What is claimed is:

1. A charging system for a battery swapping station or an energy storage station, comprising at least two charging modules, a battery charging port and a control module, wherein the at least two charging modules are connected in parallel;

the control module is used to deploy different numbers of the charging modules and/or control output power of each of the charging modules and charge a quick-swap battery through the battery charging port;

further comprising a DC energy supply module, wherein, the DC energy supply module comprises a power generation device, a unidirectional DC/DC converter, an energy storage device and a bidirectional DC/DC converter, an input end of the unidirectional DC/DC converter is connected to the power generation device, an output end of the unidirectional DC/DC converter is connected to the energy storage device and the charging modules, one end of the bidirectional DC/DC converter is connected to the energy storage device, an other end of the bidirectional DC/DC converter is connected to the power generation device and the charging modules; the unidirectional DC/DC converter is used to adjust voltage of direct current output by the power generation device; the bidirectional DC/DC converter is used to adjust voltage of direct current output by the unidirectional DC/DC converter or the bidirectional DC/DC converter is used to adjust voltage of direct current output by the energy storage device; or,

a DC energy supply module, wherein, the DC energy supply module comprises a power generation device and a unidirectional DC/DC converter, an input end of the unidirectional DC/DC converter is connected to the power generation device, an output end of the unidirectional DC/DC converter is connected to the charging modules, and the unidirectional DC/DC converter is used to adjust voltage of direct current output by the power generation device.

2. The charging system according to claim 1, wherein the control module is used to deploy different numbers of the charging modules and control the output power of each of the charging modules according to a charging demand of the quick-swap battery, and charge the quick-swap battery through the battery charging port so as to meet the charging demand.

3. The charging system according to claim 2, wherein each of the charging modules has a first output interface, the first output interfaces of the at least two charging modules are connected in parallel through a current divider or a contactor, and the control module deploys different numbers of the charging modules by controlling the current divider or the contactor.

4. The charging system according to claim 2, wherein the control module is further used to disconnect electric connection between the charging module and the battery charging port and instruct the deployed charging module to stop outputting after charging of the quick-swap battery is completed.

5. The charging system according to claim 4, further comprising a monitoring module, a calculating module and a centralized regulation and control module, wherein,

the monitoring module is used to monitor a current battery parameter of each of the quick-swap batteries in the station;

the calculating module is used to obtain a charging demand of each of the quick-swap batteries in the current station according to the current battery parameter;

the centralized regulation and control module is used to instruct the control module to deploy different numbers of the charging modules for the battery charging port corresponding to each of the quick-swap batteries and adjust the output power of each of the deployed charging modules according to the charging demand of each of the quick-swap batteries, so that each of the battery charging ports outputs output power suitable for charging each of the quick-swap batteries.

6. The charging system according to claim 5, further comprising an AC energy supply module, wherein,

the AC energy supply module comprises an AC/DC converter, an input end of the AC/DC converter is connected to a power grid, an output end of the AC/DC converter is connected to the charging modules, and the AC/DC converter is used to convert alternating current output by the power grid into direct current and adjust voltage of the direct current.

7. The charging system according to claim 5, further comprising an AC energy supply module and an energy storage and supply module, wherein the AC energy supply module comprises a bidirectional AC/DC converter, and the energy storage and supply module comprises an energy storage device and a bidirectional DC/DC converter;

an alternating current end of the bidirectional AC/DC converter is connected to a power grid, a direct current end of the bidirectional AC/DC converter is connected to the charging modules and one end of the bidirectional DC/DC converter, the one end of the bidirectional DC/DC converter is also connected to the charging modules, and the other end of the bidirectional DC/DC converter is connected to the energy storage device;

the bidirectional AC/DC converter is used to convert alternating current output by the power grid into direct current and adjust voltage of the direct current; or the bidirectional AC/DC converter is used to convert direct current output by the charging modules and/or direct current output by the bidirectional DC/DC converter into alternating current and adjust voltage of the alternating current;

the bidirectional DC/DC converter is used to adjust voltage of direct current output by the energy storage device; or the bidirectional DC/DC converter is used to adjust voltage of direct current output by the bidirectional AC/DC converter.

