CLAIMS

We claim:

1. A swap station (101) for swapping at least one battery with a device, the swap station comprising at least one portable battery station (102), the at least one portable battery station (102) comprises:

a plurality of battery conditioning bays (201);

a power converter (203) for enabling the swap station (101) to connect to at least one external power supply through a power interface (207);

at least one bi-directional power supply unit (208) for

providing power to at least one battery pack present in the at least one of the plurality of battery conditioning bays (201) from at least one of

the at least one external power supply; and

at least one other battery pack present in at least one other of the plurality of battery conditioning bays (201);

providing power from the at least one battery pack present in the at least one of the plurality of battery conditioning bays (201) to at least one external load connected to the swap station (101);

a communication interface (205) for enabling the swap station (101) to communicate with at least one external entity; and

a controller (206) configured for:

determining at least one of the plurality of battery conditioning bays (201), where at least one used battery pack from the device is to be placed;

determining at least one new battery pack present in the at least one other of the plurality of battery conditioning bays (201) for use in the device;

unlocking a used battery pack in the device on performing authentication;

conditioning the at least one battery pack in the at least one of the plurality of battery conditioning bays (201); and

swapping the at least one used battery pack and the at least one new battery pack using at least one of an automated system, a semi-automated system; and a manual means.

2. The swap station, as claimed in claim 1, wherein the controller (206) is configured for performing the authentication of a user of the device, the device, and the used battery pack.

3. The swap station, as claimed in claim 1, wherein the plurality of battery conditioning bays (201) is configured for charging the at least one battery pack present in the plurality of battery conditioning bays (201).

4. The swap station, as claimed in claim 1, wherein the plurality of battery conditioning bays (201) is configured for conditioning the at least one battery pack present in the plurality of battery conditioning bays (201).

5. The swap station, as claimed in claim 1, wherein the plurality of battery conditioning bays (201) is configured for transferring energy from the at least one battery pack present in the plurality of battery conditioning bays (201) to at least one external load.

6. The swap station, as claimed in claim 1, wherein the at least one portable battery station (102) further comprises a lock for locking the at least one battery pack in the plurality of battery conditioning bays (201).

7. The swap station, as claimed in claim 1, wherein the at least one portable battery station (102) further comprises a temperature controller (204), which further comprises at least one thermal element.

8. The swap station, as claimed in claim 1, wherein the at least one portable battery station (102) further comprises at least one sensor for sensing pollutants.

9. The swap station, as claimed in claim 1, wherein the at least one portable battery station (102) is connected to at least one renewable energy source.

10. The swap station, as claimed in claim 1, wherein the at least one bi-directional power supply unit (208) further comprises of at least one bi-directional power rack (401) and at least one charger unit (501).

11. The swap station, as claimed in claim 10, wherein the at least one power rack (401) is connected to at least one of a single battery pack, in parallel; and in series.

12. The swap station, as claimed in claim 10, wherein the at least one charger unit (501) is connected to at least one of a single battery pack, in parallel; and in series.

13. The swap station, as claimed in claim 1, wherein the at least one portable battery station (102) further comprises a storage and retrieval system (202), wherein the storage and retrieval system (202) is configured to swap the at least one used battery pack and the at least one new battery pack using the automated system.

14. The swap station, as claimed in claim 13, wherein the controller (206) is configured for aligning the storage and retrieval system (202).

15. The swap station, as claimed in claim 1, wherein the at least one portable battery station (102) further comprises a storage and retrieval system (202), wherein the storage and retrieval system (202) is configured to swap the at least one used battery pack and the at least one new battery pack using the semi-automated system.

16. The swap station, as claimed in claim 15, wherein the controller (206) is configured for aligning the storage and retrieval system (202).

17. The swap station, as claimed in claim 1, wherein the controller (206) is configured for performing billing services.

18. The swap station, as claimed in claim 1, wherein the swap station (101) further comprises at least one device station (103), wherein at least one

path exists between the at least one portable battery station (102) and the at least one device station (103).

19. The swap station, as claimed in claim 1, wherein the swap station (101) comprises of at least one container.

20. The swap station, as claimed in claim 1, wherein the swap station (101) is modular.