CLAIMS

What is claimed is:

1. A control system (1201) configured to control an acceleration of an air vehicle (100) which comprises a tiltable propulsion unit (420) that is tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle, the control system comprising:

an input interface for receiving information indicative of a monitored airspeed of the air vehicle; and

a control unit (1290), configured to issue controlling commands to a controller (1410) of the tiltable propulsion unit for controlling the acceleration of the air vehicle, wherein the controlling of the acceleration comprises:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) the monitored airspeed and (ii) an airspeed command; and

following a tilting of the at least one tiltable propulsion unit, controlling in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle.

2. An air vehicle system (100), comprising:

a wing (320);

a tiltable propulsion unit (420), tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle; and

a control unit (1290), configured to issue controlling commands to a controller (1410) of the tiltable propulsion unit for controlling the acceleration of the air vehicle, wherein the controlling of the acceleration comprises:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) a monitored airspeed of the air vehicle and (ii) an airspeed command; and

following a tilting of the at least one tiltable propulsion unit, controlling in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle.

3. The system according to any one of claims 1 and 2, wherein the control unit is configured to control the operation of the tiltable propulsion unit automatically.

4. The system according to any one of claims 1 to 3, wherein the control unit comprises a pitch control module which is configured to issue a pitch command based on the monitored airspeed and the airspeed command and to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle based on the pitch command, wherein the controlling of the modifying of the tilt angle is further based on the pitch command.

5. The system according to claim 4, wherein the control unit is configured to issue a rotor tilt command for lowering a rotor tilt angle as a result of an issue of a pitch command for lowering a pitch angle.

6. The system according to any one of claims 4 to 5, wherein the pitch control module is configured to issue the pitch command further in response to the measured altitude of the air vehicle.

7. The system according to any one of claims 4 to 6, wherein the control unit is configured to change a ratio between: (a) a contribution of the tiltable propulsion

unit to the modification of the pitch and (b) a contribution of at least one elevator to the modification of the pitch, wherein the changing of the ratio is correlated to the monitored airspeed.

8. The system according to any one of claims 1 to 7, wherein the control unit is further configured to control thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting increasing of the thrust power based on a threshold (4110) that is determined in response to the measured airspeed.

9. The system according to any one of claims 1 to 8, wherein the control unit comprises a tilting control module that is configured to determine a timing for tilting of the at least one tiltable propulsion unit between the second and the first parts of the acceleration for minimizing a duration in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction.

10. The system according to any one of claims 1 to 9, wherein the pitch control module is further configured to keep a pitch of the air vehicle (100) during at least a part of the first part of the acceleration within a permitted pitch range that is dynamically determined in response to the measured airspeed of the air vehicle (100).

11. The system according to any one of claims 1 to 10, wherein the control unit is configured to control before the first part of the acceleration a substantially vertical ascent of the air vehicle from the ground, and to control aerodynamic parts of the air vehicle in a first part of the substantially vertical ascent from the ground for minimizing change in pitch angle and roll angle of the air vehicle.

12. The system according to claim 11, wherein the control unit is configured to issue a positive airspeed command for accelerating the air vehicle if predetermined time elapsed from an initiation of the substantially vertical ascent, regardless of sensors data.

13. The system according to any one of claims 1 to 12, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, wherein the control unit is configured

to balance between modifying the tilt angle and modifying the pitch angle for reducing an energy cost of the acceleration of the air vehicle.

14. The system according to any one of claims 1 to 13, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, and to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby preventing creation of negative lift force by the wing.

15. The system according to any one of claims 1 to 14, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle and to limit in the first part of the acceleration lift created by the wing below 80% of maximal lift which may be created by the wing in the monitored airspeed.

16. The system according to any one of claims 1 to 15, wherein the control unit is configured to control thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting reduction of the thrust power based on a lower threshold (4120) that is determined in response to a measured airspeed of the air vehicle.

17. The system according to claim 16, further comprising an altitude control module (1221.1) configured to minimize a vertical deviation of the air vehicle from a set altitude during the first part of the acceleration, wherein the minimizing is restricted at least by the restricting of the reduction of the thrust power based on the lower threshold.

