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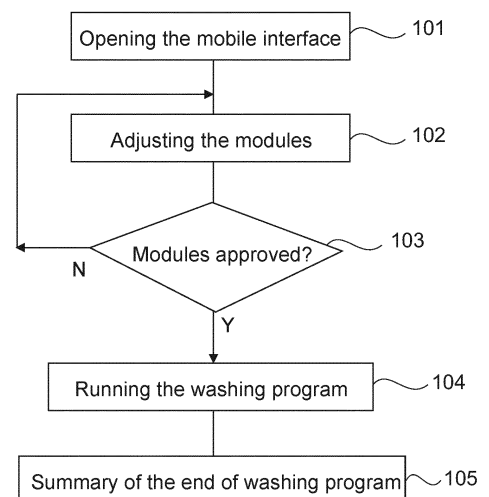
(71) Applicant: **Arçelik Anonim Sirketi**
34445 Istanbul (TR)

(72) Inventors:
• **GURAN, Ali Kerem**
34445 Istanbul (TR)
• **SAHIN, Umit**
34445 Istanbul (TR)
• **ORENGUL, Hakan**
34445 Istanbul (TR)
• **GOZLUKAYA, Eylem**
34445 Istanbul (TR)
• **AKTAS, Yakup**
34445 Istanbul (TR)

(54) **A WASHING MACHINE CONTROL METHOD**

(57) The present invention relates to a washing machine control method comprising a mobile interface suitable for enabling the user to select the washing program and the parameters thereof, and the control method comprises the steps of determining at least one input module enabling the user to select parameters according to the characteristics of the laundry to be washed in the washing machine via the mobile interface, at least one washing module enabling the user to select parameters according to the characteristics of the washing program and at least one output module enabling the user to select the parameters according to the characteristics desired to be obtained by the laundry at the end of the washing program, and transferring to the user the washing program consumption parameters obtained as a result of the selected input module, washing module and output module.

Figure 1



Description

[0001] The present invention relates to a washing machine control method wherein the user constructs the washing program with modules consisting of his/her own parameters with the "gamification" method.

[0002] Today, conventional washing machines have washing programs defined according to algorithms and parameters determined by certain standards and laboratory studies. In said washing programs, detergent type differences, laundry type selection, the hardness of the mains water used, changes in such parameters and similar parameters sometimes affect the washing programs, and therefore the washing machine cannot fully fulfill the performance expectations of the users. As a result, users become dissatisfied with the performance of the product.

[0003] Moreover, in the state of the art washing machines, the user usually does not know what algorithm the washing program he/she selects works with. Generally, the user cannot choose the amount of water, electricity and energy consumption, or the duration.

[0004] In the state of the art Chinese Patent Application No. CN111206377, a household appliance control method is disclosed, comprising the steps of obtaining the standard parameters of the target program by being adjusted according to the user parameters, displaying standard parameters and user parameters and differences therebetween on the household appliance, and deciding whether there is a technical problem.

[0005] The aim of the present invention is the realization of a washing machine control method wherein the user constructs the washing program with modules consisting of his/her own parameters.

[0006] The washing machine control method realized in order to attain the aim of the present invention, explained in the first claim and the respective claims thereof, comprises a mobile interface suitable for enabling the user to select the washing program and the parameters thereof, the control method further comprising the steps of determining an input module suitable for the user to select parameters according to the characteristics of the laundry to be washed in the washing machine via the mobile interface, a washing module suitable for the selection of parameters according to the characteristics of the washing program and an output module suitable for the selection of the parameters according to the characteristics desired to be obtained by the laundry at the end of the washing program, and transferring to the user the washing program consumption parameters determined as a result of the selected input module, washing module and output module.

[0007] By means of the present invention, the user can customize the washing program to be used as per his/her preferences while remaining within the safety limits. By means of the mobile interface organized as a mobile game, the user is enabled to use the washing machine while having more fun and to understand the working of the washing machine more clearly. Thus, the user is al-

lowed to consider the use of the washing machine a fun activity rather than a burden.

