CLAIMS

1. A component-handling device (100) for removing components from a structured component supply and depositing them at a reception device (200), having

- a first turning device (130) having a plurality of pick-up elements (132) which is configured
  - to receive a component (B) from the structured component supply at a dispensing point (SPS), and
  - to turn the received component through a first predetermined angle about its longitudinal or transverse axis (LA, QA) and to convey it to a transfer point (ÜS);
- a second turning device (150) having a plurality of pick-up elements (152) which is configured
  - to receive the component (B) from a pick-up element (132) of the first turning device (130) at the transfer point (ÜS),
  - to turn the received component (B) through a second predetermined angle about its longitudinal or transverse axis (LA, QA) and to convey it to a deposit point (AS); and
- a controller (ECU) being configured
  - to rotate the first turning device (130) in a controlled manner about a first axis (X-axis) by means of a first rotary drive (DA1);
  - to rotate the second turning device (150) in a controlled manner about a second axis (Y-axis) that is not collinear with the first axis (X-axis) by means of a second rotary drive (DA2); and
- the first and second turning devices (130, 150) are star- or wheel-shaped, and
- the respective pick-up elements (132, 152) have radially outward facing suction contact points for the components (B) to be conveyed.

2. The component-handling device (100) as claimed in claim 1, having

- a delivery device (110) which is configured to deliver a component (B) from the structured component supply (wafer) to a pick-up element (132), correspondingly positioned by the controller, of the first turning device (130), and
- a position and property sensor (K1) associated with the delivery device (110), which sensor is configured to detect at least one of the position of the

delivery device (110) relative to the component (B) to be delivered, position data of the component (B) to be delivered and properties of the component (B) to be delivered, and to provide them to the controller (ECU) for operation of the delivery device (110).

3. The component-handling device (100) as claimed in claim 1 or 2, having
- a reception device (200), associated with the deposit point (ABS), for a component (B) fed thereto, wherein the reception device (200)
- has associated position and property sensors (K4, K5) which are configured to detect and provide to a controller (ECU)
  - position data of the component (B) fed to the deposit point (ABS),
  - at least one of position data and properties of reception points (ES1, ES2) in the reception device (200) and of the component (B) situated in the reception device (200), wherein
- the controller (ECU) is configured to perform at least one of
  - rotating the reception device (200) in a controlled manner at least partly about a third axis (Z-axis) containing the deposit point (ABS) by means of a third rotary drive (DA3),
  - moving the reception device (200) in a controlled manner at least partly along at least one of the first, second and third axes (X-, Y-, Z-axis) by means of at least one of a third and fourth linear drive (LA3, LA4), and
  - moving a carrier (320) guided by the reception device (200) along at least one of the first and second axes (X-, Y-axis) in a controlled manner by means of a fourth rotary drive (DA4).

4. The component-handling device (100) as claimed in claim 1 or 2, wherein the pick-up elements (132, 152) of at least one of the first and second turning device (130, 150) are configured to perform at least one of
- being deployed and retracted in a controlled manner radially to their respective axis of rotation (X-, Y-axis),
- being subjected to negative pressure and excess pressure in a controlled manner in order to receive and deliver a component (B) to be fed,
- being immovable about their respective radial movement axis,
- being rotated in a controlled manner through an angle of rotation about their respective radial movement axis.

5. The component-handling device (100) as claimed in claim 4, wherein the pick-up elements (132, 152) of at least one of the first and second turning device (130, 150) are provided with associated linear drives for radial deployment/retraction at the dispensing point (SPS), the transfer point (ÜS) between the first and second turning devices (130, 150), which linear drives engage with the correspondingly positioned pick-up elements (132, 152) in each case from outside and deploy and retract the respective pick-up element (132, 152) or deploy the respective pick-up element (132, 152) while a return spring retracts the respective pick-up element (132, 152), or each of the pick-up elements (132, 152) has an associated radial drive.

6. The component-handling device (100) as claimed in claim 4, wherein valves provide each of the individual pick-up elements (132, 152), individually and in the correct position, with negative pressure and excess pressure in order to perform at least one of the following functions, freely or in a position-controlled manner:
(i) suction of the component (B),
(ii) holding of the component (B),
(iii) deposition of the component (B) with or without a controlled blow-off pulse, and free blowing-off of the component (B).

