The present disclosure is therefore based on the object of improving the user-friendliness of a method for grinding material by providing individual setting options for the grinding process.

In one aspect, the present disclosure provides a method for grinding material to be ground having at least one coffee grinding mill in a coffee machine, the method comprising: determining an actual grind level of the grinding mill, determining a target grind level of the grinding mill based on a coffee product selected by a user, comprising: receiving a first user input; and determining the target grind level based on the received first user input, wherein the first user input is associated with the selection of a coffee product; automatically comparing the actual grind level with the target grind level, and automatically outputting information to a user of the grinding mill based on the comparison of the actual grind level with the target grind level; receiving a second user input; and when the actual grind level matches the target grind level: grinding the material to be ground with the actual grind level; when the actual grind level does not match the target grind level: grinding of the material to be ground with the actual grind level, or adjusting the actual grind level to set the target grind level, wherein the grinding of the material to be ground with the actual grind level or adjusting the actual grind level is performed in response to the receiving the second user input.

This allows the user of the grinding mill to be informed of the set actual grind level of the grinding mill. This improves the user-friendliness of the grinding mill while at the same time providing individual adjustment options for the

grinding mill, especially if the actual grind level does not match the target grind level.

The actual grind level can be determined, for example, via the position of the grinding mill. In particular, the actual grind level can be determined via the relative distance between two grinding or cutting tools. In addition or alternatively, the actual grind level can be determined via the position or setting of an adjustment device for setting a grind level.

The target grind level is determined based on a coffee product selected by a user.

The target grind level can, for example, be stored in a (device) controller of the grinding mill or a device comprising the grinding mill or can be queried by the latter. The target grind level can be assigned to one or more specific products that are to be prepared with ground material of the target grind level. The target grind level can be determined or is determinable based on a user selection of a product to be prepared with the ground product.

The automatic comparison of the actual grind level with the target grind level can be carried out in particular before the grinding of the material to be ground. The comparison can be carried out by a (device) controller of the grinding mill or a device comprising the grinding mill or an external (device) controller.

The automatically issued notification to the user of the grinding mill can be a visual, haptic and/or acoustic notification, for example.

In one example, it is provided that the method further comprises: receiving a first user input, and determining the target grind level based on the received first user input.

For example, the first user input is aimed at selecting a product to be prepared based on or using the ground material. For example, the grinding mill is a coffee grinding mill in a coffee machine. In this example, the target grind level can be determined based on the selection of a coffee product. In this way, the user of the grinding mill can be advised of a recommended or optimum grind level for the selected product. This serves to support the user in the preparation of high-quality products and further improves the user-friendliness

of the process.

In one example, it is provided that the method further comprises: outputting information to the user of the grinding mill if the actual grind level does not match the target grind level, in particular wherein it is automatically output whether and/or by how much the actual grind level should be increased or decreased in order to achieve the target grind level.

In particular, the actual grind level does not match the target grind level if the actual grind level or an actual grind level range assigned to the actual grind level does not or does not at least partially match a target grind level range assigned to the target grind level. The actual grind level range and/or the target grind level range can be predetermined or determinable. In particular, a magnitude or width of the actual grind level range and/or the target grind level range can be determined based on a user input, for example based on a product to be prepared selected by the user. In this way, the information can be directed towards increasing or decreasing the actual grind level in order to directly or indirectly prompt the user to achieve a change in the actual grind level to the target grind level. This further improves the user-friendliness of the grinding process.

In one example, it is provided that the method further comprises: grinding the material to be ground with the actual grind level when the actual grind level matches the target grind level, and/or grinding the material to be ground with the actual grind level when the actual grind level does not match the target grind level, and/or adjusting the actual grind level to set the target grind level when the actual

grind level does not match the target grind level.

