

particularly thin and easy to produce.

Summary

In an aspect, the present disclosure refers to an end effector for holding substrates, having a multi-layered main body and a fluid channel which is provided in the main body, wherein the main body comprises three layers, wherein each of the three layers is not inherently stable but has sufficient stability to hold the substrates when the three layers are fixed together.

In an example, the present disclosure refers to an end effector for holding substrates, having a multi-layered main body and a fluid channel which is provided in the main body, wherein the main body comprises at least two layers, wherein at least one of the layers is not inherently stable, wherein the fluid channel issues into openings, wherein a vacuum suction cup is provided in the openings, and wherein the main body comprises an upper layer, a middle layer and a lower layer, and the vacuum suction cup has a carrier that is passed through the middle layer and the upper layer and is held in position by the lower layer.

In an example, an end effector for holding substrates is provided, having a main body and a fluid channel which is provided in the main body, wherein the main body comprises at least two layers, wherein at least one of the layers is not inherently stable.

"Not inherently stable" means that the layer is not stable enough to independently hold a substrate, for which the corresponding end effector is provided, in the holding region provided for this purpose. The at least one layer can thus be thin, whereby the whole construction height, i.e. the thickness, of the end effector can be reduced. It is even feasible for a plurality of layers or all layers of the end effector not to be inherently stable and to have the necessary stability to hold a substrate only once fastened to one another. The layer which is not inherently stable can be e.g. a thin film, or the end effector can be built up of a plurality of very thin metal sheets. The fluid channel can thus serve as a vacuum channel or excess pressure channel depending on whether the end

Claims

1. End effector for holding substrates, having a multi-layered main body and a fluid channel which is provided in the main body, wherein the main body comprises
5 three layers, wherein each of the three layers is not inherently stable but has sufficient stability to hold the substrates when the three layers are fixed together.
2. End effector as claimed in claim 1, characterised in that a groove and/or a slot is incorporated in at least one of the layers and partially defines the fluid channel.
3. End effector as claimed in claim 2, characterised in that the groove and/or
10 the slot is covered and sealed by at least another one of the layers.
4. End effector as claimed in claim 3, characterised in that the middle layer of the three layers is provided with the slot which is covered by the outer two layers, thus forming the fluid channel.
5. End effector as claimed in any one of the preceding claims, characterised in
15 that the layer in which the groove and/or the slot is incorporated, is produced from a metal sheet.
6. End effector as claimed in any one of the preceding claims, characterised in that the three layers are congruent to one another and/or have the contour of the end effector.
- 20 7. End effector as claimed in any one of the preceding claims, characterised in that at least one of the layers is a prefabricated component.
8. End effector as claimed in any one of the preceding claims, characterised in that the layers which are not inherently stable are produced from a synthetic material.
9. End effector as claimed in any one of the preceding claims, characterised in
25 that the three layers are adhered together.
10. End effector as claimed in any one of the preceding claims, characterised in that the main body comprises a receiving end and a fastening end, wherein a holding region for holding the substrate is provided on the receiving end.
- 30 11. End effector as claimed in claim 10, characterised in that a cut-out extends from the receiving end into the main body, wherein holding arms are formed by the cut-out.

12. End effector as claimed in claim 11, characterised in that the cut-out comprises at least one radius on its end facing the fastening end and is U-shaped.

13. End effector as claimed in any one of claims 11 to 12, characterised in that the fluid channel extends from the fastening end into the holding arms and at that
5 location issues into openings.

14. End effector as claimed in claim 13, characterised in that a holding apparatus is provided in or on the opening.

15. End effector as claimed in claim 14, characterised in that the holding apparatus is a vacuum suction cup or a fixing apparatus based on the Bernoulli
10 effect.

16. End effector as claimed in any one of claims 10 to 15, characterised in that a flange region is provided on the fastening end in order to fasten the end effector to a transport apparatus.