CLAIMS

1. Bonding head (1) for mounting components on a substrate, comprising

a shaft (2),

a housing part (3) comprising a bearing for the shaft (2) which allows rotation of the shaft (2) about an axis (6) and a movement of the shaft (2) in a longitudinal direction of the axis (6) about a predetermined stroke (H),

a drive configured to rotate the shaft (2) about the axis (6),

an encoder configured to measure the rotational position of the shaft (2), and

a force generator configured to apply a force to the shaft (2) in the longitudinal direction of the axis (6),

wherein

the drive is an electric motor comprising a stator and a rotor, wherein

the stator is attached to the housing part (3) and the rotor to the shaft (2),

the rotor comprises a plurality of permanent magnets (8),

the stator comprises coils (7) to which currents can be applied, wherein the magnetic field generated by the currents flowing through the entirety of the coils (7) causes the rotation of the permanent magnets (8) about the axis (6), and

a length (L_1) of the permanent magnets (8) measured in the longitudinal direction of the axis (6) is shorter or longer than an effective length (L_2) of the coils (7) measured in the longitudinal direction of the axis (6) by at least the stroke (H).

2. Bonding head according to claim 1, wherein the permanent magnets are arranged on a circle.

3. Bonding head according to claim 1, wherein the permanent magnets are arranged on a circle with an area facing a center of the circle being alternately a north pole N and a south pole S.

4. Bonding head according to any of claims 1 to 3, wherein the encoder comprises a circular disc (9) fixed to the shaft (2) and having an encoder scale attached to its edge, and an encoder reading head (10), wherein

the encoder scale has dashes running in the longitudinal direction of the axis (6), and

a length of the dashes measured in the longitudinal direction of the axis (6) and a measuring region of the encoder reading head (10) extending in the longitudinal direction of the axis (6) are matched to one another in such a way that the dashes lie in the measuring region of the encoder reading head (10) over the entire stroke (H) of the shaft (2).

5. Bonding head according to any of claims 1 to 4, wherein the force generator is a pneumatic force generator which has a pressure chamber to which compressed air can be supplied, wherein the pressure prevailing in the pressure chamber acts on an end of the shaft (2).

6. Bonding head according to any of claims 1 to 5, wherein the bearing is an air bearing, wherein the housing part (3) has air inlets for the supply of compressed air and air outlets for the removal of air from the air bearing, wherein the air inlets are arranged in the longitudinal direction of the axis (6) between some of the air outlets.

7. Bonding head according to any of claims 1 to 6, further comprising a temperature control device serving to maintain the temperature of predetermined parts of the bonding head (1) at a predetermined value.

8. Die Bonder with a bonding head according to any of claims 1 to 7 and with a drive (17) configured to move the bonding head (1) in the longitudinal direction of the axis (6).