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Title: Container energy storage system temperature and humidity detector

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Can a container-type ESS control temperature and humidity?

In this study, temperature and humidity monitoring and management issues were addressed for a container-type ESS by building sensor-based monitoring and control systems. Furthermore, a rule-based air conditioner control algorithm was proposed for temperature and humidity management.

How to control the indoor temperature of ESS containers?

The indoor temperature of the ESS container can be controlled to maintain the battery temperature below the target temperature. Generally, economical and simple forced air convection systems (FACS) are used to manage the indoor temperature of ESS containers .

What is the operating environment of an ESS container?

The operating environment of an ESS must be managed within the operating range provided by the manufacturer. It is recommended that the ESS container used in this study be operated at 35~75% humidity and 18~28 °C. Figure 2 shows an example of the relative humidity, temperature of the container, and battery cell temperature during summer.

What is an energy storage system (ESS)?

The implementation of an energy storage system (ESS) as a container-type package is common due to its ease of installation, management, and safety. The control of the operating environment of an ESS mainly considers the temperature rise due to the heat generated through the battery operation.

What is the indoor temperature and humidity in ESS container operation?

During the ESS container operation period, the indoor temperature was maintained in the range of 19.3-21.3 °C throughout; however, the indoor humidity was in the range of 50.1-72%. The outdoor temperature and humidity were in the ranges of 26.1-29.9 °C and 56.7-82.8%, respectively. Figure 10.

What are the parameters of the ESS container?

The absolute humidity of the ESS container at time  $t$  [g/ m<sup>3</sup>]. The target absolute humidity of the ESS container [g/ m<sup>3</sup>]. The amount of saturated water vapor. The indoor temperature of the ESS container at time  $t$  [°C]. The target indoor temperature of the ESS container [°C]. The upper limit of the battery temperature [°C].

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