July 2023

Zone selection depending on pot detection on 1 slider/+- HUI_ID-06248

Paolo Markovina

Zone selecting depending.

ID-06248

1.Summary of the disclosure

The invention discloses a method for the induction cooktop heating zone automatic preselection step for the cooking function (heating), based on the cookware placement detection on the defined cooking zone.

Based on the induction cooktop cooking zones configuration forms, the solution comprises the application of one low power induction sensory pulse system, could detect the cookware replacement time on the determinate cooking zone and cookware presence over the each cooking zone area, enabling by this the cooking zone automatic preselection for the cooking process, after while the same zone become available for the heating power level setting by HUI interface (the slider) and the user itself.

Accordingly, the invention implements a semi-automatic start of the induction cooking process, considering that a sensory system enables the cooking zone preselection (first step), afterwhile the user should perform the power level selection (second step), enables the cooking process beginning and performing.

2. Applicable Patent categorization

H05B6/06	Control, e.g. of temperature, of power;
H05B6/08	Control, e.g. of temperature, of power, using compensating or balancing arrangements;
H05B6/12	Cooking devices
H06B6/062	Control, e.g. of temperature, of power for cooking plates or the like;
H05B6/065	Control, e.g. of temperature, of power using coordinated control of multiple induction coils.
H05B6/1245	Cooking device with special coil arrangement;
G01V3/10	Electric or magnetic prospering or detecting using induction coil;
G01V3/104	Electric or magnetic prospering or detecting using several coupled or uncoupled coils;

3.Technology domain

The invention relates to an induction heating cooktop that automatically recognize placing of the cookware on the cooking zone, enabling the same for the heating power level setting by the user.

4. References

1. **EP2779787B1** METHOD OF DETECTING COOKWARE ON AN INDUCTION HOB, INDUCTION HOB AND COOKING APPLIANCE

Abstract

A method of detecting cookware on an induction hob including a plurality of induction heating coils each being adapted for heating, in the activated state, cookware placed on the induction hob. With the method, detecting cookware is based on signals generated by at least one active induction heating coil through the action of parasitic electromagnetic coupling effects in at least one inactive induction heating coil.

2. **US11064574B2** AN INDUCTION COOKING HOB INCLUDING A COOKING AREA WITH THREE OR MORE INDUCTION COILS AND A METHOD FOR CONTROLLING A COOKING AREA

Abstract

The present invention relates to an induction cooking hob including at least one cooking area, wherein the cooking area comprises at least three induction coils. The induction coils of at least one cooking area are arranged side-by-side and in series. Each induction coil of at least one cooking area has an elongated shape. The longitudinal axes of the induction coils within one cooking area are arranged in parallel. Each induction coil of the cooking area is associated with a dedicated induction generator. The induction generators are connected or connectable to at least one current line. The induction generators are connected to and controlled or controllable by at least one control unit. Requested powers for each used induction generator are adjusted or adjustable independent from each other by a user interface. Instant powers (iP) of the induction generators within a cycle pattern are controlled or controllable independent from each other by the control unit. Further, the present invention relates to a method for controlling a cooking area.

3. **EP3082378B1** COOKING FIELD DEVICE

Abstract

In order to provide a generic cooking field device with better properties in terms of comfort of use, a cooking field device with at least one variable cooking surface area is proposed, which present at least one partial area that is intended to carry out special heating processes, and with a control unit that is intended to automatically offer a catalog of several special heating processes to be selected if a detection is detected cooking battery supported on the partial area.

4.EP2506674B1 AN INDUCTION COOKING HOB WITH A POT DETECTION DEVICE

Abstract

The present invention relates to an induction cooking hob with a pot detection device. The induction cooking hob includes a cooking surface comprising one or more cooking zones. Each cooking zone comprises or corresponds with at least one induction coil. The induction cooking hob includes an input unit and a display unit. The input unit comprises an on-off key for activating the pot detection device. The pot detection device is provided for identifying the cooking zone(s) and/or induction coil(s) covered by a cooking vessel. The display unit is provided for indicating the cooking zone(s) and/or induction coil(s) covered by the cooking vessel. The input unit comprises at least one power switch for a manual setting of the power to be supplied to the identified cooking zone(s) and/or induction coil(s), respectively. Further, the present invention relates to a method for starting the operation of an induction cooking hob with a pot detection device.

5.Problem to be solved

An induction cooktop solution with a multiple independent cooking zones could not detect the placement of cookware over either a single cooking zone or the multiple cooking zones. Moreover, the induction cooktop could not activate the readiness of the individual cooking zones to set the power level and allow the cooking process to start because the cooking zones would be selected previously.

Accordingly, a function to detects the placement of the cookware on the individual cooking zone(s) needs to be incorporated into the induction cooktop control system, to enable an automatic preselection function for an individual cooking zone that would allow to appliance user to set the required cooking zone heating level enabing the cooking process start and continuity.

6. Proposed solution

The invention discloses a method for an automatically preselecting of an induction cooktop cooking zone for the cooking, based on the property that the cooking zone can detect the placement of cookware above it.

Accordingly, the detection of the placement of the cookware is enabled by a short low-power induction coil pulse signal that is repeated frequently, in time scale, in order to detect the placement and presence of the cookware on the cooking zone itself.

When the cookware is placed on the cooking zone, the same step becomes automatically indicated on the user interface unit (HUI),as the zone available for the heating power level setting by user, thereby enabling the initialization of the cooking process.

