★★★ ＜第24回知的財産翻訳検定試験【第13回和文英訳】＞ ★★★
≪１級課題-電気・電子工学-≫

【問１】

1. An AC arc welding device comprising:

a welding control unit;

a memory unit;

an AC frequency setting unit that sets an AC frequency;

a reversed polarity period setting unit that sets a reversed polarity period;

a calculating unit that calculates a positive polarity period and a reversed polarity period to be output to the welding control unit; and

a selecting unit that selects one of a plurality of outputs of the memory unit that is to be output therefrom to the calculating unit,

wherein the welding control unit causes a flow of a positive polarity base current that is lower than a peak current in the positive polarity period before a polarity reversal at which the positive polarity period finishes, and causes a flow of a reversed polarity base current that is lower than a peak current in the reversed polarity period before a polarity reversal at which the reversed polarity period finishes,

wherein the memory unit stores

(a) a plurality of combinations of a positive polarity base ratio and a reversed polarity base ratio, the positive polarity base ratio being a ratio of a period in which the positive polarity base current is conducted in the positive polarity period, and the reversed polarity base ratio being a ratio of a period in which the reversed polarity base current is conducted in the reversed polarity period, or

(b) a plurality of combinations of a positive polarity peak period, a positive polarity base period, a reversed polarity peak period, and a reversed polarity base period, the positive polarity peak period being a period in which the peak current is conducted in the positive polarity period, the positive polarity base period being a period in which the positive polarity base current is conducted, the reversed polarity peak period being a period in which the peak current is conducted in the reversed polarity period, and the reversed polarity base period being a period in which the reversed polarity base current is conducted, and

wherein the selecting unit is configured to select one of the plurality of combinations stored in the memory unit based on an inductance on a welding load side.

【問２】

In a conventional monitoring system, if the system includes a sensor installed at a gate of a parking area, for example, the system can detect a car at the gate, cause a moving robot to arrive at the gate where the sensor is installed, process pictures taken on the way by the robot to determine the car body color, and transmit the information to a center. In so doing, the monitoring system preferably takes pictures to obtain information useful to identify the car.

However, the car can be parked differently depending on the character of a thief, the parking area situation, or the like. Thus, it is impossible to expect how the car will be parked in advance. Therefore, it may be difficult for the moving robot to photograph the car to determine the car body color.

For example, even if the robot photographs a car using a color visible-light camera to determine the body color, a white car may be determined to be an orange one when it is photographed in the evening. This is because pictures taken during daytime and in the evening may show different color tones due to the influence of sunlight. There is a further problem in that a picture taken at night may show a different impression tone from the color seen by the human eye. This is because of light components from illumination devices installed in the parking area and from illuminated advertisement devices installed on the external walls of neighboring commercial facilities.

【問３】

When supercooling break is detected, the food temperature Th_2 immediately after the supercooling break corresponds to the freezing point of the food. Based on this temperature, the target temperature Tc_set in the lower-tier container of the chilled chamber is set to a temperature capable of melting ice crystals to a degree that does not cause cell damage, for example Th_2 + 2°C (S9). Note that such an in-chamber set temperature capable of melting ice crystals to a degree that does not cause cell damage is referred to as an ice crystal melting in-chamber temperature.

Next, until melting of the ice crystals that have been generated in the food is finished and the food temperature begins to rise, for example, until the food temperature Th rises to a temperature Th_2 + 1°C which is lower than the ice crystal melting in-chamber temperature and is used for judging melting of ice crystals (S10), the target temperature Tc_set of the lower-tier container of the chilled chamber is kept at Th_2 + 2°C.

To generate this state, the temperature in the lower-tier container of the chilled chamber is raised, by keeping the damper in a fully-closed state, for example. When the food temperature Th after supercooling break becomes not less than Th_2 + 1°C, the control process of steps S1 to S8 is continued again to start supercooling and confirm whether or not supercooling break has occurred.