18. A method (3000) for controlling an acceleration of an air vehicle (100) which comprises a tiltable propulsion unit (420) that is tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle (100), the method comprising:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling (3210) an operation of the at least one tiltable propulsion unit for providing lift

to the air vehicle, and (b) controlling (3220) a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) the monitored airspeed and (ii) an airspeed command; and

following a tilting of the at least one tiltable propulsion unit, controlling (3400) in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle.

19. The method according to claim 18, wherein the controlling of the modifying of a tilt angle of the tiltable propulsion unit comprises automated controlling by at least one processor of a control unit mounted on the air vehicle (100).

20. The method according to any one of claims 18 and 19, wherein the controlling of the acceleration of the air vehicle comprises controlling the acceleration of the air vehicle that comprises a wing, and balancing between contradictory aerodynamic effects resulting from the wing and from the at least one tiltable propulsion unit.

21. The method according to any one of claims 18 to 20, further comprising issuing (3270) a pitch command based on the monitored airspeed and the airspeed command and controlling (3230) in the first part of the acceleration a modifying of a pitch angle of the air vehicle based on the pitch command, wherein the controlling of the modifying of the tilt angle is further based on the pitch command.

22. The method according to claim 21, wherein the controlling of the modifying of the tilt angle comprises issuing a rotor tilt command for lowering a rotor tilt angle as a result of an issue of a pitch command for lowering a pitch angle.

23. The method according to any one of claims 21 and 22, wherein the issuing of the pitch command is further based on the measured altitude of the air vehicle.

24. The method according to any one of claims 18 to 23, comprising controlling thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting increasing of the thrust power based on a threshold (4110) that is determined in response to the measured airspeed.

25. The method according to any one of claims 18 to 24, further comprising determining timing for tilting of the at least one tiltable propulsion unit between the second and the first parts of the acceleration for minimizing a duration in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction.

26. The method according to any one of claims 18 to 25, further comprising keeping a pitch of the air vehicle (100) during at least a part of the first part of the acceleration within a permitted pitch range that is dynamically determined in response to the measured airspeed of the air vehicle (100).

27. The method according to claim 26, wherein the keeping of the pitch within the permitted pitch range prevents stalling of the air vehicle.

28. The method according to any one of claims 18 to 27, further comprising controlling (3100) before the first part of the acceleration a substantially vertical ascent of the air vehicle from the ground, and in a first part of the substantially vertical ascent from the ground controlling aerodynamic parts of the air vehicle for minimizing change in pitch angle and roll angle of the air vehicle.

29. The method according to claim 28, comprising issuing a positive airspeed command for accelerating the air vehicle if predetermined time elapsed from an initiation of the substantially vertical ascent, regardless of sensors data.

30. The method according to any one of claims 18 to 29, further comprising controlling (3230) in the first part of the acceleration a modifying of a pitch angle of the air vehicle, and balancing between modifying the tilt angle and modifying the pitch angle for reducing an energy cost of the acceleration of the air vehicle.

31. The method according to any one of claims 18 to 30, further comprising controlling (3230) in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby preventing creation of negative lift force by the wing.

32. The method according to any one of claims 18 to 31, further comprising controlling (3230) in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby limiting lift created by the wing below 80% of maximal lift which may be created by the wing in the monitored airspeed.

33. The method according to any one of claims 18 to 32, wherein at least the controlling of the accelerating comprises controlling an operation of at least one aerodynamic part of the air vehicle (100) selected from a group consisting of an aileron, an elevator, a rudder, a ruddervator, a flaperon, elevons, and a wing flap.

34. The method according to any one of claims 18 to 33, further comprising controlling thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting reduction of the thrust power based on a lower threshold (4120) that is determined in response to a measured airspeed of the air vehicle.

35. The method according to claim 34, further comprising minimizing a vertical deviation of the air vehicle from a set altitude during the first part of the acceleration, wherein the minimizing is restricted at least by the restricting of the reduction of the thrust power based on the lower threshold.

