however, are characterised in that protection of the delivered goods, i.e. the shipment, for example against the weather or theft when left outside cannot be fully ensured, and if the designated individual is not at home either, the shipment cannot be successfully delivered.

To summarise, this means that although the ordering of a product through the Internet is extremely flexible, the delivery of the product as a parcel shipment to the customer is still characterised by methods that cannot ensure that the shipment can always be provided directly at the intended delivery location without access risks, and therefore new methods for prompt, more flexible delivery of shipments are desired.

On this basis, one object of the present invention is to specify a method by means of which a shipment can be supplied in a flexible and prompt manner to the customer who ordered the shipment, at the intended delivery location without the addressee having to be present. A further object of the invention is to provide a corresponding means for delivering the shipment to the customer regardless of shop opening hours and/or delivery manpower in the case of direct shipment delivery. Lastly, a further object of the invention is to provide a further means by which the customer can access the shipment delivered in this way.

The object is achieved by the features in the independent claims. Advantageous embodiments are specified in the dependent claims.

Summary

In one aspect, the present invention refers to a method for delivering a shipment by an unmanned transport device (1) at a receiving container (2) for said shipment (6), the method comprising the following steps: moving the unmanned transport device (1) into a destination area (10) associated with the receiving container (2), on the basis of geographical co-ordinates (a); once the unmanned transport device (1) has reached the destination area (10), pairing of the transport device (1) with the receiving container (2), exchanging an electronic authorisation information (13) between the receiving container (2) and the unmanned transport device (1) (d), checking of the authorisation information (13) by the receiving container (2) (e) in respect of an authorisation, if the authorisation exists,

activating a transfer device (14) for the shipment (6) by the receiving container (2) (f), transferring the shipment (6) from the unmanned transport device (1) to the transfer device (14) and/or from the transfer device (14) to the unmanned transport device (1) by the unmanned transport device (1), by the transfer device (14) and/or by the receiving container (2) (g); and detecting, documenting, photographing, filming and/or scanning the transfer of the shipment between the unmanned transport device (1) and the receiving container (2) and/or detecting, documenting, photographing, filming and/or scanning the shipment as the shipment is transferred. In another aspect, the present invention refers to an unmanned transport device (1), designed to carry out a method described above and embodied as a flying machine, in particular as an aircraft, as a UAV, as a drone, as a parcelcopter, as a helicopter, as a multicopter, as a quadcopter, as a tiltwing aircraft, as a vehicle, or as a floating object. In still another aspect, the present invention refers to a receiving container (2), designed for carrying out a method described above and embodied as a letterbox, parcel box, letter and parcel box and/or as a parcel drop-off and pickup station for receiving the shipment (6).

Detailed Description of the Invention

The object is therefore achieved by a method for delivering a shipment by an unmanned transport device to a receiving container for said shipment, the method comprising the following steps:

moving the unmanned transport device into a destination area associated with the receiving container, on the basis of geographical co-ordinates,

once the unmanned transport device has reached the destination area, pairing of the transport device with the receiving container,

exchanging electronic authorisation information between the receiving container and the unmanned transport device,

Claims

1. A method for delivering a shipment by an unmanned transport device at a receiving container for said shipment, the method comprising the following steps:

moving the unmanned transport device into a destination area associated with the receiving container, on the basis of geographical co-ordinates;

once the unmanned transport device has reached the destination area, pairing of the transport device with the receiving container,

exchanging an electronic authorisation information between the receiving container and the unmanned transport device,

checking of the authorisation information by the receiving container in respect of an authorisation,

if the authorisation exists, activating a transfer device for the shipment by the receiving container,

transferring the shipment from the unmanned transport device to the transfer device and/or from the transfer device to the unmanned transport device by the unmanned transport device, by the transfer device and/or by the receiving container, and

detecting, documenting, photographing, filming and/or scanning the transfer of the shipment between the unmanned transport device and the receiving container and/or detecting, documenting, photographing, filming and/or scanning the shipment as the shipment is transferred.

2. The method according to the preceding claim, the method comprising the following step

moving the unmanned transport device away from the receiving container, and/or

deactivating the transfer device.

3. The method according to either one of the preceding claims, wherein the step of pairing of the transport device with the receiving container comprises a detection of a locating signal emitted by the receiving container by the unmanned transport device, the method also comprising the step of the unmanned transport device approaching the receiving container on the basis of the locating signal.

4. The method according to t claim 3, the method comprising the following step

informing the receiving container that the unmanned transport device has moved into the destination area, and

in response to the information, pairing the transport device with the receiving container, in particular activating the locating signal by the receiving container in accordance with claim 2.

5. The method according to any one of the preceding claims, wherein the transfer device is self-mobile.

6. The method according to any one of the three preceding claims, wherein the step of the unmanned transport device approaching the receiving container comprises a position-specific connecting, in particular docking, of the unmanned transport device on the receiving container.

7. The method according to any one of the preceding claims, wherein the electronic authorisation information comprises a Bluetooth, WLAN, GSM, NFC, RFID and/or an electronic radio signal.

8. The method according to any one of the preceding claims, wherein the exchange of the electronic authorisation information comprises an emission of the electronic authorisation information by the unmanned transport device to the receiving container.

9. The method according to any one of the preceding claims, wherein the authorisation information is stored on a portable electronic device on the unmanned transport device, in particular on an RFID or NFC tag.

10. The method according to any one of the preceding claims, wherein the authorisation information has a limited period of validity and/or becomes invalid after a predefined number of uses for proof of authorisation.

11. The method according to any one of the preceding claims, wherein the provision of the transfer device comprises an opening of an opening in a roof or a side wall of the receiving container in order to place and/or collect a shipment in/from the receiving container and/or comprises an extension and/or deployment of a docking device for the unmanned transport device.

12. The method according to any one of the preceding claims, wherein the transfer of the shipment comprises a lowering of the shipment from the unmanned transport device and/or a lifting of the transfer device and/or of the shipment by the receiving container and/or by the transfer device.

13. The method according to any one of the preceding claims, the method comprising the following step

gripping, hooking and/or suctioning of the shipment by the unmanned transport device and/or the receiving container in order to transfer the shipment.

14. The method according to any one of the preceding claims, the method comprising the following step

electronically transmitting a message to the receiving container informing that the unmanned transport device is moving towards the receiving container, and/or electronically transmitting a transfer message once the shipment has been transferred by the receiving container.

15. The method according to any one claims 3 to 4, wherein the locating signal is embodied as a beam, by an instrument landing system and/or as a horizontal and vertical guide signal.

16. The method according to any one of the preceding claims, the method comprising the following step

charging of a rechargeable battery of the unmanned transport device by the receiving container and/or the transfer device.

17. An unmanned transport device, designed to carry out a method according to any one of the preceding claims and embodied as a flying machine, in particular as an aircraft, as a UAV, as a drone, as a parcelcopter, as a helicopter, as a multicopter, as a quadcopter, as a tiltwing aircraft, as a vehicle, or as a floating object.

18. A receiving container, designed for carrying out a method according to any one of the preceding claims and embodied as a letterbox, parcel box, letter and parcel box and/or as a parcel drop-off and pickup station for receiving the shipment.