Claims

1. A fluid handling device adapted to cool a first fluid flow, the device comprising:

a thermal chamber adapted to cool the first fluid flow in the thermal chamber; and

an input channel adapted to channel the first fluid flow into the thermal chamber;

an output channel adapted to allow the first fluid flow from the input channel to flow out of the thermal chamber via the output channel;

an inlet channel adapted to allow a second fluid flow into the thermal chamber, the inlet channel in fluid communication with the outlet channel;

an outlet channel adapted to channel the second fluid flow out of the thermal chamber;

wherein the first fluid flow from the input channel to the output channel is an airflow and the second fluid flow from the inlet channel to the outlet channel is an evaporative liquid flow, wherein the airflow through the thermal chamber vaporises the evaporative liquid flow thereby cooling the evaporative liquid flow hence cooling the thermal chamber;

wherein the thermal energy of the second fluid flow along the outlet channel is lower than the thermal energy of the first fluid flow along the input channel; and

wherein the outlet channel is thermally connected to the input channel, wherein the outlet channel is adapted to transfer thermal energy between the cooled second fluid flow along the outlet channel and the first fluid flow along the input channel to cool the first fluid flow before entering the thermal chamber.

2. The fluid handling device of claim 1, wherein the second fluid flow along the outlet channel is isolated from the first fluid flow along input channel.

3. The fluid handling device of claim 1 or 2, wherein the second fluid flow exiting the thermal chamber via the outlet channel is a portion of the first fluid flow along the thermal chamber.

4. The fluid handling device of any one of claims 1 to 3, wherein the outlet channel is thermally connected to the input channel via a fluid channel, wherein the fluid channel being in thermal communication with the outlet channel and in thermal communication with the input channel, the fluid channel adapted to receive a third fluid flow therein, wherein thermal energy is transferred between the third fluid flow along fluid channel and the second fluid flow along the outlet channel thereby cooling the third fluid flow and wherein the thermal energy is transferred between the first fluid flow along the input channel and the third fluid flow along the fluid channel thereby cooling the first fluid flow along the input channel.

5. The fluid handling device of claim 4, wherein the third fluid flow along the fluid channel is isolated from the first fluid flow along the input channel.

6. The fluid handling device of claim 4 or 5, wherein the fluid channel comprises an evaporative liquid.

7. The fluid handling device of any one of claims 1 to 6, wherein the thermal chamber comprises an evaporative liquid.

8. The fluid handling device of any one of claims 1 to 7, wherein the input channel and/or the output channel comprise an evaporative liquid.

9. The fluid handling device of any one of claims 1 to 8, wherein the evaporative liquid flow is adapted to flow through the thermal chamber from the inlet channel to the outlet channel in a fluid direction, the airflow flows from the input channel to the output channel in an airflow direction, wherein the fluid direction is substantially perpendicular to the airflow direction.

10. The fluid handling device of any one of claims 1 to 9, wherein the outlet channel is fluidly connected to a fluid tank.

11. A method of cooling a first fluid flow with a fluid handling device, the method comprising:

receiving the first fluid flow into a thermal chamber via an input channel;

channelling the first fluid flow out of the thermal chamber via an output channel:

receiving a second fluid flow into the thermal chamber via an inlet channel.

channelling the second fluid flow from the thermal chamber into an outlet channel, the outlet channel being in thermal communication with the input channel, wherein the first fluid flow from the input channel to the output channel is an airflow and the second fluid flow from the inlet channel to the outlet channel is an evaporative liquid flow, wherein the airflow through the thermal chamber vaporises the evaporative liquid flow thereby cooling the evaporative liquid flow hence cooling the thermal chamber; wherein the second fluid flow along the outlet channel has a lower thermal energy than the first fluid flow along the input channel; and

transferring thermal energy between the second fluid flow along the outlet channel and the first fluid flow along the input channel thereby cooling the first fluid flow along the input channel.

12. The method of claim 11, wherein transferring the thermal energy between the second fluid flow along the outlet channel and the first fluid flow along the input channel includes,

receiving a third fluid flow in a fluid channel;

transferring thermal energy between the third fluid flow along the fluid channel and the second fluid flow along the outlet channel; and

transferring thermal energy between the first fluid flow along the input channel and the third fluid flow along the fluid channel thereby heating or cooling the first fluid flow along the input channel.