Claims

1. A method for placing product packages each containing one or more products into shipment containers of different sizes, the method being **characterised by** the steps of:

- selecting and marking a shipment container (71, 72) of suitable size for a specific shipment order in accordance with the specific shipment order;
- loading different types of product packages (A,A1,B,B1,C,D,D1,E,U,V,W,X,Y,Z) each containing one or more products onto a conveyor system (2) comprising a plurality of separate conveyance tracks (21,22,23,24,25,26, 27,28, 29);
- assigning each one of the product packages a conveyance tracking clock information, including information about the type of product package, its respective conveyance track, its conveyance speed, and its predetermined position and orientation within the shipment container for the specific shipment order;
- forwarding the respective conveyance tracking clock information to a control system,
- conveying the different types of product packages on the plurality of conveyance tracks to a loading zone (4) comprising at least one loading station (5) each having a pick-and-place robot (51),
- within the at least one loading station (5) providing the shipment container for the specific shipment order into which the product packages for this order are to be placed, the shipment container (71,72) being arranged in a loading position (7) in which the container is resting still,

- within the at least one loading station (5) by means of the pick-and-place robot (51) picking the product packages for the specific shipment order from the plurality of conveyance tracks and placing the product packages into the shipment container (71,72) resting still in the loading position (7), and
- after completion of the shipment order removing the shipment container from the loading station (5).

2. The method of claim 1, wherein within the at least one loading station (5) a plurality of shipment containers for different orders are resting still in the loading position (7) in side-by-side configuration at the same time, and wherein the pick-and-place robot (51) picks the product packages from the plurality of conveyance tracks and in accordance with the respective shipment order places them into the corresponding one of the plurality of shipment containers resting in the loading position (7).

3. The method according to claim 1 or 2, wherein the different types of product packages to be loaded onto the conveyor system (2) are retrieved from separate storage facilities in accordance with the respective shipment order, and are loaded onto the conveyor system (2) by one of automatic and manual loading.

4. The method according to any one of claims 1 to 3, wherein the loading zone (4) comprises a plurality of successively arranged loading stations (5), and wherein further the conveyance tracking code of each one of the product packages comprises an additional information about that loading station (5) of the plurality of successively arranged loading stations (5) in which the automatic picking of the respective product package from the respective conveyance track and the placing of the product package

into the shipment container for the specific order is performed.

5. The method according to any one of the preceding claims, wherein prior to reaching the loading zone (4) the exact position and rotational orientation of the product packages on the respective conveyance tracks are detected, and wherein data corresponding to the detected position and orientation of the product packages are passed on to the control system for controlling the picking and placing of the product packages to the respective shipment container for the specific order.

6. The method according to any one of the preceding claims, wherein within the at least one loading station (5) a said shipment container is transferred from the loading position (7) to an intermediate storage position if within a preselected time period the said shipment container cannot be completed, and wherein the said shipment container is retrieved again at a later time from the intermediate storage position and is transferred back to the loading position (7) for completion of the shipment container once the required product packages for completing the specific order are loaded onto the conveyor system (2).

7. The method according to any one of the preceding claims, wherein each of the product packages contains a single one or a plurality of ophthalmic lenses, in particular contact lenses, having the same specific combination of lens parameters.

8. The method according to claim 7, wherein the step of loading different types of product packages onto the conveyor system (2) comprises continuously loading product packages containing ophthalmic lenses having the most frequently ordered lens parameters onto a plurality of conveyance tracks of the conveyor system (2), and loading product packages containing ophthalmic lenses having only rarely ordered lens parameters onto one conveyance track of said conveyor system on demand only.

9. The method according to any one of the preceding claims, wherein each of the plurality of conveyance tracks (21,22,23,24,25,26,27,28,29) has the same transport speed.

10. The method according to claim 9, wherein the plurality of conveyance tracks (21,22,23,24,25,26,27, 28,29) are provided on a single common conveyor belt.

11. A packaging plant (1) for placing product packages each containing one or more products into shipment containers (71,72) of different sizes, **characterised in that** the packaging plant comprises:

- a conveyor system (2) comprising a plurality of separate conveyance tracks (21,22,23,24, 25,26,27,28,29) for conveying different types of product packages,
- a conveyor tracking unit for assigning each one of the product packages a conveyance tracking clock information and for forwarding the respective conveyance tracking clock information to a control system, the conveyance tracking clock information including information about the type of product package, its respective conveyance track, its conveyance speed, and its predetermined position and orientation within a shipment container (71, 72) of suitable size for a specific order into which the product package is to be loaded,
- a loading zone (4) arranged along the conveyor system (2), the loading zone (4) comprising at least one loading station (5) each having a pick-and-place robot (51) for picking the product packages from the plurality of conveyance tracks (21,22,23,24, 25,26,27,28,29) and placing them into the shipment container (71, 72) by

means of the pick-and-place robot (51), with the shipment container (71,72) being arranged in a loading position (7) in the at least one loading station (5) and resting still in the loading position (7),
- a transport device (58) for removing the shipment container from the loading station after completion of the shipment order, and
- a control system for controlling all components of the packaging plant (1).

12. The packaging plant of claim 11, wherein each loading station (5) is adapted to accommodate a plurality of shipment containers (71,72) in side-by-side arrangement.

13. The packaging plant according to any one of claims 11 or 12, further comprising a plurality of supply lines for loading the different types of product packages to the conveyor (2) system, the supply lines being connected to an automatically operable storage or to a manually operable feed station (32,33,34,35).

14. The packaging plant according to any one of claims 11 to 13, wherein the loading zone (4) comprises a plurality of loading stations (5), each loading station in addition to the pick-and-place robot (51) having an automatic manipulation robot (54) for moving a respective shipment container (71,72) from the loading position to an intermediate storage (56,57) arranged in the loading station (5), and vice versa.

15. The packaging plant according to any one of claims 11 to 14, further comprising a detector (6) arranged to extend transversely to the direction of the conveyance tracks over the entire width of the conveyor system (2), for detecting the exact positions and rotational orientations of the product packages on the conveyor system (2) and for passing data corresponding to the detected positions and orientations to the control system for controlling the pick-and-place robot (51) in the respective loading station (5).