

TECHNICAL REPORT

Decentralized Multiple Energy Systems - Part 1: General

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**Decentralized Multiple Energy Systems -
Part 1: General**

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INTRODUCTION

A Decentralized Multiple Energy System (DMES) integrates various forms of energy, such as electricity, water, heat or cold energy, gas, and hydrogen. By optimizing energy production, storage, distribution, and utilization, the DMES achieves efficient complementarity and collaborative management, enhancing the system's flexibility, reliability, and sustainability. Compared to centralized energy systems, the DMES is more suitable for the integration of distributed energy sources, offering significant advantages in addressing energy supply fluctuations and improving energy utilization. Furthermore, by providing customized energy solutions, the DMES can better satisfy the user demand in various application scenarios, such as industrial parks, urban communities, and remote areas.

Although a number of standards have been intensively established for different energy systems, there are still gaps in existing standards to guide the synergy and coordination of multiple energy systems due to the standard barrier between various industries. To address this issue, this report aims to analyse the applicability of existing standards in supporting the DMES development and identifying gaps and future standard needs.

1 Scope

This document presents general features, typical cases, and key technologies related to DMES. It analyses the existing standards and identifies the gaps and needs for DMES development from the perspectives of the equipment layer, the communication layer, the information layer, the management system layer, and the application layer. This document also provides information on future standardization needs in the area.

2 Normative references

There are no normative references in this document.

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