The present invention relates to laundry treatment machine (1) comprising an outer casing (2), a rotatable drum (3) which is arranged in axially rotating manner inside the outer casing (2) and is structured to receive the laundry to be washed and/or dried, a control panel (6) configured to select a main laundry treatment program comprising a prefixed sequence of laundry treatment phases. The control panel (6) comprises: a first input region (7) configured to enable the operator to select a main laundry treatment program among a plurality of selectable prefixed laundry treatment programs; and a second input region (8) configured to enable the operator to select a program-part of the selected laundry treatment program, wherein the program-part comprises at least one laundry treatment phase comprised in a subset of laundry treatment phases of said laundry treatment program; the laundry treatment machine further comprises a control unit (5) configured to control driving of the laundry treatment machine (1) in order to selectively perform only the selected program part of the selected laundry treatment program.
Description

[0001] The present invention concerns the field of laundry treatment machines (called also laundry treatment appliances), such as laundry washing machines (called also washing machines), laundry washing-drying machines (called also washer-driers), laundry drying machines (called also driers or dryers).

[0002] In particular, the present invention relates to a user control panel for laundry treatment appliance, which is designed for selecting one or more treatment operating phases of a selected laundry treatment program such that, in usage, only a specific part of the selected laundry treatment program may be performed.

BACKGROUND ART

[0003] Nowadays the use of laundry treatment appliances, such as laundry washing machines, i.e. laundry washing machines which wash and rinse laundry, or laundry washing and drying machines, i.e. laundry washing machines which also dry laundry, or laundry drying machines, i.e. laundry machines which dries the laundry, is widespread. In this respect, in the present description, where not stated differently, the term "laundry treatment appliance" (or "laundry treatment machine") can be referred indiscriminately to a laundry washing machine, or to a laundry washing and drying machines, or to a laundry drying machine.

[0004] As it is known, laundry treatment machines are typically provided with a control panel to enable the operator to select a desired main laundry treatment program to be performed. The control panel generally comprises a graphic interface, structured to show/provide a number of different selectable main laundry treatment programs that laundry treatment machine is able to perform, and one or more input devices, i.e. rotary switches and/or buttons, to enable the operator to select a desired main laundry treatment program among the performable main laundry treatment programs.

[0005] In some kind of known laundry treatment machines, such as for example laundry washing and drying machines, the number of selectable prefixed main laundry treatment programs is very high (for example there could be twenty-five selectable main laundry treatment programs, even if many of these main laundry treatment programs are actually only parts of other main laundry treatment programs), and causes, on the one hand, the graphic layout of the user control panel to be very complex, and, on the other hand, the operator to be confused about the right main laundry treatment program to be selected, so that the probability of selection of a wrong main laundry treatment program may be high. Therefore it happens often that operators remain frustrated in searching the right main laundry treatment program to be used when the number of selectable programs illustrated in the control panel is so high. Operator typically wishes to have a very intuitive control panel in order to be able to quickly select the right main laundry treatment program without effort and errors.

[0006] Moreover, a high number of laundry programs in the graphic layout of the control panel requires using expensive and complex input devices, such as step rotary selectors, which constrains the control panel to be used in a limited number of models of machines. A control panel provided with a step rotary selector associated with a prefixed number of programs, i.e. fourteen programs, is unsuitable to be mounted in a model of machine having a different number of programs, i.e. twenty-one, twenty-five programs. In this respect, it is well-established that laundry treating appliance manufactures would like to have an economic control panels which, on the one hand, are simple and intuitive to be used by the operator and, on the other hand, may be easily mounted in several different models of laundry treatment machines, irrespective of the number of main laundry treatment programs.

[0007] Furthermore, operator often needs to re-perform only a part, i.e. a specific treatment operating phase of a laundry treatment program, such as only a rinse phase or only a dry phase etc., because, for example, such specific laundry operation was not performed correctly/completely in a laundry treatment program previously performed. However, current command panels are configured to enable the operator to select only the whole prefixed laundry treatment program. Therefore, when the above disclosed need arises, operator has to re-select the previous laundry treatment program, that is therefore completely re-implemented by the machine, causing useless time, energy, and detergent consuming, etc.