7. The component-handling device (100) as claimed in claim 2, it is satisfied at least one of:

wherein position and property sensors (K2, K3) are associated with at least one of the first turning device (130) between the dispensing point (SPS) and the transfer point (ÜS) and the second turning device (150) between the transfer point (ÜS) and the deposit point (ABS), which sensors are configured to detect at least one of position data and properties of the fed component (B) and to provide them to the controller (ECU),

wherein at least some of the position and property sensors (K1, ..., K4, K5) are configured to inspect at least one of at least one end face (D1, D2) and one or more side faces (S1-S4) of the fed component (B) in order to detect at least one of the position data and properties thereof and provide them to the controller (ECU),

wherein

- at least one of an imaging property sensor and position sensor is provided in at least one of the center of the first turning device (130) and the center of the second turning device (150) for determining at least one of properties and the position of a component (B) to be received or for determining at least one of the position of reception points (ES1, ES2) in the reception device (200) and

the position of the component (B) situated therein, for the purpose of correction by the controller (ECU) in the event of at least one of property defects and position errors of the component (B) to be received or of the reception point, wherein the imaging position sensor(s) is/are configured to perform an image acquisition between adjacent pick-up elements (132, 152) during the turning movement of the first or second turning device and to provide the acquired image to the controller (ECU) in order to effect corresponding correction movements,

- at least one of imaging property sensors and position sensors, provided externally relative to the first and second turning devices (130, 150), for determining at least one of properties and the position of a component (B) to be received or for determining at least one of the position of reception points (ES1, ES2) in the reception device (200) and the position of the component (B) situated therein, for the purpose of correction by the controller (ECU) in the event of at least one of property defects and position errors of the component (B) to be received or of the reception point.

8. The component-handling device (100) as claimed in claim 3, it is satisfied at least one of:

wherein a discharge point (335) is arranged upstream or downstream of at least one of the transfer point (ÜS) and the deposit point (ABS), which discharge point is configured, under the control of the controller (ECU), to discharge a component (B) identified by the controller (ECU) as being a reject part by means of at least one of the position and property sensors and not to deposit it in the reception device (200),

wherein a whole number of n pick-up elements (132, 152) is associated with at least one of the first and second turning device (130, 150), wherein n is >= 2, and wherein the number of pick-up elements (132) of the first turning device (130) and the number of pick-up elements (152) of the second turning device (150) is the same or different,

wherein at least one of the first, second and third axes (X-, Y-, Z-axes) enclose an angle relative to one another of in each case 90° plus/minus not more than 10°,

wherein the position and property sensors are imaging sensors having corresponding or different detection spectra, or position sensors which measure distance by contact or without contact, or property sensors which detect by contact or without contact, and

wherein the position and property sensors are imaging sensors with straight or bent optical axes.

9. The component-handling device (100) as claimed in claim 1 or 2, wherein

- at least one of the first and second turning devices (130, 150) are star- or wheel-shaped, and
- the respective pick-up elements (132, 152) have radially outward facing suction contact points for the components (B) to be conveyed.

10. The component-handling device (100) as claimed in claim 1 or 2, wherein position and property sensor (K1,..., K5) associated with the first or second turning devices (132, 152), which sensor is configured to detect and provide to the controller (ECU) at least one of:

- position data of the first or second turning devices (130, 150),
- position data of components (B) situated at the pick-up elements (132, 152),
- properties of components (B) situated at the pick-up elements (132, 152) of the first or second turning devices (130, 150).

11. A method for removing components from a structured component supply and for depositing them at a reception device, comprising the steps:

- by means of a first turning device (130) having a plurality of pick-up elements (132), receiving a component (B) from the structured component supply at a dispensing point (SPS);
- turning the received component (B) through a first predetermined angle about its longitudinal or transverse axis (LA, QA) and conveying it to a transfer point (ÜS);
- by means of a second turning device (150) having a plurality of pick-up elements (152), receiving the component (B) at the transfer point (ÜS) from a pick-up element (132) of the first turning device (130);
- turning the received component (B) through a second predetermined angle about its longitudinal or transverse axis (LA, QA) and conveying it to a deposit point (ABS); and
- rotating the first turning device (130) in a controlled manner about a first axis (X-axis) by means of a first rotary drive (DA1);
- rotating the second turning device (150) in a controlled manner about a second axis (Y-axis) that is not collinear with the first axis (X-axis) by means of a second rotary drive (DA2).