to an exhaust treatment system to remove one or more contaminants from the mixed stream, and further comprising:
obtaining temperature measurements;
determining whether the temperature measurements are within a threshold; and
adjusting a volume of cooling stream drawn into the cooling component if the temperature measurements are not within the threshold;
wherein the obtaining temperature measurements comprises

measuring the temperature of the mixed stream upstream of the exhaust treatment system, or measuring the temperature of the exhaust stream upstream of the cooling component.

16. The process of claim 15, further comprise combusting a feed stream in a turbine to produce the exhaust stream.

17. The process of claim 15, wherein the cooling stream is predominately atmospheric air.

18. The process of claim 15, wherein drawing the cooling stream comprise passing the cooling stream through a valve associated with the cooling component.

19. The process of claim 15, wherein drawing the cooling stream comprise passing the cooling stream through a damper associated with the cooling component.

20. The process of claim 15, further comprising diverting a flow path of at least the portion of the exhaust stream into the cooling component.

21. The process of claim 15, further comprising diverting a flow path of at least the portion of the exhaust stream to interact with the cooling stream.

22. The process of claim 15, wherein the temperature of the mixed stream provided to the exhaust treatment system is in the range between 356.85° C. and 426.85° C.

23. The process of claim 15, wherein drawing the cooling stream relies solely on pressure differentials.

24. The process of claim 15, wherein passing at least the portion of the exhaust stream through the cooling component comprises passing at least the portion of the exhaust stream through an upstream flow passage having an upstream cross sectional area and passing at least the portion of the exhaust stream through a downstream flow passage having an downstream cross sectional area, wherein the upstream cross sectional area is smaller than a downstream cross sectional area as measured along the direction of the exhaust stream passing through the cooling component.