[0008] Applicant conducted an in-depth study with the objective of providing a laundry treatment machine provided with an user control panel which:

- enables the operator to select only a part of the main laundry treatment program, i.e. a subset of laundry treatment operating phases of a main laundry treatment program, in order to cause the laundry treatment machine to perform only the part of the program that operator has selected;
- has a simplified graphic layout, wherein the number of main laundry treatment programs is reduced compared with the current control panels; in other words the control panel is "user-friendly", i.e. simple and intuitive to be used by the operator;
- is suitable to be used in different models of laundry treatment machines.

[0009] It is thus the object of the present invention to provide a solution which allows achieving the objectives indicated above.

DISCLOSURE OF INVENTION

[0010] According to the present invention, there is provided a laundry treatment machine comprising an outer
casing, a rotatable drum which is arranged in axially rotating manner inside the outer casing and is structured to receive the laundry to be washed and/or dried, a control panel configured to select a main laundry treatment program comprising a prefixed sequence of laundry treatment phases, wherein the control panel comprises a first input region configured to enable the operator to select a main laundry treatment program among a plurality of selectable prefixed laundry treatment programs; and a second input region configured to enable the operator to select a program-part of the selected laundry treatment program. The program-part comprises at least one laundry treatment phase comprised in a subset of laundry treatment phases of said laundry treatment program. The laundry treatment machine further comprises a control unit configured to control driving of the laundry treatment machine in order to selectively perform only the selected program part of the selected laundry treatment program.

[0011] The presence of the second input region in the control panel usefully enables the operator to directly and quickly select the specific phase of a selected program to be performed. It should be understood that the selected treatment phase of the selected program is not a common phase which can be used for any program, but is a part of the selected program, i.e. characterized by the prefixed control parameters of the selected program. In other words any selected treatment phase of the selected program is specifically related to the specific selected program; for example if the selected program is "COTTON DELICATE", and the selected phase is a rinsing phase, this rinsing phase is the same specific rinsing phase performed during the "COTTON DELICATE" program; if the selected program is "SYNTETIC LAUNDRY", and the selected phase is spin drying, the spin drying that is performed is the same that is performed in the "SYNTETIC LAUNDRY" program.

[0012] Preferably, the laundry treatment machine is a washing machine and/or laundry washing drying machine, and the second input region is configured to enable the operator to alternately select one of the following program-parts of a main laundry treatment program: a program-part comprising the dry phase and designed to cause, in usage, the laundry treatment machine to perform only the drying of the laundry based on the selected treatment program, or a program-part comprising the cool phase and designed to cause, in usage, the laundry treatment machine to perform only the cooling of the laundry based on the selected laundry treatment program.

[0014] The presence of the second input region having selectable program-parts allows eliminating many traditional programs in the first input region so that number of illustrated main program in the first input region is reduced. As a matter of the fact, many main sub-programs identified as main program in the control panel are deleted from the first region, but can be performed optionally by selecting the program-part in the second input region. Reduction of the number of main laundry treatment programs allows obtaining a simplified graphic layout and a user-friendly control panel, i.e. simple and intuitive to be used by the operator. Moreover, the second input region with program-parts causes the control panel to be suitable to be used in different models of laundry treatment machines.

[0015] Preferably, the first input region may comprise a main-programs displaying interface, designed to visualize main laundry treatment programs performable by the laundry treatment machine, and an input device designed to enable the operator to select one of said laundry treatment programs.

[0016] Preferably, the second input region of the control panel may comprise a program-parts displaying interface designed to provide/display the laundry treatment program-parts which, in usage, the operator may optionally select after the main laundry program has been selected via the first input region, and an input device designed to enable the operator to select one of said laundry program parts.

[0017] Preferably, the program-parts displaying interface comprises light indicators, which are designed to be turned on/off to signal/indicate the selected laundry program. Preferably, the program-parts displaying interface comprises light indicators, which are designed to be turned on/off to signal/indicate the selected program parts.