36. A program storage device readable by machine, tangibly embodying a computer readable code portion executable by the machine for controlling an acceleration of an air vehicle (100) which comprises a tiltable propulsion unit (420) that is tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle (100), the computer readable code portion comprising instructions for:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling (3210) an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling (3220) a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) the monitored airspeed and (ii) an airspeed command; and

following a tilting of the at least one tiltable propulsion unit, controlling (3400) in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle.

Claims:

1. A control system configured to control an acceleration of an air vehicle which comprises a tiltable propulsion unit that is tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle, the control system comprising:

an input interface for receiving information indicative of a monitored airspeed of the air vehicle; and

a control unit, configured to issue controlling commands to a controller of the tiltable propulsion unit for controlling the acceleration of the air vehicle, wherein the controlling of the acceleration comprises:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) the monitored airspeed and (ii) an airspeed command; and

following a tilting of the at least one tiltable propulsion unit, controlling in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle,

wherein the control unit is configured to issue a pitch command based on the monitored airspeed and the airspeed command and to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle based on the pitch command, wherein the controlling of the modifying of the tilt angle is further based on the pitch command.

2. An air vehicle system, comprising:

a wing;

a tiltable propulsion unit, tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle; and

a control unit, configured to issue controlling commands to a controller of the tiltable propulsion unit for controlling the acceleration of the air vehicle, wherein the controlling of the acceleration comprises:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) a monitored airspeed of the air vehicle and (ii) an airspeed command; and

following a tilting of the at least one tiltable propulsion unit, controlling in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle,

wherein the control unit is configured to issue a pitch command based on the monitored airspeed and the airspeed command and to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle based on the pitch command, wherein the controlling of the modifying of the tilt angle is further based on the pitch command.

3. The system according to claim 1, wherein the control unit is configured to control the operation of the tiltable propulsion unit automatically.

4. The system according to claim 1, wherein the control unit is configured to issue a rotor tilt command for lowering a rotor tilt angle as a result of an issue of a pitch command for lowering a pitch angle.

5. The system according to claim 1, wherein the pitch control module is configured to issue the pitch command further in response to the measured altitude of the air vehicle.

6. The system according to claim 1, wherein the control unit is configured to change a ratio between: (a) a contribution of the tiltable propulsion unit to the modification of the pitch and (b) a contribution of at least one elevator to the modification of the pitch, wherein the changing of the ratio is correlated to the monitored airspeed.

7. The system according to claim 1, wherein the control unit is further configured to control thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting increasing of the thrust power based on a threshold that is determined in response to the measured airspeed.

8. The system according to claim 1, wherein the control unit comprises a tilting control module that is configured to determine a timing for tilting of the at least one tiltable propulsion unit between the second and the first parts of the acceleration for minimizing a duration in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction.

9. The system according to claim 1, wherein the pitch control module is further configured to keep a pitch of the air vehicle during at least a part of the first part of the acceleration within a permitted pitch range that is dynamically determined in response to the measured airspeed of the air vehicle.

10. The system according to claim 1, wherein the control unit is configured to control before the first part of the acceleration a substantially vertical ascent of the air vehicle from the ground, and to control aerodynamic parts of the air vehicle in a first part of the substantially vertical ascent from the ground for minimizing change in pitch angle and roll angle of the air vehicle.

11. The system according to claim 10, wherein the control unit is configured to issue a positive airspeed command for accelerating the air vehicle if predetermined time elapsed from an initiation of the substantially vertical ascent, regardless of sensors data.

12. The system according to claim 1, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, wherein the control unit is configured to balance between modifying the tilt angle and modifying the pitch angle for reducing an energy cost of the acceleration of the air vehicle.

13. The system according to claim 1, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, and to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby preventing creation of negative lift force by the wing.

14. The system according to claim 1, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle and to limit in the first part of the acceleration lift created by the wing below 80% of maximal lift which may be created by the wing in the monitored airspeed.

15. The system according to claim 1, wherein the control unit is configured to control thrust power of the tiltable propulsion unit for reducing a difference between the

measured airspeed and a set airspeed, while restricting reduction of the thrust power based on a lower threshold that is determined in response to a measured airspeed of the air vehicle.

