

ContainerPower Energy Solutions

Energy storage device selection



Overview

Energy storage systems (ESS) are becoming an essential component of energy supply and demand matching. It is important yet complex to find preferable energy storage technologies for a specific applic.

Is there a decision support tool for energy storage selection?

It is important yet complex to find preferable energy storage technologies for a specific application. In this paper, a decision support tool for energy storage selection is proposed; adopting a multi-objective optimization approach based on an augmented ϵ -constraint method, to account technical constraints, economic and environmental objectives.

How to choose the best energy storage technology?

The selection aims at finding the optimum energy storage technology that not only meets the technical constraints posed by the energy storage application, but also possesses the best overall technical, economic and environmental performance (i.e. high technical maturity, low total cost, and little negative environmental impact).

What is the decision-making framework for energy storage selection?

A decision-making framework for energy storage selection is developed. Life cycle environmental, economic and technical criteria are considered. Centralized and distributed energy systems are studied. Evaluation of the major energy storage technologies shows consistent with literature and experience.

Should energy storage requirements be considered in the selection of energy storage technology?

Therefore, energy storage requirements should be considered in the selection of energy storage technology. Consequently, this paper proposes an MCDM energy storage approach for selecting a suitable energy storage technology considering the power storage requirements.

How do decision makers choose energy storage technologies?

Before the process starts, the decision makers make a first, rough selection of energy storage technologies based on the use case examined. We use m to indicate the number of energy storage technology alternatives, and $A = \{a_1, a_2, \dots, a_i, \dots, a_m\}$ to indicate the set of alternatives, where $a_i \in A$ is the i -th energy storage technology.

Which energy storage technologies are best for distributed energy systems?

Evaluation of the major energy storage technologies shows consistent with literature and experience. Flow batteries, hydrogen energy storage, and the emerging applications are optimal energy storage alternatives in distributed energy systems. Energy storage systems (ESS) are becoming an essential component of energy supply and demand matching.

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