Summary

In a first aspect, the present disclosure refers to a screen unit for a printing device for printing three-dimensionally-shaped structures - in particular, on substrates, printed circuit boards, wafers, solar cells, carrier substrates, printing tables, carrier plates, sintering plates or the like - wherein the screen unit has a frame holding at least one printing screen and is designed to be accommodated in a screen receptacle of the printing device, to be filled with a printing compound, and to be subjected to the action of a squeegee for carrying out a printing process, characterized in that the screen unit has the squeegee and, in or on the frame, at least one holding device for the squeegee, which is in the form of an exchangeable squeegee, that the squeegee has a holding section and a squeegee section, wherein the holding device is designed to hold the squeegee only at the holding section, and that the holding device has a recess in which the squeegee section can be arranged without contact.

In a second aspect, the present disclosure refers to a printing system with at least one printing device for printing three-dimensionally-shaped structures - in particular, on substrates, printed circuit boards, wafers, solar cells, carrier substrates, printing tables, carrier plates, sintered plates or the like - wherein the printing device has a printing head, with a squeegee device to which a squeegee can be assigned, and which has a screen receptacle for receiving at least one screen unit, characterized in that the screen unit is designed according to the first aspect, and has a squeegee with an exchangeable connector for the squeegee device.

The aim underlying the invention is achieved by a screen unit with the features of the first aspect. This has the advantage that the screen unit makes a change of material in a printing device particularly easy, because the screen unit is not only exchangeable, but also carries along the elements of the printing device that are essential for the printing process and which also come into contact with the material, such that not only the printing screen, but also the tool for carrying out the printing process, can be fed to the printing device with the screen unit. According to the invention, at least one holding device for a squeegee, which is in the form of an exchangeable squeegee, is, for this purpose, arranged in or on the frame of the screen unit. Thus, the invention provides that the squeegee be able to be or be carried along on the screen unit for the printing process. The holding device holds the squeegee securely on the screen unit and allows it to be carried along with the screen unit, such that the unit consisting of the printing screen and the squeegee can always be handled together. A prerequisite for this is that the

squeegee be designed as an exchangeable squeegee and therefore able to be easily replaced on the printing head or the squeegee device of the printing head. Preferably, the squeegee forms a component of the screen unit.

Furthermore, it is preferably provided that the holding device have a squeegee receptacle in which the squeegee can be accommodated. The squeegee receptacle allows the squeegee to be securely carried along and, in particular, to be aligned on the printing screen, ensuring that the squeegee can be easily gripped by the printing device.

Furthermore, it is preferably provided that the squeegee have a holding section and a squeegee section, wherein the holding device is designed to hold the squeegee only at the holding section. This means that the mechanism by which the squeegee is held to the frame is detached from the squeegee section itself, such that contamination of the mechanism by the printing compound is reliably prevented.

Furthermore, it is preferably provided that the holding device have a recess in which the squeegee section can be accommodated - in particular, without contact. Due to the - in particular - contact-free accommodation of the squeegee section, it can be accommodated on the printing screen without creating a load and be carried along with it. In addition, this prevents any printing compound remaining on the squeegee from coming into contact with the frame of the screen unit and/or the holding device and soiling it permanently and impairing the function of the holding device in particular. Furthermore, it is preferably provided that the recess in the frame be

CLAIMS

1. Screen unit for a printing device for printing three-dimensionally-shaped structures - in particular, on substrates, printed circuit boards, wafers, solar cells, carrier substrates, printing tables, carrier plates, sintering plates or the like - wherein the screen unit has a frame holding at least one printing screen and is designed to be accommodated in a screen receptacle of the printing device, to be filled with a printing compound, and to be subjected to the action of a squeegee for carrying out a printing process, characterized in that the screen unit has the squeegee and, in or on the frame, at least one holding device for the squeegee, which is in the form of an exchangeable squeegee, that the squeegee has a holding section and a squeegee section, wherein the holding device is designed to hold the squeegee only at the holding section, and that the holding device has a recess in which the squeegee section can be arranged without contact.

2. Screen unit according to claim 1, characterized in that the holding device has a squeegee receptacle in which the squeegee can be arranged.

3. Screen unit according to one of the preceding claims, characterized in that the recess in the frame is designed as a depression or as a perforation.

4. Screen unit according to one of the preceding claims, characterized in that the squeegee has an exchangeable connector for the printing device.

5. Screen unit according to one of the preceding claims, characterized in that the exchangeable connector has at least one locking means for locking the squeegee to a printing head of the printing device.

6. Printing system with at least one printing device for printing three-dimensionally-shaped structures - in particular, on substrates, printed circuit boards, wafers, solar cells, carrier substrates, printing tables, carrier plates, sintered plates or the like - wherein the printing device has a printing head, with a squeegee device to which a squeegee can be assigned, and which has a screen receptacle for receiving at least one screen unit, characterized in that the screen unit is designed according to one of claims 1 through 5, and has a squeegee with an exchangeable connector for the squeegee device.

7. Printing system according to claim 6, characterized in that the squeegee device has a device for removing and placing the squeegee from or into the holding device and for carrying out a printing operation.

8. Printing system according to one of the preceding claims, characterized in that a plurality of screen units are present.

9. Printing system according to one of the preceding claims, characterized in that a screen magazine is present, which has several screen stores for receiving one screen unit each, and that the screen units are stored in the screen magazine.

10. Printing system according to one of the preceding claims, characterized in that the screen magazine has a conditioning device for setting or maintaining a climate in the screen magazine, by which the drying out of printing compound remaining on a screen unit is prevented.

11. Printing system according to one of the preceding claims, characterized in that a transport device is present, which is designed to remove a selected screen unit from the screen magazine and to arrange it in the screen receptacle of the printing device, and vice versa.