SiMBa

Silicon (PV) Modules with Battery

Product Description:

Cost-competitive integrated PV-battery module

Energy generation: silicon PV
Energy storage: lithium ion-based batteries

Energy Problem

Lack of access to electricity and lead contamination due to lead-acid storage units in rural areas

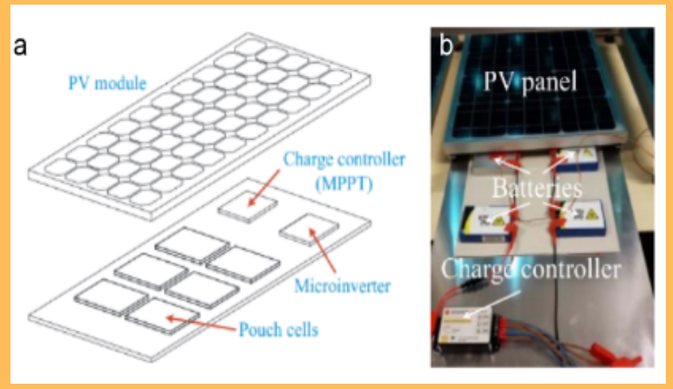
Market

Rural communities in developing countries

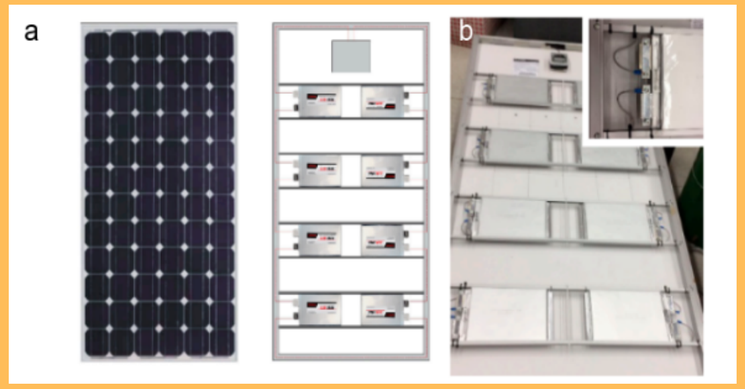
Solution

Integrate silicon-based PV module with non-toxic battery

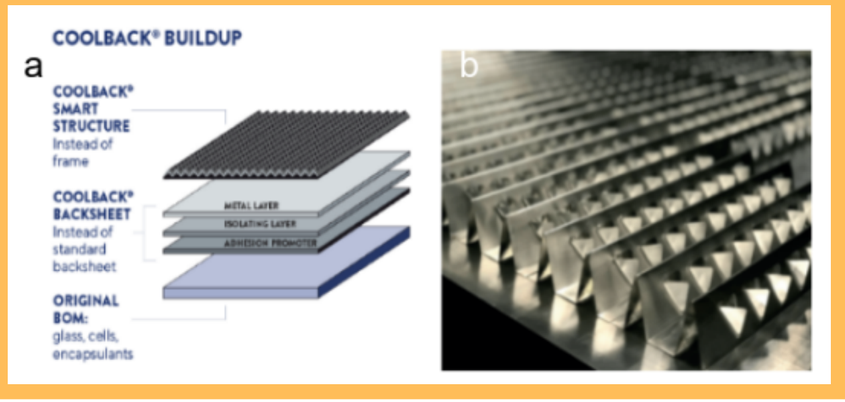
[1] Working prototype of silicon PV module and $LiFePO_4$ batteries



[2] Aluminum bar structures for batteries to avoid overheating



[3] COOLBACK technology to help in keeping the modules cool



- low maintenance
- compact
- non-toxic battery
- cost-competitive

References:-

[1] Vega-Garita, Victor, Laura Ramirez-Elizondo, and Pavol Bauer. "Physical integration of a photovoltaic-battery system: A thermal analysis." *Applied energy* 208 (2017): 446-455. DOI:10.1016/j.apenergy.2017.10.007.
[2] Hammami, Manel, Simone Torretti, Francesco Grimaccia, and Gabriele Grandi. "Thermal and performance analysis of a photovoltaic module with an integrated energy storage system." Applied Sciences 7, no. 11 (2017): 1107. DOI: 10.3390/app7111107.
[3] https://www.coolback.com/