[0018] The present invention further relates to a method for controlling a laundry treatment machine comprising an outer casing, a rotatable drum which is arranged in axially rotating manner inside the outer casing and is structured to receive the laundry to be washed and/or dried, a control panel configured to select a main laundry treatment program, which comprises a prefixed sequence of laundry treatment phases; and a control unit configured to control driving of the laundry treatment machine. The control panel comprises a first input region configured to enable the operator to select a main laundry program.
Advantageously, if the inventive method according to the invention is applied to a laundry treatment machine which is a washing machine and/or laundry washing drying machine, the method may comprise the step of providing alternately to the control unit by means of the second input region, a signal based on the selection performed by the operator, indicative of:

- a program-part comprising the rinse phase and designed to cause, in usage, the laundry treatment machine to perform only the rinse of the laundry based on the selected laundry treatment program, or
- a program-part comprising the drain phase and designed to cause, in usage, the laundry treatment machine to perform only the drying of the laundry based on the selected laundry treatment program, or
- a program-part comprising the spin phase and designed to cause, in usage, the laundry treatment machine to perform only the spinning of the laundry based on the selected laundry treatment program; or
- a program-part comprising the spin and drain phases and designed to cause, in usage, the laundry treatment machine to perform only the spinning of the laundry based on the selected laundry treatment program.

Advantageously, if the inventive method is applied to a laundry treatment machine which is a drying machine and/or laundry washing drying machine, the method comprises the step of providing alternately to the control unit by means of the second input region, a signal based on the selection performed by the operator, indicative of:

- a program-part comprising the dry phase and designed to cause, in usage, the laundry treatment machine to perform only the drying of the laundry based on the selected treatment program, or
- a program-part comprising the cool phase and designed to cause in usage, the laundry treatment machine to perform only the cooling of the laundry based on the selected laundry treatment program.

Advantageously, in the inventive method, the first input region comprises a main-programs displaying interface designed to visualize main laundry treatment programs performable by the laundry treatment machine, and an input device designed to enable the operator to select one of said laundry treatment programs; the method comprising the step of selecting a laundry treatment program by the input device.

Advantageously, in the inventive method, the second input region of the control panel comprises a program-parts displaying interface designed to provide/display the laundry treatment program-parts which, in usage, the operator may optionally select after the main laundry program has been selected via the first input region, and an input device designed to enable the operator to select one of said laundry program parts; the method comprising the step of selecting a program- part by the input device.

Advantageously, the inventive method comprises the step of varying the said displayed program-parts based on the laundry treatment program selected by means of the first input region.

The present invention further relates to a control panel structured to be mounted in a laundry treatment machine and configured to select a main laundry treatment program comprising a prefixed sequence of laundry treatment phases; the laundry treatment machine comprising an outer casing, a rotatable drum which is arranged in axially rotating manner inside the outer casing and is structured to receive the laundry to be washed and/or dried; the control panel; comprising a first input region configured to enable the operator to select a main laundry treatment program among a plurality of selectable prefixed laundry treatment programs; and a second input region configured to enable the operator to select a program-part of the selected laundry treatment program, wherein the program-part comprises at least one laundry treatment phase comprised in a subset of laundry treatment phases of said laundry treatment program.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will be highlighted in greater detail in the following detailed description of some of its preferred embodiments, provided with reference to the enclosed drawings. In the drawings, corresponding characteristics and/or components are identified by the same reference numbers. In particular:

- Figure 1 shows schematically a perspective view of a laundry treatment machine according to the invention;
The user control panel of the present invention

DETAILED DESCRIPTION OF THE INVENTION

Figure 2 shows schematically a front view of a portion of the control panel of the laundry treatment machine of Figure 1;

Figures 3 and 4 show as much simplified flowcharts illustrating the steps for selecting a laundry treatment program and respectively, a laundry drying program, by means of the control panel of a laundry treatment machine made according to the present invention.

[0026] The user control panel of the present invention has proved to be particularly advantageous when applied to a laundry treatment machine, such as laundry washing machines, as described below. It should be understood that although the user control panel is described with reference to a laundry washing machine, other applications are contemplated. As can be appreciated, the present invention can be conveniently applied to other laundry treatment appliances, like for example laundry washing and drying machines (called also washer/driers) or laundry drying machines (called also drier), wherein one or more steps of introducing water and/or steam and/or hot/cold air inside a laundry tub is required.

[0027] With reference to Figure 1, a laundry treatment machine corresponding to a laundry washing machine 1 according to the present invention is described.

[0028] The laundry washing machine 1 is a front loading laundry washing machine. The present invention has proved to be particularly successful when applied to front loading laundry washing machines. It should in any case be understood that the present invention is not limited to this type of application. On the contrary, the present invention can be usefully applied to different types of washing devices, for example top loading laundry washing machines or top loading laundry washing and drying machines, or top loading drying machines.

