Claims

1. An unmanned aerial vehicle system (1), comprising:
an unmanned aerial vehicle (10) devoid of a built-in battery;
a base station (20) comprising:
a power supply unit (23) for supplying electric power to the unmanned aerial vehicle (10);
a tether (22) configured to connect the unmanned aerial vehicle (10) to the base station (20), continuously transmit power from the power supply unit (23) to the unmanned aerial vehicle (10) during flight and transmit data signals between the unmanned aerial vehicle (10) and the base station (20); and
a tether winch mechanism (21) for extending and retracting the tether (22), wherein the tether winch mechanism (21) is configured to extend the tether (22) such that the unmanned aerial vehicle (10) operates within a flight range defined by the length of the tether (22); and
a protection cage (30) surrounding the unmanned aerial vehicle (10), the protection cage (30) comprising an ejectable parachute (31) and a plurality of inflatable cushions (32), wherein the ejectable parachute (31) and the inflatable cushions (32) are configured to automatically deploy when the power to the unmanned aerial vehicle (10) is cut off during flight, indicating a tether breakage.

2. The unmanned aerial vehicle system (1) according to claim 1, further comprising a free fall detection sensor (33), wherein the free fall detection sensor (33) automatically triggers the deployment of the ejectable parachute (31) and the inflatable cushions (32) when a rapid descent is detected.

3. The unmanned aerial vehicle system (1) according to claim 1, further comprising a remote controller (40) for controlling the operations of the unmanned aerial vehicle (10).

4. The unmanned aerial vehicle system (1) according to claim 1, further comprising an electronic device selected from any one or any combination of an imaging device, a light emitting device, a sound output device, a Wi-Fi signal transmitter and a sensor.

5. The unmanned aerial vehicle system according to claim 4, further comprising an extendable holder for securing the electronic device on the unmanned aerial vehicle (10) or the protection cage (30), wherein the extendable holder is configured to extend or retract to move the electronic device relative to the unmanned aerial vehicle (10) or the protection cage (30).

6. The unmanned aerial vehicle system (1) according to claim 1, wherein the protection cage (30) is removably attached to the unmanned aerial vehicle (10) via a plurality of connecting members (35).

7. The unmanned aerial vehicle system (1) according to claim 6, wherein the connecting members (35) are elongate members made from steel, aluminium or fibre glass.

8. The unmanned aerial vehicle system (1) according to claim 1, wherein the unmanned aerial vehicle (10) is positioned in the middle of the protection cage (30).

9. The unmanned aerial vehicle system (1) according to claim 1, wherein the base station (20) further comprises a counterweight for the unmanned aerial vehicle (10).

10. The unmanned aerial vehicle system (1) according to claim 1, wherein the power supply unit (23) is a battery, a generator, or a power adapter for deriving power from an external power source.

11. The unmanned aerial vehicle system (1) according to claim 1, wherein the protection cage (30) has a collapsible lantern structure.

12. The unmanned aerial vehicle system (1) according to claim 11, wherein the protection cage (30) comprises a plurality of ribs (34) arranged in such a manner that the protection cage (30) acquires a collapsible lantern structure.

13. The unmanned aerial vehicle system (1) according to claim 12, wherein the ribs (34) are made of a flexible plastic material.

14. The unmanned aerial vehicle system (1) according to claim 13, wherein the flexible plastic material is fibre-reinforced plastic.

15. The unmanned aerial vehicle system (1) according to claim 12, wherein the inflatable cushion (32) is removably affixed to the outer surface of each alternating rib (34) of the protection cage (30).

16. The unmanned aerial vehicle system according to claim 1, wherein the ejectable parachute (31) is removably affixed to the top of the protection cage (30).

17. The unmanned aerial vehicle system (1) according to claim 1, further comprising a thermal sensor, an anti-collision proximity sensor, or the combination thereof, wherein the thermal sensor or the anti-collusion proximity sensor automatically sets the unmanned aerial vehicle (10) to hover when a close object is detected.

18. The unmanned aerial vehicle system (1) according to claim 1, further comprising an ultrasonic wind speed and direction sensor, wherein the ultrasonic wind speed and direction sensor automatically triggers the unmanned aerial vehicle (10) to return to the base station (20) when a condition unconducive to the flight of the unmanned aerial vehicle (10) is detected.