受験番号：24IPE016

問１）

What is claimed is:

1. An alternating-current arc welding apparatus, comprising:

a welding control unit;

a storage unit;

an alternating-current frequency setting unit that sets an alternating-current frequency;

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

a calculation unit that calculates a normal polarity period and a reverse polarity period, and outputs the normal polarity period and the reverse polarity period to the welding control unit; and

a selection unit that selects one of a plurality of outputs from the storage unit, and outputs the one of the plurality of outputs to the calculation unit,

wherein the welding control unit is configured to cause a base current of normal polarity lower than a peak current of the normal polarity period to flow before reversal of polarity when the normal polarity period ends, and to cause a base current of reverse polarity lower than a peak current of the reverse polarity period to flow before reversal of polarity when the reverse polarity period ends, and

wherein the storage unit is configured

(a) to store a plurality of combinations of a base ratio of normal polarity, which is the ratio of a period in which the base current of normal polarity flows in the normal polarity period, and a base ratio of reverse polarity, which is the ratio of a period in which the base current of reverse polarity flows in the reverse polarity period, or

(b) to store a plurality of combinations of a peak period of normal polarity, which is a period in which the peak current in the normal polarity period flows, a base period of normal polarity, which is a period in which the base current of normal polarity flows, a peak period of reverse polarity, which is a period in which the peak current in the reverse polarity period flows, and a base period of reverse polarity, which is a period in which the base current of reverse polarity flows, and

wherein the selection unit is configured to select, based on an welding-load-side inductance, one of the plurality of combinations stored in the storage unit.

問２）

In conventional monitor systems, for example, when a sensor has been set at a gate of a parking lot, a car is detected at the gate, and a movable robot arrives at the gate where the sensor is set. The robot can identify the color of the body of the car by processing images obtained by imaging while moving to the gate, and send information about the color to a center. In this case, it is preferable that the monitor system performs imaging so that useful information for identifying the car is obtainable.

However, the method for parking a car depends on the character of a thief, the condition of a parking lot or the like, and is not predictable. Therefore, in some cases, it is difficult for the movable robot to image a car so that the color of the body of the car is distinguishable.

For example, even when a car is imaged by using a visible light camera for color imaging to identify the color of the body of the car, the hue of an image obtained in the daytime and the hue of an image obtained at dusk are different because of the effect of sun light. Therefore, even if the color of the car is white, if the car is imaged at dusk, the color may be identified as orange. Further, there has been a problem that the hue may give a different impression from a color observed by human eyes also at night depending on a lighting device set in a parking lot and light components from a decorative advertisement apparatus set on an outer wall of nearby commercial facilities.

問３）

Next, when cancellation of supercooling is detected, temperature Th_2 of the food immediately after cancellation of supercooling corresponds to the freezing point of the food. Target temperature Tc_set in a lower container of a chilled room is set, based on this temperature, at a temperature, e.g., Th_2+2 [°C], at which ice crystals are meltable in such a manner that cells of the food are not damaged (S9). Here, a temperature set for the inside of the refrigerator so that ice crystals are meltable in such a manner that cells of the food are not damaged will be referred to as an ice crystal melt refrigerator inside temperature.

Next, when melt of ice crystals occurred in the food ends and the temperature of the food starts rising, target temperature Tc_set of the lower container of the chilled room is maintained at Th_2+2 [°C], for example, until the temperature Th of the food rises to Th_2+1 [°C], which is lower than the ice crystal melt refrigerator inside temperature, and at which melt of ice crystals is judged (S10). To form this condition, the temperature of the lower container of the chilled room is increased, for example, by keeping a damper in a fully opened state. When the temperature Th of the food after

cancellation of supercooling becomes Th_2+1 [°C] or higher, presence of introduction of supercooling and cancellation of supercooling is continuously checked again by performing control in S1 through S8.