For example, the method can include grinding the material to be ground with the actual grind level only if the actual grind level matches the target grind level. In this way, the preparation of a product with ground material with a non-optimal grind level is prevented. Furthermore, the method can include grinding the material to be ground with the actual grind level, even if the actual grind level does not match the target grind level. This allows the user to make individual adjustments to the grinding mill, which may not correspond to the recommended or objectively optimal settings, depending on the user's perception. Furthermore, the method can include adjusting the actual grind level to set the target grind level if the actual grind level does not match the target grind level. In this way, the user-friendliness of the method is further increased by the fact that an optimum target grind level is set, for example with reference to the non-optimum actual grind level, before a product associated with the target grind level is prepared.

In one example, it is provided that the method further comprises: receiving a second user input, wherein grinding the material to be ground with the actual grind level and/or adjusting the actual grind level is performed in response to receiving the second user input. For example, the second user input is received following and/or in response to the information being issued to the user. In particular, the second user input is a response to the information, or a confirmation of the information, by the user. The second user input can be directed to a confirmation that the grinding of the material to be ground should be carried out with the actual grind level, in particular despite the fact that the actual grind level does not match the target grind level.

Alternatively, the second user input can be directed to a confirmation that the grinding of the material to be ground should be carried out with the target grind level, in particular instead of grinding the material to be ground with the actual grind level. In addition or alternatively, the second user input can be directed to a confirmation that the grind level is to be (automatically) adjusted from the actual grind level to the target grind level or that the user wishes to adjust it.

In one example, it is provided that the grinding of the material to be ground with the actual and/or the desired grind level takes place in response to the expiry of one or more preferably predetermined first time intervals, in particular from the first user input, the second user input, the adjustment of the grind level, the adjustment of a control element and/or the output of the information to the user.

For example, the user can be given time from a user input or from the notification to the user to make a decision regarding the grind level, in particular whether an adjustment, and in particular which adjustment, of the grind level should take place. Furthermore, the method can carry out the grinding process with the actual grind level or the target grind level if a predetermined time interval has expired or elapsed. In other words, an elapsed time interval without user input is interpreted as user consent. This further increases the user-friendliness of the method.

In one example, it is provided that the adjustment of the actual grind level takes place in response to the expiry of one or more preferably predetermined second time intervals, in particular from the first user input, the second user

input, the adjustment of the or a control element and/or the output of the information to the user. In this way, the grind level can be adjusted automatically without depriving the user of the possibility of grinding material to be ground with the (non-optimal, non-recommended or non-preset) actual grind level.

In one example, it is provided that the information to the user of the grinding mill comprises an indication of the actual and/or the desired grind level, and/or wherein the information to the user of the grinding mill comprises an indication of a desired setting of a control element of the grinding mill for setting the grind level.

In this way, the user can be informed about a set (actual) and/or a recommended (target) grind level, in particular about an option for setting the recommended grind level. This represents an improvement in supporting the user in selecting the grind level, in particular for a specific product to be prepared.

In one example, it is provided that the information to the user of the grinding mill comprises a specification for setting the target grind level and/or a specification for adjusting the control element of the grinding mill. For example, the user is visually shown the (on) position of a control element that leads to the setting of the target grind level. The user can also be shown an adjustment direction of the control element that can be used to set the target grind level. The information or display can, for example, be visual, haptic and/or visual.

In one example, it is provided that the determination of the actual grind level comprises the determination of an

actual value or an actual value range for the set grind level, wherein the determination of the target grind level comprises the determination of a target value or a target value range for the target grind level, and wherein the output of the information to the user of the grinding mill comprises the output of information to the user of the grinding mill when the target value or target value range does not at least partially correspond to the actual value or actual value range. The actual value, the actual value range, the target value and/or the target value range can be predetermined or determinable. The actual value range and/or the target value range, in particular their width, can be dependent on the actual value and/or the target value, in particular their height. In this way, tolerance ranges can be determined in which the actual grind level is considered to be greater than the target grind level.

