DESCRIPTION

[Title of the Invention] SHEET PASTING METHOD

[Field of the Invention]

[0001]

The present invention relates to a sheet pasting method.

[Background of the Invention]

[0002]

A sheet pasting method of forming a united product in which a work is supported by a frame member through a first sheet and a second sheet has been conventionally known (see, for example, Patent Document 1).

[Description of Related Art]

[Patent Document]

[0003]

[Patent Document 1] Japanese Unexamined Patent Application Publication No. 2007-165363

[Summary of the Invention]

[Problems to Be Solved by the Invention]

[0004]

However, in the conventional mounting method (sheet pasting method) described in Patent Document 1, if one that is changed to a prescribed state by the application of prescribed energy while undergoing prescribed deformation such as contraction deformation or expansion deformation is adopted as the die bonding sheet section DS (first sheet), there occurs a problem that, when a united product in which the wafer W (work) is supported by the ring frame RF (frame member) through the first sheet and the dicing tape DT (second sheet) is formed and the prescribed energy is applied to change the first sheet to the prescribed state, the deformation of the first sheet causes the formation of wrinkles WV in the second sheet as illustrated in FIG. 1(C).

[0005]

It is an object of the present invention to provide a sheet pasting

initial positions indicated by the solid lines in FIG. 1(A), after setting the first and second raw sheets RS1, RS2 as illustrated in this drawing. Then, the first and second pasting means 10, 20 drive the rotary motors 13A, 18A and 23A, 28A to rotate the die cut rollers 13C, 23C and form first and second cuts CU1, CU2 in the first and second bases BS1, BS2 to form first and second sheets AS1, AS2 and first and second unnecessary sheets US1, US2 while feeding out the first and second raw sheets RS1, RS2.

[0016]

Here, in the first sheet preparing step, in consideration of the contraction deformation that the first sheet AS1 undergoes when the heat is applied in the energy applying step, the first sheet AS1 shaped not to protrude from the one surface WK1 of the work WK is formed and prepared (the same applies to the following). Specifically, if the first sheet AS1 is shaped to protrude from the one surface WK1 of the work WK, it is expected that, when the heat is applied by the energy applying means 30, the contraction deformation of the first sheet AS1 causes the formation of wrinkles WV in the second sheet AS2 as illustrated in FIG. 1(C). Therefore, in this embodiment, if the one surface WK1 of the work WK has a circular shape with a 300 mm diameter, the first pasting means 10 forms the first sheet AS1 in a circular shape with a 299 mm diameter. Next, as illustrated in FIG. 1(A), when feeding-direction leading ends of the first and second sheets AS1, AS2 at the heads are released by a predetermined length at the releasing edges 16A, 26A of the releasing plates 16, 26, the first and second pasting means 10, 20 stop driving the rotary motors 13A, 18A and 23A, 28A.

[0017]

Thereafter, as illustrated in FIG. 1, when the user or a not-illustrated conveying means such as a multi-joint robot or a belt conveyor places a ring frame RF and the work WK on the holding table 42 with the work WK being disposed inside an opening RF1 of the ring frame RF, the carrying means 40 drives the not-illustrated pressure-reducing means to start the suction holding of the ring frame RF and the work WK on the holding surface 42A. Next, the carrying means 40 drives the linear motor 41 to move the holding table 42

leftward, and when the work WK reaches a predetermined position relative to the releasing plate 16, the first pasting means 10 drives the rotary motors 13A, 18A and feeds out the first raw sheet RS1 in pace with the moving speed of the holding table 42 while forming a new cut CU1 in the first sheet base BS1. Consequently, as indicated by the two-dot chain line in FIG. 1, the first sheet AS1 is released from the first release liner RL1, and the first sheet AS1 released from the first release liner RL1 is pressed against the work WK by the press roller 17 to be pasted.

[0018]

Here, in the first pasting step, in consideration of the contraction deformation that the first sheet AS1 undergoes when the heat is applied in the energy applying step, the first sheet AS1 is pasted on the one surface WK1 of the work WK without protruding from the one surface WK1 of the work WK. Specifically, if the first sheet AS1 protrudes from the one surface WK1 of the work WK when pasted, it is expected that, when the energy applying means 30 applies the heat, the contraction deformation of the first sheet AS1 causes the formation of the wrinkles WV in the second sheet AS2 as illustrated in FIG. 1(C). Therefore, in this embodiment, if the one surface WK1 has a circular shape with a 300 mm diameter, the first sheet AS1 is pasted on the one surface WK1 of the work WK such that the outer edge of the circular first sheet AS1 with a 299 diameter is located within a range of 0 mm to 1 mm from the outer edge position of the one surface WK1. At this time, the first pasting means 10 drives the not-illustrated direct-acting motor so that the whole first pasting means 10 moves in the front-rear direction to adjust the front-rear direction position of the first sheet AS1 relative to the one surface WK1 of the work WK, and also adjusts the drive start timing of the rotary motors 13A, 18A relative to the holding table 42 moving leftward to adjust the left-right direction position of the first sheet AS1 relative to the one surface WK1 of the work WK. Then, when a predetermined length of a feeding-direction leading end of a first sheet AS1 next to the first sheet AS1 at the head is released at the releasing edge 16A of the releasing plate 16, the first pasting means 10 stops driving the rotary motors 13A, 18A.

[0027]

At the time of pasting the first and second sheets AS1, AS2 on the work WK, the first and second pasting means 10, 20 may be moved while the work WK is not moved or is moved in the carrying step, or in the carrying step, the holding table 42 does not necessarily have to suction-hold the work WK, the ring frame RF, and so on. In a case where another device executes the carrying step, the carrying step need not be executed in the sheet pasting method of the present invention.

[0028]

The one surface WK1 of the work WK may have a circular shape with 300 mm or more or may have a circular shape with less than 300 mm. For example, for the work WK whose one surface WK1 has a circular shape with a 300 mm diameter, the first sheet AS1 prepared in the first sheet preparing step may have a circular shape with a 300 mm diameter, a circular shape having a less than 300 mm diameter, such as a 299.5 mm or 280 mm diameter, or may have a shape other than the circular shape, such as a triangular shape, a polygonal shape having four sides or more, or an elliptical shape.

The one surface WK1 of the work WK may have any shape other than the circular shape, such as a triangular shape, a polygonal shape having four sides or more, or an elliptical shape. The first sheet AS1 prepared for the work WK whose one surface WK1 has such a shape may have a shape other than the circular shape, such as a triangular shape, a polygonal shape having four sides or more, or an elliptical shape. For example, for the one surface WK1 having a quadrangular shape, the first sheet AS1 having an elliptical shape may be prepared, and for the one surface WK1 having an elliptical shape, the first sheet AS1 having a pentagonal shape may be prepared.

The prescribed deformation of the first sheet AS1 due to the application of the energy may be any deformation such as expansion deformation, enlargement deformation, contraction deformation, reduction deformation, wavy deformation, or distortion deformation.