CLAIM(S):

1. A system for filtering aircraft air comprising:

(A) a mist and vapor eliminating (MaVE) filter device comprising

a main housing including a main housing body, an inlet duct connected to a first end of the main housing body, and an outlet duct connected to a second end of the main housing body; and,

a mist and vapor eliminating (MaVE) filter comprising a first stage filter and a second stage filter;

(a) the first stage hollow filter comprising

a first housing having a first housing first end and a first housing second end; and, arranged in the first housing:

(i) a first adsorption element comprising activated carbon and/or activated clay; and,

(ii) a first hydrophobic pleated hollow porous medium surrounding the first adsorption element;

the first stage hollow filter including a first end cap connected to the first housing first end;

(b) the second stage hollow filter comprising

a second housing having second housing first end and a second housing second end; and, arranged in the second housing:

(iii) a second adsorption element comprising activated carbon and/or activated clay;

(iv) a second hydrophobic pleated hollow porous medium surrounding the second adsorption element;

the second stage hollow filter including a second end cap connected to the second housing second end;

wherein the first housing second end is connected to the second housing first end by an intermediate end cap;

the intermediate end cap including a first drain channel between the first housing second end and the second housing first end; and,

the second end cap including a second drain channel at the second housing second end;

wherein the mist and vapor eliminating filter device is arranged in the main housing between the inlet duct and the outlet duct;

the system further comprising

(B) a bypass valve including a pivotable bypass plate, arranged in a hollow sleeve, wherein the hollow sleeve is arranged between the main housing body and the outlet duct, the hollow sleeve providing an aircraft air flow path through the MaVE filter device partially bypassing the MaVE filter when the bypass valve is opened.

2. The system of claim 1, wherein the first adsorption element and the first hydrophobic pleated hollow porous medium each have a tapered configuration.

3. The system of claim 1 or 2, wherein the MaVE filter further comprises a first adsorption element end cap, sealed to an end of the first adsorption element, the first adsorption element end cap contacting the intermediate end cap; and

a second adsorption element end cap, sealed to an end of the second adsorption element, the second adsorption element end cap contacting the second end cap.

4. The system of any one of claims 1-3, wherein the first hydrophobic pleated hollow porous medium is retained by the intermediate end cap, and the second hydrophobic pleated hollow porous medium is retained by the second end cap.

5. The system of any one of claims 1-4, wherein the intermediate end cap provides a drain gap in the range of from 6 mm to 18 mm for the first drain channel, and the second end cap provides a drain gap in the range of from 6 mm to 18 mm for the second drain channel.

6. The system of any one of claims 1-5, wherein the MaVE filter includes at least two joining arrangements connecting the first housing second end to the intermediate end cap, and at least two additional joining arrangements connecting the second housing second end to the second end cap.

7. The system of any one of claims 1-6, wherein the first stage hollow filter includes a first stage outer cage and a first stage inner core; and, the second stage hollow filter includes a second stage outer cage and a second stage inner core.

8. A method of filtering aircraft cabin air, the method comprising passing aircraft air through the system of any one of claims 1-7;

opening the bypass valve; and

flowing aircraft air through the MaVE filter device while partially bypassing the MaVE filter.

9. The method of claim 8, further comprising closing the bypass valve and flowing aircraft air through the MaVE filter.

10. The method of claim 8 or 9, including collecting free water on an upstream surface of the first hydrophobic pleated hollow porous medium and collecting free water on an upstream surface of the second hydrophobic pleated hollow porous medium.

11. The method of any one of claims 8-10, including passing the collected free water on the upstream surface of the first hydrophobic pleated hollow porous medium through the first drain channel, and passing the collected free water on the upstream surface of the second hydrophobic pleated hollow porous medium through the second drain channel.