referred to as "solar-generated power") as AC power and DC power.

Fig. 3 is a block diagram showing the configuration of the powercon 24.

The powercon 24 is provided with a DC/DC converter 24A that converts DC power generated by the solar cells 14 so as to achieve a voltage of a predetermined magnitude and a DC/AC converter 24B that converts the DC power output from the DC/DC converter 24A to AC power.

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Then, the DC power output from the DC/DC converter 24A is supplied to electric power loads that utilize the DC power via the ~~DC~~AC lines ~~28~~30. On the other hand, the AC power output from the DC/AC converter 24B is transmitted to the power grid 22 via the DC lines 28, making it possible to sell the electrical power. In the first embodiment, the voltage of the DC power output from the powercon 24 is assumed to be 315 V as an example, and the voltage of the AC power output from the powercon 24 is assumed to be 200 V as an example.

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In the case of the related art, DC power output from solar cells 14 is converted to AC power temporarily, is subsequently converted again to DC power, and is then supplied to the electric power loads that utilize the DC power. However, because such a method involves conversion loss each

it is also possible to output AC power from the powercon 124, solar-generated power that is not consumed at the electric power loads can also be transmitted to the power grid 122 (to be sold). Therefore, with the mechanical parking apparatus 10 according to the fourth embodiment, it is possible to efficiently utilize the solar-generated power.

{0109}

Note that the electric power loads that utilize DC power refer to, for example, a raising/lowering motor 132 for raising/lowering the pallets between the entry level and the storage levels, a turning motor 134 for turning the pallets at the entry level, and so forth. The DC power is converted to, for example, three-phase AC power by motive-power ~~power source~~ units 136A and 136B having a so-called inverter function and is utilized by the raising/lowering motor 132 and the turning motor 134. The raising/lowering motor 132 and the turning motor 134 can perform regenerative operation and generate regenerated power during regenerative operation. Note that, in addition to the raising/lowering motor 132 and the turning motor 134 to which electrical power is supplied via the motive-power ~~power source~~ units 136A and 136B having the inverter function, the electric power loads that utilize DC power include other electric power loads such as an electric power load to which DC power is supplied without using an inverter and so forth.

powercon 124 ~~via the motive-power power source unit 140~~. Therefore, with the mechanical parking apparatus 10 according to the fourth embodiment, it is possible to prevent the influence of supplying the DC power to the electric power loads from spreading to the power grid 122. Note that the voltage of the DC power output from the powercon 124 in the DC power source mode is set within the range of voltages that allows the operation of the motive-power power source unit 140.

{0117}

Fig. 23 is a diagram showing ON/OFF states of the switches 150A and 150B and the flow of electrical power in the case in which regenerative operation is performed in the DC power source mode. Note that Fig. 23 shows, as an example, a case in which regenerated power is generated by the raising/lowering motor 132.

When the regenerative operation is performed in the DC power source mode, because the voltages of the DC lines 128 increase due to the regenerated power, the DC power from the powercon 124 does not reach the motive-power power source unit 140. On the other hand, the regenerated power is consumed at the resistor 144 (damping resistance). When the regenerative operation is performed in the DC power source mode, as shown in Fig. 23, because the solar-generated power, which is the DC power from the powercon 124, is neither consumed at the

resistor 144.

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In addition, in general, the solar-generated power transmitted to the power grid 122 from the powercon 124 as AC power has a higher voltage than the operating voltage of the motive-power power source unit 140. Because of this, if the voltages of the DC lines 128 become equal to or greater than the operating voltage of the motive-power power source unit 140 due to the influence of the powercon 124, this causes a voltage abnormality, and the output voltage of the motive-power power source unit 140 becomes ~~0~~O V (Over Voltage: excess voltage), which triggers a protection circuit, and the function of the motive-power unit is stopped. However, by cutting the connection between the powercon 124 and the motive-power power source unit 140 by means of the switch 150A while AC power is being transmitted to the power grid 122 from the powercon 124, as in the grid interconnected mode, it is possible to prevent the function of the motive-power power source unit 140 from being stopped due to the influence of the powercon 124.

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In addition, in the case in which the operation of the mechanical parking apparatus 10 is stopped, whether or not the regenerated power is generated is the only difference as compared with the example shown in Fig. 24, and ON/OFF states

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In addition, the mechanical parking apparatus 10 according to the fifth embodiment performs control so that the charged power is transmitted to the power grid 122 (hereinafter referred to as "DC power-source power generation mode").

Fig. 30 is a diagram showing ON/OFF states of the switches 150A (switches 150AA and 150AB in the case of the fifth embodiment) and 150B and the flow of electrical power in the DC power-source power generation mode. Note that, in the example shown in Fig. 30, two DC lines 128A and 128B, in which the directions of electrical power flow are individually restricted by diodes 146A and 146B and in which the switches 150AA and 150AB are provided, are provided between the powercon 124 and the secondary battery 160 and between the powercon 124 and the electric power loads. Although the diodes 146A and 146B allow electrical power to flow in opposite directions from each other, in practice, the DC lines 128A and 128B allow the electrical power to flow in both directions. Specifically, the DC line 128A allows the electrical power to flow from the powercon 124 to the secondary battery 160 and the electric power loads, and the DC line 128B allows the electrical power to flow from the secondary battery 160 to the powercon 124.

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