[0029] The laundry washing machine 1 according to one embodiment of the invention comprises an external casing or casing 2, in which a washing tub (not illustrated) is provided, that contains a rotatable drum 3 (only partially illustrated), where the laundry to be washed can be loaded. The washing tub and the drum 3 both have preferably a substantially cylindrical shape. The casing 2 is provided with a loading/unloading door 4 which allows access to the washing tub and the drum 3. The washing tub is preferably suspended in a floating manner inside the casing, advantageously by means of a number of coil springs (not illustrated). The drum 3 may be advantageously rotated by an electric motor (not illustrated), which may preferably transmit the rotating motion to the shaft of the drum, advantageously by means of a belt/pulley system (not illustrated). In a different embodiment of the invention, the motor can be directly associated with the shaft of the drum.

[0030] In this instance the washing tub, the drum 3, the electric motor, belt/pulley system of the laundry washing machine 1 are well-known elements provided in well-known laundry machine and detailed description thereof will be omitted accordingly.

Figure 2 also shows a control unit 5 (illustrated schematically in Figure 1 with broken line) which is configured to control driving of the laundry washing machine 1. In a preferred embodiment, the control unit 5 is configured to memorize a plurality of laundry washing programs/cycles (for example in a memory unit not illustrated) and controls driving of the laundry washing machine 1 in order to perform a laundry washing program/cycle selected by the operator among the memorized laundry washing programs.

[0031] The laundry washing machine 1 further comprises a control unit 5 (illustrated schematically in Figure 1 with broken line) which is configured to control driving of the laundry washing machine 1. In a preferred embodiment, the control unit 5 is configured to memorize a plurality of laundry washing programs/cycles (for example in a memory unit not illustrated) and controls driving of the laundry washing machine 1 in order to perform a laundry washing program/cycle selected by the operator among the memorized laundry washing programs.

[0032] Terminology which will be used as follows is defined. The "laundry washing program" comprises a number of prefixed sequential laundry treatment phases which, in a laundry washing machine, typically comprise at least a main wash phase, one or more rinse phases, one or more drain phases, and one or more spin phases, while a main laundry treatment program for laundry washing and drying machine may further comprise one or more cool and/or dry phases. Each laundry treatment phase of a laundry treatment program is characterised by several laundry treating parameters, such as phase duration, water/air temperature, spin speed of the drum, amount of supplied water, etc., which are established/set based on the corresponding laundry treatment program. Therefore, as used herein, the term "laundry treatment program" refers to a memorized program comprising all the prefixed laundry treatment phases, wherein each phase is characterised by prefixed laundry treating parameters, while the term "laundry program part" refers to a laundry treatment phase comprised in the laundry program, or more specific laundry treatment phases which however correspond to a subset of the laundry treatment phases of the laundry treatment program. In other words, "a program part of the laundry program" does not comprise all the laundry treatment phases of the laundry program, but only a subgroup of them.

[0033] In accordance with one embodiment, laundry washing machine 1 is further provided with a control panel 6 comprising a first input region 7 which is configured to enable the operator to select a main laundry treatment program among a plurality of selectable prefixed laundry treatment programs, and a second input region 8 which is configured to enable the operator to select a program part of the selected laundry treatment program to be performed, afterward indicated as program-part.

[0034] In accordance with one exemplary embodiment illustrated in Figure 2, the first input region 7 of the control panel 6 advantageously comprises a main-programs display interface 9 designed to visualize main laundry washing programs performable by the laundry treatment machine 1, and an input device 10 designed to enable...
the operator to select one of laundry programs illustrated in the main-programs displaying interface 9. Referring to the example of Figures 1 and 2, the input device 10 is operatively connected with the control unit 5, and is structured to provide the control unit 5 with a signal codifying the laundry program selected by the operator.

[0035] In an exemplary embodiment illustrated in Figure 2, the main-programs displaying interface 9 has a graphic layout comprising a number of textual indication/symbols associated with the selectable laundry treatment programs. As shown in the example illustrated in Figure 2, textual indication/symbols may be preferable vertically superimposed one to each other in the control panel 6 in order to form a column of textual indication/symbols that in the example illustrated in Figure 2 comprise "Cottons", "Cotton ECO" "Synthetics", "Delicates", "Wool/Handwash", etc.... It should be understood that textual indication/symbols and their layout in main program displaying interface 9 of the control panel 6 is not limited to the example described/shown herein. Of course, other layouts and textual indications/symbols associated with other kind of main laundry treatment programs can be used in the main program displaying interface 9 of the control panel 6.

