separator insert is non-rotatably retained so that the rotor remains rotatable with the drum, wherein the relative position of the holders having the stator units of the bearing devices can be changed such that the separator insert can be exchanged, and wherein the housing and at least one of the holders have corresponding interlocking elements in order to non-rotatably retain the housing on the holder.

"In operation" means during centrifugal processing when the rotor is turning.

According to claim 1, it is possible to provide a separator comprising a disposable module with disposable "drum" and "housing" components, whereas at least the frame and parts of the bearing and drive device can be reusable. By changing the position, the corresponding interlocking elements can be engaged and disengaged to change the separator insert. The invention enables the manufacture of a separator in which a disposable separator insert can be used, which is preferably designed such that all components in contact with the product are made of plastic or other non-magnetic materials which can be disposed of after single use. Cleaning after use is thus not necessary. The machine and its operation can thus be made significantly less expensive. Magnets can be optionally recycled.

It is simple and safe in this case to provide mutually spaced holders for the bearing devices on the frame, between which the separator insert can be non-rotatably inserted.

It can further be provided that the separator insert can be attached to the frame in a form-fit and force-fit manner so that it cannot rotate.

According to a particularly simple variant, the holders and the housing can have corresponding pins and recesses as corresponding interlocking elements for holding the housing on the holders in a rotationally fixed manner. It is particularly simple if the holders and pins each extend axially.
It can also be provided that the position of the holders, in particular on the console, can be adjusted in order to be able to change the separator insert. For this purpose, the relative spacing of the holders can be adjustable, but one or both holders can also be designed to be foldable, pivotable, rotatable or displaceable in order to be able to place the separator insert between the holders. Preferably,

The invention also provides a separator insert for separating a flowable suspension in a centrifugal field into at least two flowable phases of different density, which forms a pre-assembled, exchangeable unit for insertion into stator units on the frame of the separator and comprises at least the following: a housing which is stationary in operation, designed in the manner of a container, which is designed to be closed except for one or more openings, a rotor arranged inside the housing and rotatable about an axis of rotation, and comprises a drum which has one or more openings, a separating means arranged to the drum, at least two rotor units for magnetic bearing devices at two axially spaced locations of the rotor having the drum, by means of which the rotor with the drum can be held in suspension, is rotatably supportable and can be made to rotate within the housing during operation, wherein the housing has interlocking elements for non-rotatably retaining the housing on an abutment such as a frame. This separator insert is particularly suitable for a separator as an exchangeable module, wherein the frame, in particular its holders, form the abutment(s).

The invention also provides an advantageous and simple method for exchanging a first separator insert of a separator according to one of claims 1 to 7 for a second separator insert, comprising the following steps:

a) Providing the separator with a first separator insert mounted to the frame,
b) adjusting the relative position, in particular the relative distance, of the holders and releasing the interlock between the frame and the separator insert and removing the first separator insert from the holders;
c) providing the second separator insert (before, at or after steps a) and b));
d) inserting the other second separator insert into the one of the holders so that the corresponding interlocking elements at one end of the housing and at one of the holders engage into each other; and
e) adjusting the relative position, in particular the relative distance, of the holders until the corresponding interlocking elements at both ends of the housing of the separator insert and non-rotatably engage into each other at the two holders.

According to an advantageous variant, at least one of the two magnetic bearing devices preferably also represents the rotary drive for the drum, wherein this drive is also suitable for driving the drum with freely adjustable speeds or freely

CLAIMS:

1. Separator having a frame and a separator insert exchangeably arranged on the frame,
   a) wherein the separator insert is designed to separate a flowable suspension into at least two flowable phases of different density in a centrifugal field and forms a pre-assembled, exchangeable unit for insertion into stator units on the frame of the separator and comprises at least the following:
      i. a housing which is stationary in operation and is designed in the manner of a container which is closed except for one or more openings,
      ii. a rotor arranged inside the housing and rotatable about an axis of rotation, having a drum which has one or more openings,
      iii. preferably a separating means arranged in the drum,
      iv. at least two rotor units for magnetic bearing devices at two axially spaced locations of the rotor with the drum, by means of which the rotor with the drum can be held in suspension, is rotatably supportable and can be made to rotate within the housing in operation,
   b) wherein furthermore mutually spaced holders having stator units of the bearing devices are formed on the frame, between which holders the housing of the separator insert is non-rotatably retained such that the rotor remains rotatable with the drum,
   c) wherein the relative position of the holders having the stator units of the bearing devices can be changed such that the separator insert can be exchanged,
   d) wherein the housing and at least one of the holders have corresponding interlocking elements in order to non-rotatably retain the housing on the holder.

2. Separator according to claim 1, characterized in that the housing and the holders have corresponding interlocking elements to non-rotatably retain the housing on the holders.

3. Separator according to claim 1, characterized in that the housing and only holders have corresponding interlocking elements for retaining the housing non-rotatably on the respective holder.

4. Separator according to claim 1, characterized in that the housing and the holders have corresponding pins and recesses as corresponding interlocking elements to retain the housing non-rotatably on the holders.

5. Separator according to one of the preceding claims, characterized in that the relative distance between the two holders is adjustable.

6. Separator according to one of the preceding claims, characterized in that one of the two holders is arranged adjustably on the frame, in particular on the console, and in that the other holder is formed in a stationary manner on the frame, in particular on the console.

7. Separator according to one of the preceding claims, characterized in that both holders are adjustably arranged on the frame, in particular on the console.

8. Separator according to one of the preceding claims, characterized in that one or both holders is/are displaceably arranged on the frame, in particular on the console.

9. Separator according to one of the preceding claims, characterized in that one or more axially aligned hose(s) is/are guided on the separator insert through a passage opening of the respective axially associated holder.

10. Separator according to one of the preceding claims, characterized in that the frame comprises a control device.

11. Separator insert for separating a flowable suspension in a centrifugal field into at least two flowable phases of different density, forming a pre-assembled, exchangeable unit for insertion into stator units on the frame of the separator and comprising at least the following:
    i. a housing which is stationary in operation and is designed in the manner of a container which is closed except for one or more openings,
    ii. a rotor which is arranged inside the housing, is rotatable about an axis of rotation, and comprises a drum which has one or more openings,
    iii. a separating means arranged to the drum,

iv. at least two rotor units for magnetic bearing devices at two axially spaced locations of the rotor having the drum, by means of which the rotor having the drum can be held in suspension, is rotatably supportable and can be made to rotate within the housing during operation, wherein the housing has interlocking elements for non-rotatably retaining the housing on an abutment such as a frame.

12. Method for exchanging a first separator insert of a separator according to one of claims 1 to 8 for a second separator insert, comprising the following steps:
a) providing the separator with a first separator insert mounted on the frame,
b) changing the relative position of the holders and releasing the interlock between the frame and separator insert and removing the first separator insert from the holders;
c) providing the second separator insert;
d) inserting the other second separator insert into the one of the holders so that the corresponding interlocking elements at one end of the housing and at one of the holders engage with each other; and
e) renewed changing of the relative position of the holders until the corresponding interlocking elements at both ends of the housing and non-rotatably engage into each other at the two holders.

13. Method according to claim 12, characterized in that, when the separator insert is inserted, one or more axially outgoing hoses on the separator insert are guided through a passage opening of the respective axially associated holder.

14. Method for operating a separator according to one of the preceding claims, characterized in that, during operation of the separator, a leakage line is provided from the separator, in particular via a separate leakage outlet of the separator insert.

15. Use of a container in a separator according to one of the preceding claims, wherein the container is exchangeably arranged at a leakage outlet of a separator insert.