New solar boxes could expand clean energy to include the world's poorest regions

Imagine being able to power your house with solar "energy cubes" that you can stack up like LEGO pieces to create a network of energy. It sounds like something out of sci-fi movie, yet this remarkable idea invented by a Swiss company may one day actually provide us with inexpensive, clean energy across all grids.

From a distance, Switzerland-based Power-Blox's PBX-200 looks like a cooler box you'd commonly see on a beach; however, that couldn't be further away from truth. These "solar boxes" have batteries powered by portable solar panels, and just one of them can supply the majority of a home's energy demands.

This is a system that adapts to your needs since the solar boxes can expand, divide, and re-group. To create energy for a community, the batteries in the blocks can merge to form an energy swarm, as the boxes can easily be plugged into another box.

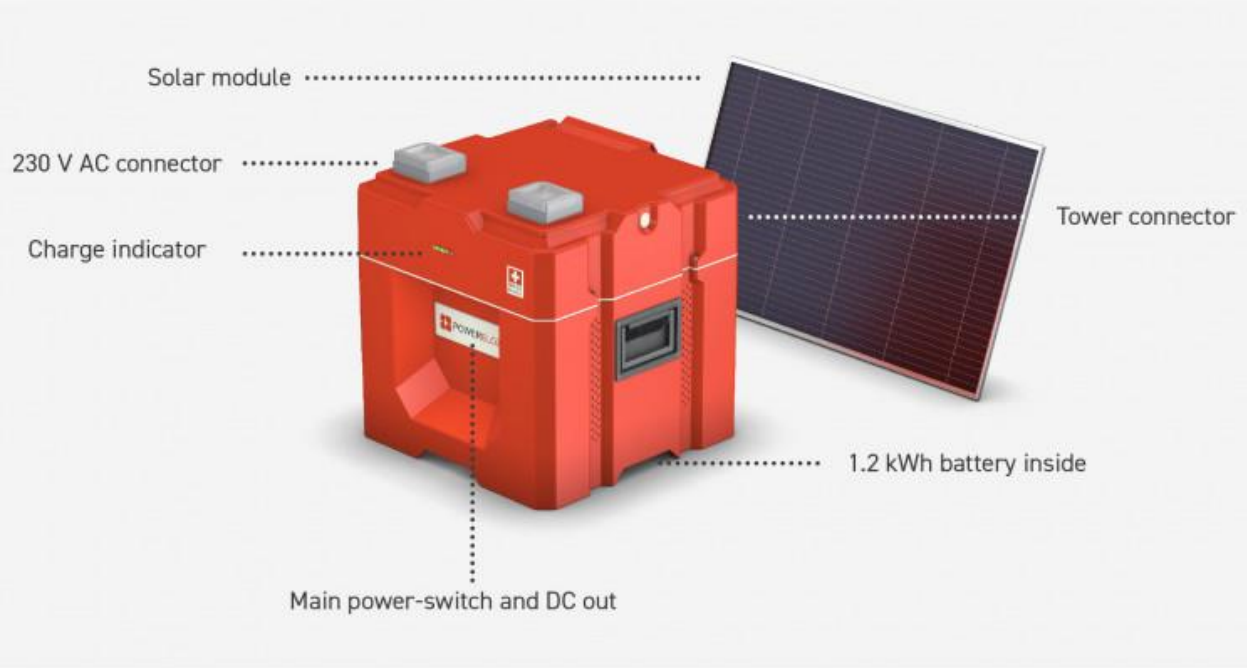
The engineering behind the Power-Blox

Power-Blox technology is unique in that it combines the ease of use of a solar home system with the power of a mini-grid. The system was created by electrical engineers who were inspired by nature, specifically, a school of fish.

The PBX-200 series, like fish, may grow, split, and re-group, with the batteries combining to form an off-grid "energy swarm" with limitless application possibilities.

The PBX-200 system is made up of "intelligent" energy cubes with built-in batteries, which are available as both lead or lithium ion, and each cube generates 200 watts of alternating current. They can be powered by a solar unit or any other external source like wind, hydrothermal, biomass, or a generator to supply the electricity needs of a household or small commercial business. To put that into perspective, Tesla Powerwall, which is an integrated battery system that stores solar energy for backup protection, can provide up to 5 kW of continuous power with a storage capacity of 13.5 kWh.

However, it should be noted that Powerwall is fundamentally different from the Power-Blox in that Powerwalls do not contain swarm technology and must be installed by professionals.



One of the finest aspects of the PBX-200 system is that it does not require configuration, specialized knowledge, or maintenance. When the need for electricity increases, the PBX-200s are plugged in without interrupting the power supply within a few minutes.

Revolutionising energy across the world

Since the PBX-200 is a more adaptable and flexible system than mini-grids, it has enormous potential in some of the world's poorest and most remote areas. Since 2018, the firm has supplied over 2,000 power blocks in approximately 20 countries, providing the energy storage solution to dozens of communities in collaboration with the United Nations Development Programme (UNDP) and other humanitarian organizations.

In one recently electrified Mozambique village, people have used the invention to start selling items from cold drinks to fridges and offer customers mobile charging stations.

There is a growing interest from Western countries, too. Power-Blox has powered 150 Swiss mountain cabins and helped Swiss IT businesses transition from analogue to digital communications.

The biggest obstacle seems to be a lack of funding; however, the researchers are already looking for ways to make the solar boxes even more sustainable, as the current lithium-iron phosphate batteries could easily be swapped out for a better model.