[0036] In one exemplary embodiment, the input device 10 can comprise, but is not limited to, a button which is arranged on the control panel 6 in first input region 7, in a position substantially aligned with the column of textual indications/symbols preferably, although not necessarily, under the latter.

[0037] In one embodiment, the main program displaying interface 9 may comprise light indicators 11, i.e. LEDs, which are designed to signal/indicate the laundry program selected by the operator via the input device 10. In an exemplary embodiment illustrated in Figure 2, the light indicators 11 are arranged on the main program displaying interface 9 of the control panel 6 next to the respective textual indications/symbols and are configured to be turned on/off based on the laundry program selected by the operator.

[0038] In accordance with one embodiment, the second input region 8 of the control panel 6 comprises a program-parts displaying interface 12 designed to display/show the laundry program-parts which, in usage, the operator may optionally select after having selected the main laundry program in the first input region 7, and an input device 13 designed to enable the operator to select one of laundry program-parts illustrated in the program-parts displaying interface 12.

[0039] In an exemplary embodiment, the program-parts displaying interface 12 has a graphic layout comprising a number of the textual indication/symbols associated with the selectable laundry program-parts. Textual indication/symbols may be arranged on the program-parts displaying interface 12 of the control panel 6 vertically superimposed one to each other in order to form a column of textual indication/symbols. Figure 2 illustrates a schematic of textual indication/symbols associated with the selectable laundry program-parts comprising "Drain & Spin", "Rinse Only", etc.... Of course, other layouts and/or textual indications/symbols associated with other kind of laundry program-parts can be used in the program-parts displaying interface 12. In one exemplary embodiment, the textual indications/symbols with the selectable laundry program parts are fixed on the in-view surface of the program-parts displaying interface 12, i.e. they may be printed on the surface such as to be invariable.

[0040] In accordance with another embodiment, the textual indication/symbols associated with the selectable laundry program-parts are displayed by the program-parts displaying interface 12 based on the selected main laundry program. For example, selection of a cotton program in a main-programs displaying interface 7 may cause the program-parts displaying interface 12 to visualize one or more prefixed operating parts of the cotton program, such as "rinse cotton phase" and "spin cotton phase". In accordance with an exemplary embodiment, the program-parts displaying interface 12 may comprise a display/screen arranged in the control panel 6 whereas, in usage, the control unit 5 may receive the selected laundry program from the first input region 7, determine the laundry program-parts to be selected based on the selected laundry treatment program, and command the display/screen corresponding to the program-parts displaying interface 12 to show the determined laundry program-parts.

[0041] In one exemplary embodiment, the input device 13 comprises but is not limited to, a button which is arranged on the control panel 6, preferably in a position substantially aligned with the column of textual indications/symbols preferably although not necessarily under the latter.

[0042] In one exemplary embodiment, the program-parts displaying interface 12 comprise light indicators 14, i.e. LED, which are designed to signal the laundry program-part selected by the operator via the input device 13. Figure 2 illustrates an example wherein the light indicators 14 are arranged on the program-parts displaying interface 12 next to the respective textual indications/symbols, and are configured to be turned on/off based on the laundry program-part selected by the operator.

[0043] In accordance with one embodiment, the control panel 6 may preferably, although not necessarily, comprise a number of additional input regions configured to enable the operator to set some laundry treatment parameters of the selected laundry program. In the example shown in Figure 2, the control panel 6 further comprises a third input region 15 configured to enable the operator to set a temperature of a selected laundry program, i.e. water temperature (laundry washing program) or air temperature (laundry drying program), a fourth input region 16 configured to enable the operator to set a drum speed, i.e. spin speed, of a selected laundry program, and a fifth input region 18 configured to enable the operator to set
In accordance with one exemplary embodiment, the third input region 15 may comprise a temperature displaying interface 19 that visualize a number of selectable temperatures, an input device 20, i.e. a button, to enable the operator to select a temperature among the provided temperatures. As can be appreciated, the selectable temperature may refer to a water temperature of the wash phase of a laundry washing program or to an air temperature of the drying phase of a washing and drying program or of a drying program.

