

The claims defining the invention are as follows:

1. A vertical take-off and landing (VTOL) aircraft comprising:
a fuselage;
first and second forward wings mounted to opposing sides of the fuselage;
first and second rearward wings mounted to opposing sides of the fuselage;
each wing having a fixed leading edge and a trailing control surface which is pivotal about a generally horizontal axis;
a plurality of electric rotors mounted to the wings, the electric rotors being pivotal with the trailing control surface between a first position in which each rotor has a generally vertical axis of rotation, and a second position in which each rotor has a generally horizontal axis of rotation;
wherein at least one of the wings has a first and a second electric rotor which are each mounted having non-parallel axes of rotation so that the thrust lines of the first and second electric rotors are different.
2. The vertical take-off and landing (VTOL) aircraft of claim 1, wherein a thrust line of the first electric rotor is angled to pass above a hinge line, and a thrust line of the second electric rotor is angled to pass below the hinge line.
3. The vertical take-off and landing (VTOL) aircraft of claim 1 or 2, wherein an axis of rotation of the first electric rotor is angled upwardly relative to a plane passing through leading and trailing portions of the control surface, and an axis of rotation of the second electric rotor is angled downwardly relative to a plane passing through leading and trailing portions of the control surface.
4. The vertical take-off and landing (VTOL) aircraft of any one of the preceding claims, wherein when the first and second electric motors are operated at the same rotational speeds, turning moments generated by each of the first and second motors and acting on the control surface cancel each other out.

5. The vertical take-off and landing (VTOL) aircraft of any one of the preceding claims, wherein the first and second electric motors are pivotally mounted to an underside of the fixed leading edge.

6. The vertical take-off and landing (VTOL) aircraft of claim 5, wherein a distal end of each of the first and a second electric rotors is secured to the trailing control surface.

7. A vertical take-off and landing (VTOL) aircraft comprising:
a fuselage;
first and second forward wings mounted to opposing sides of the fuselage;
first and second rearward wings mounted to opposing sides of the fuselage;
each wing having a fixed leading edge and a trailing control surface which is pivotal about a generally horizontal axis;
a plurality of electric motors each having rotors mounted to the wings, the electric rotors being pivotal with the trailing control surface between a first position in which each rotor has a generally vertical axis of rotation, and a second position in which each rotor has a generally horizontal axis of rotation;
wherein at least one of the wings has a first and a second electric rotor which are offset relative to upper and lower surfaces of the wing.

8. The vertical take-off and landing (VTOL) aircraft of claim 7, wherein the first electric rotor is located below the lower surface of the wing, and the second electric rotor is located above the upper surface of the wing.

9. The vertical take-off and landing (VTOL) aircraft of claim 7 or claim 8, wherein the electric rotors are distributed along the wing at positions below the lower surface of the wing and alternately above the upper surface of the wing.

10. The vertical take-off and landing (VTOL) aircraft of any one of the preceding claims, where a distal portion of each forward wing, furthest from the fuselage, is connected to a distal portion of the adjacent rearward wing with a connecting member, defining a boxed wing structure.

11. The vertical take-off and landing (VTOL) aircraft of any one of the preceding claims, where each forward wing is connected to the adjacent rearward wing with one or more struts or tie bars.

12. The vertical take-off and landing (VTOL) aircraft of any one of the preceding claims, wherein the control surface is pivotal through a range of about 80 and 100 degrees.

13. The vertical take-off and landing (VTOL) aircraft of claim 12, wherein the control surface is pivotal through a range of about 90 degrees.

14. A vertical take-off and landing (VTOL) aircraft comprising:
a fuselage;
first and second forward wings mounted to opposing sides of the fuselage;
first and second rearward wings mounted to opposing sides of the fuselage, each forward wing being connected to the adjacent rearward wing with a distal connecting member or strut(s) to define a box wing or strut braced wing structure;
each wing having a fixed leading edge and a trailing control surface which is pivotal about a generally horizontal axis;
a plurality of electric rotors mounted to the wings, the electric rotors being pivotal with the trailing control surface between a first position in which each rotor has a generally vertical axis of rotation, and a second position in which each rotor has a generally horizontal axis of rotation.

15. The vertical take-off and landing (VTOL) aircraft of claim 14, wherein at least one of the wings has a first and a second electric rotor which are offset relative to an upper and a lower surface of the wing.

16. The vertical take-off and landing (VTOL) aircraft of any one of claims 14 to 15, wherein the electric rotors are distributed along the wing at positions below the lower surface of the wing and alternately above the upper surface of the wing.

17. A vertical take-off and landing (VTOL) aircraft comprising:
a fuselage;

first and second forward wings mounted to opposing sides of the fuselage, each wing having a fixed leading edge and a trailing control surface which is pivotal about a generally horizontal pivot axis;

first and second electric motors each having rotors, the motors being mounted to each wing, the electric rotors being pivotal with the trailing control surface between a first position in which each rotor has a generally vertical axis of rotation, and a second position in which each rotor has a generally horizontal axis of rotation,

a control system for controlling each motor;

wherein the control system is configured to selectively operate the first electric motor and the second electric motor at different rotational speeds to generate a turning moment to pivot the control surface about the pivot axis.

18. The vertical take-off and landing (VTOL) aircraft of any one of the preceding claims, wherein each rotor is longitudinally offset relative to an adjacent rotor mounted on the same wing, about an axis of rotation of the rotors.

19. The vertical take-off and landing (VTOL) aircraft of claim 18, wherein each rotor outer diameter is overlapping relative to an adjacent rotor outer diameter and mounted on the same wing, when viewed in a plane extending perpendicular to an axis of rotation of the rotors.

20. The vertical take-off and landing (VTOL) aircraft of anyone of the preceding claims, wherein the fuselage has a cabin which is accessed through a door which is forward facing and hinged at an upper region to open upwardly.

21. The vertical take-off and landing (VTOL) aircraft of any one of claim 1 to 20, wherein the first and second rearward wings each includes a downwardly and rearwardly extending winglet having one or more wheels for supporting the aircraft.