Moreover, the invention provides a method for initiating a semi-automatic start of the cooking process on the determinate cooking zone, and such method reduces the human involvement in selecting of an appropriate cooking zone and the amount of labor and time for the cooking zone selection, since it is already preselected by the cookware placement access.

7. Description

The invention relates to the automatic preselection of the induction cooktop heating zone, by the cookware placement onto same, which enables to remove one step of user interaction with a preselected cooking zone and reduce its activity in deciding which cooking zone is preferable for the use and its switching for cooking (heating) process, since that cookware placement step on the cooking zone substitutes these actions, living for the user the only step of the cookware (considered, loaded with food) placement onto preferred cooking zone through which action the same cooking zone becomes a preselected for the cooking (heating) process.

The pot (cookware) detection feature is obtainable by the induction coil impulse signal, removes a repetitive step from consumers workflow (Fig.1). In accordance, an induction cooking hob includes a cooking surface comprises one or more cooking zones. Each cooking zone comprises or corresponds with at least one induction coil (see Fig.2).

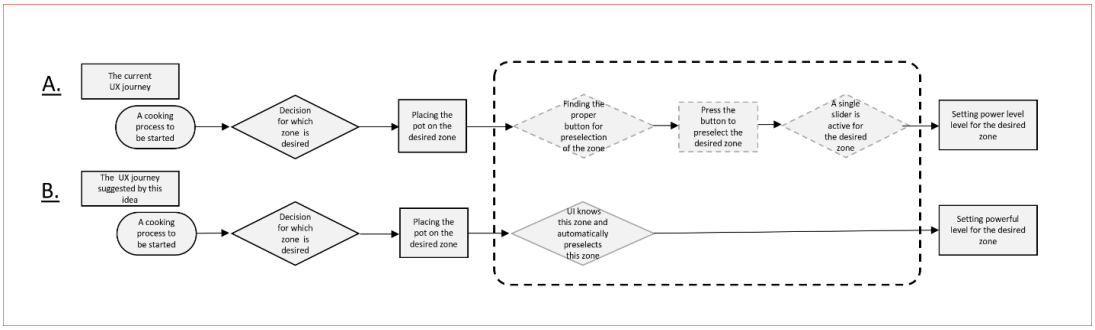

Fig.1. Block diagram of an induction cooktop zone power level setting without and with preselection characterstic and missing steps

Accordingly, upon the cookware placement onto cooking zone, the specific cooking zone is signed onto user interface unit (HUI) as a preselected zone (Fig.3, point 2) and available for the cooking process initialization, upon the heating power level should be set (Fig.3, point 3 and 4) by the appliance user.

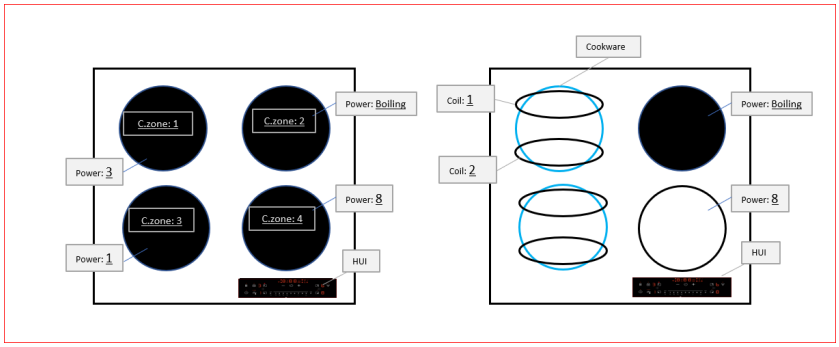

Fig.2. Induction heating cookptop with heating zones and coils (the number of coils than number of cooking zones)

Moreover, a possible HUI feature for the cooking zone default setting of the specified power level, could enable to user an additional fast reaction step for the cooking process performing, considering a cookware with an specific applied food load .

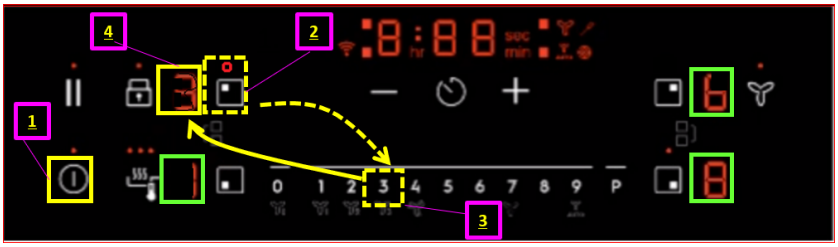

Fig.3. User interface unit for the induction heating cookptop with signed preselected cooking zone(2) and appropriate power level(4) obtained by the power level setting on the UI slider(3)

Accordingly, an induction cooking hob includes a HUI input unit with: the display section (upper section) and the power level slider (lower section) (see:Fig.3). The HUI input section comprises an on-off key (Fig.3; point 1) for activating the pot detection device, enables an identification and indication of the relative cooking zone (Fig.3; point 2 - red point) and/or induction coil(s) covered by a cooking vessel (cookware).
Moreover, the display section provides for preselected (indicated) cooking zone(s) and/or induction coil(s) the indication of the power level set, performed by the user touching an according key of the HUI slider (Fig.3, points 3 and 4) remains visible on the display unit through the cooking process period.