user to wait while the beverage machine is reheating the liquid. Only after the reheating process is completed, the user can again operate the beverage machine to obtain the hot beverage.

In view of the above-described disadvantages of the simple timer, it is desirable to provide more sophisticated system and a method that efficiently reduce the energy consumption of a beverage machine, but at the same time minimize the waiting time for a user, which occurs when the liquid in the beverage machine is reheated. Further, a system and method are desired, which can be implemented with any kind of beverage machines that comprise a heating-system.

EP 2027799 describes a standby mode in which the continuous flow heater and the pump are switched off and do not consume electrical power.

In a first aspect the present invention discloses a heating-energy saving system for use with a heating-system of a beverage machine. The system comprises a timer, a plurality of data registers, wherein each data register is active within a predetermined range of time, and wherein each data register can hold one of at least two values, a detection unit for detecting a usage of the beverage machine, a control unit adapted to determine the values of the plurality of data registers and to change the value of the active data register upon a detection by the detection unit. The control unit is further adapted to turn off the heating-system of the beverage machine, if it determines that the active data register holds a value equal to or lower than threshold value, and to turn on the heating-system of the beverage machine, if it determines that the active data register holds a value larger than the threshold value.

The above-described heating-energy saving system is a so-called self-learning energy preservation (SLEP) system. The system learns user behavior and adapts to it, by only heating the beverage machine when a user is anticipated. Upon detection of the usage of the beverage machine, the control unit changes the value of the active register in such a way that it reflects the usage of the beverage machine. After a certain learning period, when the plurality of data registers have been active a couple of times, the values in the individual data registers reflect and anticipate the usage of the beverage

machine within each predetermined range of time very well. By determining these values and comparing them to a threshold value, wherein the result of the comparison automatically triggers either the turning on or turning off of the heating-system, the

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Claims

1. Heating-energy saving system (10) for use with a heating-system (21) of a beverage machine (20), comprising

a timer (11);

a detection unit (13) for detecting a usage of the beverage machine (20), wherein it comprises:

a plurality of data registers (12a...12x), wherein each data register (12a...12x) is active within a predetermined range of time, and wherein each data register (12a...12x) can hold one of at least two values;

~~a detection unit (13) for detecting a usage of the beverage machine (20);~~

a control unit (14) adapted to determine the values of the plurality of data registers (12a...12x) and to change the value of the active data register (12a...12x) upon a detection by the detection unit (13), and

adapted to turn off the heating-system (21) of the beverage machine (20), if it determines that the active data register (12a...12x) holds a value equal to or lower than a threshold value, and to turn on the heating-system (21) of the beverage machine (20), if it determines that the active data register (12a...12x) holds a value larger than the threshold value.

2. Heating-energy saving system (10) according to claim 1, wherein

each of the plurality of data registers (12a...12x) is adapted to hold at least one integer value from 0 to 3;

the control unit (14) is adapted to increase the value of the active data register (12a...12x) by one increment, if a usage of the beverage machine (20) is detected by the detection unit (13);

the control unit (14) is adapted to decrease the value of the active data register (12a...12x) by one increment, if no usage of the beverage machine (20) is detected by the detection unit (13) for the predetermined range of time.

3. Heating-energy saving system (10) according to one of the claims 1 to 2, wherein the threshold value is 0.

determining (S12) the value of the active data register (12a...12x), and changing (S21) the value of the active data register (12a...12x) upon a detection in the detecting step (S20), and

turning off (S17) the heating-system (21) of the beverage machine (20), if it is determined (S13) that the active data register (12a...12x) holds a value equal to or lower than a threshold value, and turning on (S16) the heating-system (21) of the beverage machine (20), if it is determined (S13) that the active data register (12a...12x) holds a value larger than the threshold value.

15. A ~~C~~computer program product ~~for~~ implementing ~~the~~ a method ~~steps according to~~of claim 14, when executed on a ~~computer~~computing device.