[0008] In an embodiment of the present invention, the input module comprises parameters related to the type of laundry to be washed, the amount of load and the type of cleaning agent.

[0009] In another embodiment of the present invention, the washing module comprises parameters related to the duration of the washing program, the amount of water to be used, the level of dirt removal and energy consumption.

[0010] In yet another embodiment of the present invention, the output module comprises parameters related to the spin-drying level, the rinsing time and the rinse water amount, and the wrinkle level.

[0011] Thus, the laundry washing program is divided into multiple parts, enabling the user to select the desired parameters, remove or move the same, or add additional steps. Moreover, a field of play is created on the mobile interface, allowing the user to create his/her own special washing program. The user can create his/her own washing program by adding, removing and changing the modules via the mobile interface.

[0012] In an embodiment of the present invention, as changes are made to the modules, information about the possible effects thereof is also presented to the user via the mobile interface. This information includes the possible energy consumption, water usage, operating time of the washing machine, washing performance of the washing machine and textile damage on the washed laundry and similar information which will be obtained with the parameter changes made in each module by the user. The user is asked whether each module is approved or not, and if approved, the washing program runs according to the determined parameters. The control method also suggests modules which optimize the intended purpose with parameter changes made by the user. In an embodiment of the present invention, when a parameter determined by the user becomes inappropriate, the control method further comprises the step of suggesting a module layout which optimizes such parameter.

[0013] In an embodiment of the present invention, the user arranges all the modules as per his/her preferences while remaining within the safety limits. In case of any breach of safety, the prepared module layout is not accepted and the user is requested to make changes.

[0014] By means of the present invention, the user sees the result of every change he/she makes via the mobile interface in the form of a summary containing information on energy use, water use, electricity consumption, washing performance, and textile damage. Thus, the user can decide as per his/her own interest.

[0015] In the preferred embodiment of the present invention, the mobile interface is an application running on the portable telephone or computer of the user.

[0016] By means of the present invention, a washing machine control method is realized, wherein the user constructs the washing program with modules consisting

of his/her own parameters with the "gamification" method.

[0017] A washing machine control method realized in order to attain the aim of the present invention is illustrated in the attached figure, where:

Figure 1 - is the view of the flow chart of a control method.

[0018] The washing machine control method of the present invention comprises a mobile interface suitable for enabling the user to select the washing program and the parameters thereof, the control method further comprising the steps of determining at least one input module enabling the user to select parameters according to the characteristics of the laundry to be washed in the washing machine via the mobile interface, at least one washing module enabling the user to select parameters according to the characteristics of the washing program and at least one output module enabling the user to select the parameters according to the characteristics desired to be obtained by the laundry at the end of the washing program, and transferring to the user the washing program consumption parameters obtained as a result of the selected input module, washing module and output module.

[0019] By means of the present invention, the user can customize the washing program to be used as per his/her preferences while remaining within the safety limits. By means of the mobile interface organized as a mobile game, the user is enabled to use the washing machine while having more fun and to understand the working of the washing machine more clearly. Thus, the user is allowed to consider the use of the washing machine a fun activity rather than a burden.

[0020] In an embodiment of the present invention, the input module comprises parameters related to the type of laundry to be washed, the amount of load and the type of cleaning agent.

[0021] In another embodiment of the present invention, the washing module comprises parameters related to the duration of the washing program, the amount of water to be used, the level of dirt removal and energy consumption.

[0022] In yet another embodiment of the present invention, the output module comprises parameters related to the spin-drying level, the rinsing time and the rinse water amount, and the wrinkle level.

[0023] Thus, the laundry washing program is divided into multiple parts, enabling the user to select the desired parameters, remove or move the same, or add additional steps. Moreover, a field of play is created on the mobile interface, allowing the user to create his/her own special washing program. The user can create his/her own washing program by adding, removing and changing the modules via the mobile interface.

