

Summary

According to an aspect, the present disclosure refers to a magazine system for production lines for planar substrates, in particular wafers, solar cells or printed circuit boards, comprising at least one substrate magazine, which has two side walls, which are arranged opposite one another and which are vertically aligned, as well as a plurality of compartments, which are formed between the side walls and into which one or several substrates can in each case be inserted, wherein each compartment has two guide rails, which are arranged on the side parts at a distance from and parallel to one another, characterized in that the magazine system has at least one adapter plate for each of the side walls, wherein the respective adapter plate has fastening means for releasable fastening to one of the side walls, and wherein on a respective side, the adapter plates in each case have one or several carrying rails, which in the fastened state on the side walls, together in each case form a support for a substrate stack.

The object on which the ~~invention~~present disclosure is based is solved by means of a magazine system comprising the features of ~~claim 1~~the above aspect. This has the advantage that the magazine system can be adapted in such a way that it cannot only be used as storage position for planar substrates, but also for substrate stacks, thus for a plurality of substrates stacked one on top of the other. It is attained by means of the magazine system according to the present disclosure ~~invention~~ that an existing substrate magazine can be adapted in a simple manner in such a way that a switch can be made between the operation for receiving individual substrates to an operation for receiving substrate stacks. According to the present disclosure~~invention~~, this is attained in that the magazine system has at least one adapter plate for each of the side walls, wherein the respective adapter plate has fastening means for releasable fastening to one of the side walls, and wherein on a respective side, the adapter plates in each case have one or several carrying rails, which in the fastened state on the side walls, together in each case form a support for a substrate stack. The side walls can thus be adapted to receive substrate stacks by means of the adapter plates. For this purpose, the adapter plates can be releasably fastened to the side walls and, in turn, have carrying rails. In the assembled state of the adapter plates on the side walls, these carrying rails lie opposite one another and at the same height, so that, together, they form a support for a substrate stack. An adaptation of the substrate magazine to individual substrates or substrate stacks is thus made possible by means of a few aid and a few steps.

According to a preferred further ~~development example~~ of the ~~present disclosure invention~~, each adapter plate has at least one assembly hook for suspension on the respective side wall. The suspension of the respective adapter plate allows for a simple assembly on the side walls and a secure hold. The suspension furthermore also allows for a simple disassembly of the adapter plates, in that the assembly hooks are unhooked from the respective side wall. According to one ~~embodiment example~~, further fastening means are forgone.

According to a further ~~embodiment example~~ of the ~~present disclosure invention~~, each adapter plate has at least one elastically displaceable latching element for the positive locking to the side wall in addition or alternatively to the already mentioned assembly hook. An unintentional release from the respective side wall is securely prevented by means of the latching element. In contrast to the suspension, the use of the latching element moreover allows for a simple translatory assembly joining or movement, while the suspension also requires a pivoting of the adapter plate. Depending on the installation space or formation of the substrate magazine, a purely translatory assembly movement can prove to be an advantage.

Each adapter plate particularly preferably has the at least one assembly hook at a first end, and the at least one latching element at the second end facing away from the first end. The respective

adapter plate can thus be suspended on the respective side wall at the one end, and can be locked in a positive manner to the side wall at the other end by means of the latching element. An unintentional release of the printed circuit board is thus securely prevented. The fastening furthermore also allows that rattling noises or movements of the adapter plate are prevented in response to a movement of the substrate magazine. Elastic cushioning means, which act between the adapter plate and the respective side wall to prevent rattling noises and movements, are optionally assigned to the assembly hook and/or to the respective latching element. In the case of arrangement of the adapter plate on a side wall as intended, the cushioning elements are optionally elastically deformed or pre-tensioned, respectively, so that a particularly fixed arrangement of the respective adapter plate on the respective side wall is ensured.

According to an advantageous further ~~development-example~~ of the ~~present disclosureinvention~~, several carrying rails are arranged parallel to one another on each adapter plate, wherein adjacent carrying rails of the respective adapter plate have a distance from one another, which is larger than a distance of adjacent guide rails from one another. Due to the increased distance, the reception of substrate stacks is made possible. Due to the presence of several carrying rails, it is ensured that several substrate stacks can be received in the substrate magazine by means of the adapter plates. The distance of the adjacent carrying rails or guide rails is to thereby be understood as the distance of the rails at the height in the case of arrangement of the adapter plate on the respective side wall as intended.

According to a preferred further ~~development-example~~ of the ~~present disclosureinvention~~, the adapter plates arranged on the substrate magazine form at least two carrying compartments, which lie one on top of the other. At least two adapter plates of the magazine system thus in each case have two carrying rails, which lie opposite one another at the same height in the case of use as intended, so that two carrying compartments are created.

It is furthermore preferably provided that the respective adapter plate is formed as adapter sheet, and the respective carrying rail is formed as cropped and bent-out sheet metal tongue in the adapter sheet. Due to the formation of the respective adapter plate as adapter sheet, a structurally simple and cost-efficient realization of the adapter plates is ensured. By bending out the carrying rails as sheet metal tongues, the number of the individual parts of the magazine system is furthermore minimized. The carrying rails are optionally releasably held on the respective adapter plate. It is attained thereby that the carrying compartments of the adapter plates can be adapted to expected substrate stacks. For example, the height distance of the carrying rails on an adapter plate can thus