

# **Peak-valley arbitrage in the Saint Lucia energy storage system**

**Modular design,  
unlimited combinations in parallel**

**BUILT-IN DUAL FIRE PROTECTION MODULE**



## Overview

---

What is Peak-Valley arbitrage?

The peak-valley arbitrage is the main profit mode of distributed energy storage system at the user side (Zhao et al., 2022). The peak-valley price ratio adopted in domestic and foreign time-of-use electricity price is mostly 3–6 times, and even reach 8–10 times in emergency cases.

What is the optimal SoC factor for Energy Arbitrage?

With the optimal value of 24 %, the remaining capacity and operational flexibility of the ESS can be properly balanced, so as to achieve the full operational cycle of energy arbitrage and the highest profit. Compared to the default value as in previous work (50 %), the optimal initial SOC factor increases the annual arbitrage profit by 16 %.

Is energy arbitrage profitability a sizing and scheduling Co-Optimisation model?

It proposes a sizing and scheduling co-optimisation model to investigate the energy arbitrage profitability of such systems. The model is solved by an efficient heuristic algorithm coupled with mathematical programming.

Are energy storage systems more cost-effective than batteries for Energy Arbitrage?

The retrofitted energy storage system is more cost-effective than batteries for energy arbitrage. In the context of global decarbonisation, retrofitting existing coal-fired power plants (CFPPs) is an essential pathway to achieving sustainable transition of power systems.

## Peak-valley arbitrage in the Saint Lucia energy storage system

---

### Contact Us

---

For catalog requests, pricing, or partnerships, please visit:  
<https://zegrzynek.pl>