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AN OVERVIEW OF THERMAL ENERGY STORAGE SYSTEM

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ABSTRACT

As we known of humanity's massive use of thermal energy, any advances in thermal energy management techniques may have a major positive impact on society. Thermal energy storage is an important part of thermal energy management. This review covers the following features of TES: (1) A broad range of topics in the area of thermal energy storage are addressed. The role of TES in the context of various thermal energy sources is discussed, as well as how TES eliminates the need for fossil fuel combustion. The use of TES in solar power production, building thermal comfort, and other specialized applications is discussed. (2) Provides insight into several types of TES storage materials, including physical characteristics, cost, operating performance, and application appropriateness. (3) A description of the many kinds of TES systems is provided. Different kinds of criteria are used to classify TES systems. Seasonal TES systems, CSP plant TES systems, TES systems for residential solar thermal applications, heat and cold storages in building HVAC systems, and other TES systems are discussed. Thermo cline, packed bed, fluidized bed, moving bed, and other active TES systems are investigated. The use of passive TES systems in buildings, textiles, cars, and other applications is discussed. The following is a list of TES systems that operate in the cold, low, medium, and high temperature ranges. TES system design parameters, operational problems, and cost models are addressed.

KEYWORDS: *Energy, Fossile Fuel, High Temperature, Storage System, Thermal Energy,*

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