Referring the fourth input region 16, it may comprise a drum speed displaying interface 21 that visualizes a number of selectable drum speeds, and an input device 22, i.e. a button, to enable the operator to select a drum speed among the illustrated drum speeds. As can be appreciated, the selectable drum speed may refer to a spin speed of the drum 3 during a wash phase of a laundry washing program or to a spin speed of the drum 3 during a dry phase of a laundry washing/drying program.

In accordance with one exemplary embodiment the fifth input region 18 may comprise a graphic interface 23 showing the programmed starting delay, and an input device 24, i.e. a button, configured to enable the operator to regulate starting delay.

In one exemplary embodiment, the temperatures displaying interface 19 and drum speed displaying interface 21 may comprise light indicators 25, i.e. LEDs, which are designed to signal the temperature and/or the drum speed selected by the operator via the input devices 20 and 22, respectively.

Figure 2 illustrates an example wherein the light indicators 25 are arranged on the temperatures displaying interface 19 and drum speed displaying interface 21 next to the respective temperatures and drum speeds and are configured to be turned on/off based on the temperature and the drum speed selected by the operator.

In one embodiment control panel 6 further comprises a power button 26 operatively coupled with the control unit 5 to turn on and off the laundry washing machine 1, and a start button 27 operatively coupled with the control unit 5 to start the selected program. Figures 3 shows a sequence of steps S1 to S6 of a method for controlling a laundry control machine 1 provided with the control panel 6 in accordance to an exemplary embodiment.

Referring with Figure 3, in step S1 the operator powers on the laundry washing machine 1 by pressing the power button 26. In step S2 the operator selects one of the main laundry programs illustrated in the main-programs displaying interface 12 by the input device 10, i.e. by pressing the button 10. In this step, the control unit 5 receives from the input device 10 a signal indicative of the main program selected by the operator and turns on the light indicator 11 associated to the selected laundry treatment program. In the example illustrated in Figure 3, it is supposed that operator presses the button 10 as many time as necessary to select the main laundry treatment program "Cotton".

In one embodiment wherein the program-part displaying interface 12 is provided with a display/screen, the control unit 5 may further determine the program-parts to be displayed based on the selected laundry program, and command the program part displaying interface 12 to visualize the determined program-parts. For example, as shown in Figure 3, if the operator selects the main program "Cotton washing program", the control unit 5 may command the program part displaying interface 12 in order to selectively provide/visualize the program-parts " Rinse Only" and Drain & Spin". Main laundry treatment program selected by the operator may be displayed time by time by turning on the corresponding light indicator 11 and turning off the remaining light indicators 11 arranged in the first input region 7.

In step S3, the operator selects the program-part by means of the input device 13, i.e. by pressing the button 13. Program-part selected by the operator may be signalled/displayed time by time by turning on the corresponding light indicator 14 and turning off the remaining light indicators 14.

In the example illustrated in Figure 3, it is supposed that the operator presses the button 13 as many times as necessary to select the program part corresponding to "Rinse only". Preferably, in step S4, the operator may select the temperature. In the example illustrated in Figure 3, it is supposed that the operator presses the button 20 as many times as necessary to select the temperature of 40°C. In accordance with one exemplary embodiment, control unit 5 may be configured to determine a prefixed temperature based on the selected main laundry treatment program and/or the selected program-part and providing/suggesting the prefixed temperature to the operator by turning on the light indicator 14 corresponding with the prefixed temperature. In accordance with this embodiment, the operator may select a new temperature which is different from the proposed temperature and the control unit 5 may set the temperature selected by the operator.

In accordance with another embodiment, control unit 5 may be configured to determine a number of prefixed temperatures based on the selected main laundry treatment program and/or the selected program-part and providing/suggesting the prefixed temperatures to the operator by turning on the light indicators 25 corresponding with the prefixed temperatures. In accordance with this embodiment, the operator can select only the temperatures proposed and the control unit 5 may set the program based on the selected temperature only if such temperature is comprised in the prefixed set of proposed temperatures.