[0024] In the embodiment of the present invention, the user opens the mobile interface (101) and adjusts the input, washing and output modules (102). Then, the consumption parameters which may occur at the end of the washing program are prepared according to the modules adjusted by the user and presented to the user's approval

(103). If the user approves said consumption parameters, the washing program runs with the parameters in the modules selected by the user (104) and the finished washing program is presented as a summary (105). If the user does not give his/her approval in the step where the consumption parameters are presented for approval, the method returns to the step where the modules are determined (Figure 1).

[0025] In an embodiment of the present invention, as changes are made to the modules, information about the possible effects thereof is also presented to the user via the mobile interface. This information includes the possible energy consumption, water usage, operating time of the washing machine, washing performance of the washing machine and textile damage on the washed laundry and similar information which will be obtained with the parameter changes made in each module by the user. The user is asked whether each module is approved or not, and if approved, the washing program runs according to the determined parameters.

[0026] In an embodiment of the present invention, the control method also suggests modules which optimize the intended purpose with parameter changes made by the user.

[0027] In another embodiment of the present invention, when a parameter determined by the user becomes inappropriate, a module layout which optimizes such parameter is suggested.

[0028] In an embodiment of the present invention, the user arranges all the modules as per his/her preferences while remaining within the safety limits. In case of any breach of safety, the prepared module layout is not accepted and the user is requested to make changes.

[0029] In the preferred embodiment of the present invention, the mobile interface is an application running on the portable telephone or computer of the user.

[0030] By means of the present invention, the user sees the result of every change he/she makes via the mobile interface in the form of a summary containing information on energy use, water use, electricity consumption, washing performance, and textile damage. Thus, the user can decide as per his/her own interest.

Claims

1. A washing machine control method **comprising** a mobile interface suitable for enabling the user to select the washing program and the parameters thereof, **characterized by** the steps of determining at least one input module enabling the user to select parameters according to the characteristics of the laundry to be washed in the washing machine via the mobile interface, at least one washing module enabling the user to select parameters according to the characteristics of the washing program and at least one output module enabling the user to select the parameters according to the characteristics de-

sired to be obtained by the laundry at the end of the washing program, and transferring to the user the washing program consumption parameters obtained as a result of the selected input module, washing module and output module.

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2. A washing machine control method as in Claim 1, **characterized by** the mobile interface which is designed as a mobile game.

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3. A washing machine control method as in Claim 1 or Claim 2, **characterized by** the input module which comprises parameters related to the type of laundry to be washed, the amount of load and the type of cleaning agent.

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4. A washing machine control method as in any one of the above claims, **characterized by** the washing module which comprises parameters related to the duration of the washing program, the amount of water to be used, the level of dirt removal and energy consumption.

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5. A washing machine control method as in any one of the above claims, **characterized by** the output module which comprises parameters related to the spin-drying level, the rinsing time and the rinse water amount, and the wrinkle level.

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6. A washing machine control method as in any one of the above claims, **characterized by** the steps of opening the mobile interface (101) and adjusting the input, washing and output modules (102), preparing the consumption parameters which may occur at the end of the washing program according to the modules adjusted by the user and presenting the same to the user's approval (103), in case the consumption parameters are approved, running the washing program with the parameters in the modules selected (104) and presenting the finished washing program as a summary (105).

