

Research progress of direct contact heat storage based on phase change heat storage

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Abstract

Phase change heat storage can solve some new energy intermittent and waste heat recovery problems, but heat storage is needed to act as this energy hub. Since the direct contact heat accumulator has the advantages of simple structure, large heat transfer area, and small heat transfer resistance, it is a good choice for improving energy storage rate. Although a great deal of research has been done on phase change materials and heat accumulators over the years, a systematic review of direct-contact heat accumulators is lacking. This paper reviews the related research on direct contact heat storage, aiming to summarize the research work on direct contact phase change heat storage systems. Various phase change materials (PCMs) for direct contact systems are analyzed, and the study of PCM melting crystallization behavior, heat transfer coefficients and system performance in direct contact systems is summarized, as well as the improvement methods for direct contact vessels and PCMs. It provides a useful reference for future research on direct-contact heat storage systems.

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