Preferably, in step S5, the operator selects a drum speed. In the example illustrated in Figure 3, it is supposed that the operator presses the button 22 as many times as necessary to select the drum speed of 800 RPM. In accordance with one exemplary embodiment, control unit 5 may be configured to determine a
prefix drum speed based on the selected main laundry treatment program and/or the selected program-part and provide/suggest the determined prefixed drum speed to the operator by turning on the light indicator 25 corresponding with the prefixed drum speed. In accordance with this embodiment, the operator may select a drum speed which is different from the proposed drum speed and the control unit 5 may set the drum speed selected by the operator.

In accordance with another advantageous embodiment, control unit 5, may be configured to determine a number of drum speeds based on the selected main laundry treatment program and/or the selected program-part and provide/suggest the determined drum speeds to the operator by turning on the light indicators 25 corresponding with the determined drum speeds. In accordance with this embodiment, the operator can select only a drum speeds among the provided drum speeds and the control unit 5 may set the selected drum speed only if the latter corresponds to the prefixed provided drum speeds. In step S6, the operator presses the start button 27 to confirm the selections and to start the program. In this phase the control unit 5 controls the laundry washing machine 1 to perform only the program-part of the laundry treatment program. If the temperature/speed has been selected, the control unit 5 controls the laundry machine 1 to perform only the program part of the laundry program based on temperature and/or drum speed selected. In the case illustrated in Figure 3, the control unit 5 controls the laundry treatment machine 1 in order to perform only the rinse phase of the cotton program with a water temperature of 40 °C and a rotating speed of 800 RPM.

Figures 4 shows a flow chart of a different example of a method for controlling a drying machine, wherein: in the step S2 the operator selects a main drying program corresponding to a synthetic drying program by means of the first input region 7, in the step S3 the operator selects the program part corresponding to a "cool only", in the step S4 the operator selects a temperature corresponding to T1, in the step S5 the operator selects the drum speed S4, while in the step S6 the operator confirms the selected program/parameters so that drying machine 1 starts the program. In this case, the drying machine 1 performs only the cooling phase of the synthetics drying program, wherein the air temperature is T1 and drum speed S4.

It has thus been shown that the present invention allows all the set objects to be achieved. In particular, the presence of the second input region having selectable program-parts allows deleting many traditional programs from the first input region so that number of illustrated main program is reduced. As a matter of the fact, many main laundry treatment programs that in prior art machines are actually only sub-programs of another main program are deleted from the first region, but can be performed by optionally selecting the program parts in the second input region. Reduction of number of main programs allows obtaining a simplified graphic layout and a user-friendly control panel, i.e. simple and intuitive to be used by the operator. Moreover the second input region with program parts causes the control panel to be suitable to be used in different models of laundry treatment machines. Reduction of main laundry treatment program allows obtaining a simplified graphic layout and a user-friendly control panel, i.e. simple and intuitive to be used by the operator.

Moreover the second input region with program parts causes the control panel to be suitable to be used in different models of laundry treatment machines.

While the present invention has been described with reference to the particular embodiments shown in the figures, it should be noted that the present invention is not limited to the specific embodiments illustrated and described herein; on the contrary, further variants of the embodiments described herein fall within the scope of the present invention, which is defined in the claims.

1. Laundry treatment machine (1) comprising an outer casing (2), a rotatable drum (3) which is arranged in an axially rotating manner inside the outer casing (2) and is structured to receive the laundry to be washed and/or dried, a control panel (6) configured to select a main laundry treatment program comprising a prefixed sequence of laundry treatment phases, the laundry treatment machine (1) being characterized in that the control panel (6) comprises:

- a first input region (7) configured to enable the operator to select a main laundry treatment program among a plurality of selectable prefixed laundry treatment programs, and
- a second input region (8) configured to enable the operator to select a program-part of the selected laundry treatment program, wherein the program-part comprises at least one laundry treatment phase comprised in a subset of laundry treatment phases of said laundry treatment program, wherein the laundry treatment machine (1) further comprises a control unit (5) configured to control driving of the laundry treatment machine (1) in order to selectively perform only the selected program part of the selected laundry treatment program.

2. Laundry treatment machine according to claim 1, wherein the laundry treatment machine is a washing machine and/or laundry washing drying machine, and wherein the second input region (8) is configured to enable the operator to alternately select one of the following program-parts of a main laundry treatment program:
Laundry treatment machine according to any of claims from 1 to 4, wherein the second input region (8) of the control panel (6) comprises a program parts displaying interface (12) designed to provide/display the laundry treatment program parts which, in usage, the operator may optionally select after the main laundry program has been selected via the first input region (7), and an input device (13) designed to enable the operator to select one of said laundry program parts.