16. The system according to claim 15, further comprising an altitude control module configured to minimize a vertical deviation of the air vehicle from a set altitude during the first part of the acceleration, wherein the minimizing is restricted at least by the restricting of the reduction of the thrust power based on the lower threshold.

17. A method for controlling an acceleration of an air vehicle which comprises a tiltable propulsion unit that is tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle, the method comprising:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) the monitored airspeed and (ii) an airspeed command;

following a tilting of the at least one tiltable propulsion unit, controlling in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle, and

issuing a pitch command based on the monitored airspeed and the airspeed command and controlling in the first part of the acceleration a modifying of a pitch angle of the air vehicle based on the pitch command, wherein the controlling of the modifying of the tilt angle is further based on the pitch command.

18. The method according to claim 17, wherein the controlling of the modifying of a tilt angle of the tiltable propulsion unit comprises automated controlling by at least one processor of a control unit mounted on the air vehicle.

19. The method according to claim 17, wherein the controlling of the acceleration of the air vehicle comprises controlling the acceleration of the air vehicle that comprises a wing, and balancing between contradictory aerodynamic effects resulting from the wing and from the at least one tiltable propulsion unit.

20. The method according to claim 17, wherein the controlling of the modifying of the tilt angle comprises issuing a rotor tilt command for lowering a rotor tilt angle as a result of an issue of a pitch command for lowering a pitch angle.

21. The method according to claim 17, wherein the issuing of the pitch command is further based on the measured altitude of the air vehicle.

22. The method according to claim 17, comprising controlling thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting increasing of the thrust power based on a threshold that is determined in response to the measured airspeed.

23. The method according to claim 17, further comprising determining timing for tilting of the at least one tiltable propulsion unit between the second and the first parts of the acceleration for minimizing a duration in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction.

24. The method according to claim 17, further comprising keeping a pitch of the air vehicle during at least a part of the first part of the acceleration within a permitted pitch range that is dynamically determined in response to the measured airspeed of the air vehicle.

25. The method according to claim 24, wherein the keeping of the pitch within the permitted pitch range prevents stalling of the air vehicle.

26. The method according to claim 17, further comprising controlling before the first part of the acceleration a substantially vertical ascent of the air vehicle from the ground, and in a first part of the substantially vertical ascent from the ground controlling aerodynamic parts of the air vehicle for minimizing change in pitch angle and roll angle of the air vehicle.

27. The method according to claim 26, comprising issuing a positive airspeed command for accelerating the air vehicle if predetermined time elapsed from an initiation of the substantially vertical ascent, regardless of sensors data.

28. The method according to claim 17, further comprising controlling in the first part of the acceleration a modifying of a pitch angle of the air vehicle, and balancing between modifying the tilt angle and modifying the pitch angle for reducing an energy cost of the acceleration of the air vehicle.

29. The method according to claim 17, further comprising controlling in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby preventing creation of negative lift force by the wing.

30. The method according to claim 17, further comprising controlling in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby limiting lift created by the wing below 80% of maximal lift which may be created by the wing in the monitored airspeed.

31. The method according to claim 17, wherein at least the controlling of the accelerating comprises controlling an operation of at least one aerodynamic part of the air

vehicle selected from a group consisting of an aileron, an elevator, a rudder, a ruddervator, a flaperon, elevons, and a wing flap.

32. The method according to claim 17, further comprising controlling thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting reduction of the thrust power based on a lower threshold that is determined in response to a measured airspeed of the air vehicle.

33. The method according to claim 32, further comprising minimizing a vertical deviation of the air vehicle from a set altitude during the first part of the acceleration, wherein the minimizing is restricted at least by the restricting of the reduction of the thrust power based on the lower threshold.