8. The charging system according to claim 6, wherein,

the monitoring module is further used to monitor a current state of the power grid;

when the current state of the power grid is a power consumption valley, the centralized regulation and control module is further used to instruct the control module to control the charging modules to only receive electric energy output by the power grid and increase output power of the output port, or meanwhile instruct the energy storage device to receive electric energy output by the power grid;

when the current state of the power grid is a power consumption peak, the centralized regulation and control module is further used to instruct the control module to control the power grid to stop outputting electric energy to the charging modules,

and control the energy storage device to output electric energy to the charging modules; or,

the centralized regulation and control module is further used to, when the current state of the power grid is the power consumption peak and the number of the quick-swap batteries that have completed charging currently reaches a threshold of full-charge batteries, instruct the control module to control the power grid to stop outputting electric energy to the charging modules, and meanwhile control the energy storage device and a first number of the quick-swap batteries to output electric energy to the power grid.

9. The charging system according to claim 7, further comprising a DC energy supply module, wherein,

the DC energy supply module comprises the power generation device and the unidirectional DC/DC converter, the input end of the unidirectional DC/DC converter is connected to the power generation device, and the output end of the unidirectional DC/DC converter is connected to the charging modules, one end of the bidirectional DC/DC converter and a direct current end of the bidirectional AC/DC converter;

the unidirectional DC/DC converter is used to adjust the voltage of the direct current output by the power generation device;

the bidirectional DC/DC converter is further used to adjust the voltage of the direct current output by the unidirectional DC/DC converter;

the bidirectional AC/DC converter is further used to convert the direct current output by the unidirectional DC/DC converter into alternating current and adjust the voltage of the alternating current.

10. The charging system according to claim 9, wherein,

the monitoring module is further used to monitor a current state of the power grid;

when the current state of the power grid is a power consumption valley, the centralized regulation and control module is further used to instruct the control module to control the charging modules to only receive electric energy output by the power grid, control the power generation device to only output electric energy to the energy storage device, and increase output power of the output port, or meanwhile instruct the energy storage device to further receive electric energy output by the power grid;

when the current state of the power grid is a power consumption peak, the centralized regulation and control module is further used to instruct the control module to control the power grid to stop outputting electric energy to the charging modules, and control the energy storage device and/or the power generation device to output electric energy to the charging modules and/or the power grid; and/or,

the centralized regulation and control module is further used to, when the number of the quick-swap batteries that have completed charging currently reaches a threshold of full-charge batteries, instruct the control module to control the power grid to stop outputting electric energy to the charging modules and meanwhile control the energy storage device, the power generation device and a first number of the quick-swap batteries to output electric energy to the power grid.

11. The charging system according to any one of claims 1–10, wherein the at least

two charging modules are conventional charging modules; the charging system further comprises at least one redundant charging module, wherein the redundant charging module is connected to the conventional charging modules in parallel and is connected to each of the battery charging ports separately through switches.

12. The charging system according to claim 11, wherein the control module is used to deploy the conventional charging module in a conventional charging mode and charge the quick-swap battery through the battery charging port;

the control module is further used to deploy the redundant charging module in a special charging mode and charge the quick-swap battery through the battery charging port.

13. The charging system according to claim 12, wherein the special charging mode includes the case that one of the conventional charging modules fails and the control module is used to connect one of the switches to deploy the redundant charging module for charging the quick-swap battery corresponding to the faulty conventional charging module through the battery charging port; and/or,

the special charging mode includes the case that the control module receives an accelerated charging instruction and the control module is used to deploy the redundant charging module and at least one of the conventional charging modules for charging the quick-swap battery that needs accelerated charging together through the battery charging port.