6. Laundry treatment machine according to claim 4, wherein the program displaying interface (9) comprises light indicators (11), which are designed to be turned on/off to signal/indicate the selected laundry program.

7. Laundry treatment machine according to claim 5, wherein the program parts displaying interface (12) comprises light indicators (11), which are designed to be turned on/off to signal/indicate the selected program parts.

8. Laundry treatment machine according to any of the previous claims, wherein the control panel (6) is configured to vary said displayed program parts based on the selected laundry treatment program.

9. Method for controlling a laundry treatment machine (1) comprising an outer casing (2), a rotatable drum (3) which is arranged in axially rotating manner inside the outer casing (2) and is structured to receive the laundry to be washed and/or dried, a control panel (6) configured to select a main laundry treatment program which comprises a prefixed sequence of laundry treatment phases, and a control unit (5) configured to control driving of the laundry treatment machine (1), the control panel (6) comprising a first input region (7) configured to enable the operator to select a main laundry treatment program among a plurality of selectable prefixed laundry treatment programs, and a second input region (8) configured to enable the operator to select a program-part of the selected laundry treatment program, wherein the program part comprises at least a laundry treatment phase comprised in a subset of the laundry treatment phases of the selected laundry treatment program, the method comprising the steps of:

- providing to the control unit (5) by means of said first input region (7), a signal indicative of a main treatment program selected by the operator among a plurality of selectable prefixed laundry treatment programs;
- providing to the control unit (5) by means of said second input region (8), a signal indicative of a program-part of the selected laundry treatment program; the program-part comprising at least one laundry treatment phase of a subset of laundry treatment phases of the selected laundry treatment program;
- driving the laundry treatment machine (1) via the control unit (5), based on the received signals so that only the selected program part of the selected treatment program is performed.

10. Method according to claim 9, wherein said laundry
treatment machine (1) is a washing machine and/or laundry washing drying machine, the method comprising the step of providing alternately to the control unit (5), by means of said second input region (8), a signal based on the selection performed by the operator, indicative of:

- a program-part comprising the rinse phase and designed to cause, in usage, the laundry treatment machine (1) to perform only the rinse of the laundry based on the selected laundry treatment program, or
- a program-part comprising the drain phase and designed to cause, in usage, the laundry treatment machine (1) to perform only the drying of the laundry based on the selected laundry treatment program, or
- a program-part comprising the spin phase and designed to cause, in usage, the laundry treatment machine (1) to perform only the spinning of the laundry based on the selected laundry treatment program; or
- a program-part comprising the spin and drain phases and designed to cause, in usage, the laundry treatment machine (1) to perform only the spinning of the laundry based on the selected laundry treatment program.

11. Method according to claim 9, wherein the laundry treatment machine is a laundry drying machine and/or laundry washing drying machine, the method comprising the step of providing alternately to the control unit (5), by means of said second input region (8), a signal based on the selection performed by the operator, indicative of:

- a program-part comprising the dry phase and designed to cause, in usage, the laundry treatment machine (1) to perform only the drying of the laundry based on the selected treatment program, or
- a program-part comprising the cool phase and designed to cause in usage, the laundry treatment machine (1) to perform only the cooling of the laundry based on the selected laundry treatment program.

12. Method according to any claims from 9 to 11, wherein the first input region (7) comprises a main-programs displaying interface (9) designed to visualize main laundry treatment programs performable by the laundry treatment machine (1), and an input device (10) designed to enable the operator to select one of said laundry treatment programs, the method comprising the step of selecting a laundry treatment program by the input device (10).

13. Method according to any claims from 9 to 12, wherein

the second input region (8) of the control panel (6) comprises a program-parts displaying interface (12) designed to provide/display the laundry treatment program-parts which, in usage, the operator may optionally select after the main laundry program has been selected via the first input region (7), and an input device (13) designed to enable the operator to select one of said laundry program parts, the method comprising the step of selecting a program-part by the input device (10).

14. Method according to claim 13, comprising the step of varying the said displayed program-parts based on the laundry treatment program selected by means of the first input region (7).
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