34. A program storage device readable by machine, tangibly embodying a computer readable code portion executable by the machine for controlling an acceleration of an air vehicle which comprises a tiltable propulsion unit that is tiltable to provide a thrust whose direction is variable at least between a general vertical thrust vector direction and a general longitudinal thrust vector direction with respect to the air vehicle, the computer readable code portion comprising instructions for:

in a first part of the acceleration, in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction: (a) controlling an operation of the at least one tiltable propulsion unit for providing lift to the air vehicle, and (b) controlling a modifying of a tilt angle of the tiltable propulsion unit with respect to a fuselage of the air vehicle, based on: (i) the monitored airspeed and (ii) an airspeed command;

following a tilting of the at least one tiltable propulsion unit, controlling in a second part of the acceleration an operation of the tiltable propulsion unit to provide thrust in the general longitudinal thrust vector direction for propelling the air vehicle, and

issuing a pitch command based on the monitored airspeed and the airspeed command and controlling in the first part of the acceleration a modifying of a pitch angle of the air vehicle based on the pitch command, wherein the controlling of the modifying of the tilt angle is further based on the pitch command.

35. The system according to claim 2, wherein the control unit is configured to control the operation of the tiltable propulsion unit automatically.

36. The system according to claim 2, wherein the control unit is configured to issue a rotor tilt command for lowering a rotor tilt angle as a result of an issue of a pitch command for lowering a pitch angle.

37. The system according to claim 2, wherein the pitch control module is configured to issue the pitch command further in response to the measured altitude of the air vehicle.

38. The system according to claim 2, wherein the control unit is configured to change a ratio between: (a) a contribution of the tiltable propulsion unit to the modification of the pitch and (b) a contribution of at least one elevator to the modification of the pitch, wherein the changing of the ratio is correlated to the monitored airspeed.

39. The system according to claim 2, wherein the control unit is further configured to control thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting increasing of the thrust power based on a threshold that is determined in response to the measured airspeed.

40. The system according to claim 2, wherein the control unit comprises a tilting control module that is configured to determine a timing for tilting of the at least one tiltable propulsion unit between the second and the first parts of the acceleration for minimizing a duration in which the tiltable propulsion unit provides thrust in the general vertical thrust vector direction.

41. The system according to claim 2, wherein the pitch control module is further configured to keep a pitch of the air vehicle during at least a part of the first part of the acceleration within a permitted pitch range that is dynamically determined in response to the measured airspeed of the air vehicle.

42. The system according to claim 2, wherein the control unit is configured to control before the first part of the acceleration a substantially vertical ascent of the air vehicle from the ground, and to control aerodynamic parts of the air vehicle in a first part of the substantially vertical ascent from the ground for minimizing change in pitch angle and roll angle of the air vehicle.

43. The system according to claim 42, wherein the control unit is configured to issue a positive airspeed command for accelerating the air vehicle if predetermined time elapsed from an initiation of the substantially vertical ascent, regardless of sensors data.

44. The system according to claim 2, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, wherein the control unit is configured to balance between modifying the tilt angle and modifying the pitch angle for reducing an energy cost of the acceleration of the air vehicle.

45. The system according to claim 2, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of

the air vehicle, and to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle, thereby preventing creation of negative lift force by the wing.

46. The system according to claim 2, further comprising a pitch control module which is configured to control in the first part of the acceleration a modifying of a pitch angle of the air vehicle and to limit in the first part of the acceleration lift created by the wing below 80% of maximal lift which may be created by the wing in the monitored airspeed.

47. The system according to claim 2, wherein the control unit is configured to control thrust power of the tiltable propulsion unit for reducing a difference between the measured airspeed and a set airspeed, while restricting reduction of the thrust power based on a lower threshold that is determined in response to a measured airspeed of the air vehicle.

48. The system according to claim 47, further comprising an altitude control module configured to minimize a vertical deviation of the air vehicle from a set altitude during the first part of the acceleration, wherein the minimizing is restricted at least by the restricting of the reduction of the thrust power based on the lower threshold.

49. The system according to claim 1, wherein the airspeed command is based on a preplanned acceleration function.

50. The system according to claim 2, wherein the airspeed command is based on a preplanned acceleration function.

51. The method according to claim 17, wherein the airspeed command is based on a preplanned acceleration function.

52. The program storage device according to claim 34, wherein the airspeed command is based on a preplanned acceleration function.