In one example, it is provided that the determination of the actual grind level comprises the determination of a position of a control element of the grinding mill and/or the determination of a position of an adjustable grinding mill element of the grinding mill, in particular the determination of a position of a first grinding mill element of the grinding mill relative to a second grinding mill element of the grinding mill.

For example, the control element is a rotary switch that can be operated by the user. In this example, the actual grind level can be determined by detecting the rotary position of the rotary switch. The first and second grinding mill elements can be a first and a second grinding tool. The first grinding mill element can be a grinding cone, for example, and the second grinding mill element can be a grinding ring, for example, or vice versa. The first and second grinding

mill elements can have cutting edges, in particular form a grinding gap delimited by the respective cutting edges. The grinding gap can be larger or smaller depending on the relative distance between the grinding elements. The size or width of the grinding gap can be used to set a specific grind level or to grind material to a specific grind level.

In one example, it is provided that the grinding mill comprises sensors and that the determination of the actual grind level, in particular the determination of the position of a control element of the grinding mill, in particular a control element of a preferably manually operable and/or mechanical adjustment device of the grind level, and/or the determination of the position of the grinding mill element of the grinding mill, is carried out on the basis of sensor data of the sensors. The sensors can, for example, comprise one or more (mechanical) sensors, in particular micro-sensors. The grinding mill, one or more grinding mill elements, the control element and/or the adjustment device can have elevations or other sensing means that actuate the sensor differently, or different sensors, depending on the setting position. Additionally or alternatively, the sensors may comprise (electro-) magnetic sensors.

In one example, it is provided that the information is output to the user of the grinding mill visually, preferably via a display and/or via the illumination of at least one region of the control element. For example, an area or individual areas of the control element can be illuminated to indicate a setting of the control element or an adjustment direction of the control element.

In one example, it is provided that the method comprises the grinding of material to be ground with a plurality of

grinding mills, wherein the output of the information to the user of the grinding mill based on the comparison of the respective actual grind level with the respective target grind level comprises the output of respective, in particular different, information. For example, the information relating to the respective grind levels of the grinding mills may be identical, in particular indicating an identical actual grind level and/or an identical target grind level. Additionally or alternatively, the information relating to the respective grind levels of the grinding mills may be different, in particular indicating different actual grind levels and/or different target grind levels. In this way, the target grind level of a specific grinding mill can be determined based on a material to be ground with the specific grinding mill. For example, the material to be ground with a particular grinding mill can be predetermined. In addition or alternatively, the material to be ground with a specific grinding mill can be determined, for example using sensors that detect the properties of the material to be ground (such as the size and/or coloration) and thus identify the material to be ground.

In one example, it is provided that the grinding mill is a coffee grinding mill and the first user input is associated with the selection of a coffee product.

In one example, the method further comprises: actuating a cleaning operation to clean the grinding mill, in particular when the actual grind level does not match the target grind level and preferably in response to or during the output of the information. For example, actuating the cleaning operation comprises adjusting the actual grind level to set a transitional grind level different from the target grind level, which is preferably coarser than the actual grind

In a second aspect, the present disclosure provides a coffee machine with a grinding mill and a processor, wherein the processor is configured to carry out the method according to the first aspect, in particular wherein the coffee machine has a preferably manually operable and/or mechanical adjustment device of the grind level and/or an optically readable display device, preferably a display and/or a controlled illuminable region.

The disclosure is described in more detail below with reference to several preferred exemplary embodiments, wherein:

Fig. 1 shows a flow diagram of a first method for grinding material to be ground with at least one grinding mill,

Fig. 2 shows a flow diagram of a second method for grinding material to be ground with at least one grinding mill,

Fig. 3 shows a first user interface of a grinding mill,

Fig. 4 shows a second user interface of a grinding mill,

Fig. 5 shows a 3-dimensional view of a device for adjusting and monitoring the grind level of a grinding mill,

Fig. 6 shows a side view of the device for adjusting and monitoring the grind level of a grinding mill,

Fig. 7 shows a top view of the device for adjusting and