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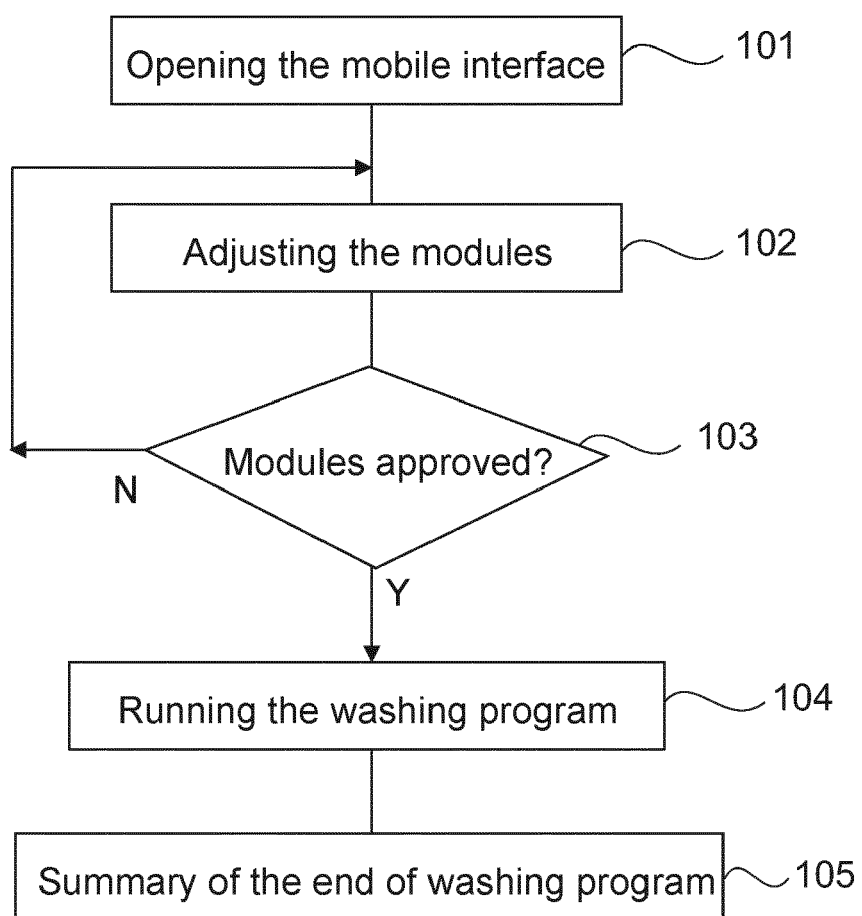
7. A washing machine control method as in Claim 6, **characterized by** the step of returning to the step (102) where the modules are determined, if the consumption parameters are not approved in the step the same are presented for approval.

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Figure 1





EUROPEAN SEARCH REPORT

Application Number

EP 22 21 0529

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2012/330442 A1 (HWANG JIN-SEONG [KR] ET AL) 27 December 2012 (2012-12-27) * paragraphs [0135] - [0167] * * paragraphs [0168] - [0178] * * figures 5-9 *	1-7	INV. D06F34/28 ADD. D06F33/32 D06F34/05
X	EP 3 312 330 A1 (QINGDAO HAIER WASHING MACH CO [CN]) 25 April 2018 (2018-04-25) * paragraphs [0027] - [0057] * * figures 1-3 *	1-4	D06F101/00 D06F101/04 D06F101/06 D06F101/10 D06F101/14 D06F105/58
A	EP 3 663 454 A1 (SAMSUNG ELECTRONICS CO LTD [KR]) 10 June 2020 (2020-06-10) * paragraphs [0030] - [0057] * * paragraphs [0130] - [0134] * * figures 1, 8 *	1	
A	WO 2019/105548 A1 (ELECTROLUX APPLIANCES AB [SE]) 6 June 2019 (2019-06-06) * page 6, line 3 - page 10, line 3 * * figures 1-7 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 30 May 2023	Examiner Weidner, Maximilian
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 22 21 0529

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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30-05-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2012330442 A1	27-12-2012	KR 20100084111 A	23-07-2010
		US 2012330442 A1	27-12-2012
EP 3312330 A1	25-04-2018	CN 106319832 A	11-01-2017
		EP 3312330 A1	25-04-2018
		JP 6713131 B2	24-06-2020
		JP 2018521743 A	09-08-2018
		KR 20180016599 A	14-02-2018
		US 2018191518 A1	05-07-2018
		WO 2016201908 A1	22-12-2016
EP 3663454 A1	10-06-2020	CN 111247284 A	05-06-2020
		EP 3663454 A1	10-06-2020
		KR 20190024671 A	08-03-2019
		US 2021062385 A1	04-03-2021
WO 2019105548 A1	06-06-2019	NONE	

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 111206377 [0004]