Brazil energy storage heat exchanger

Why do we need heat exchangers?

The pursuit for improved efficiency and reduced space requirementshas led to a preference for tubular,extended surface,shell-and-tube,or plate-type heat exchangers in modern industries. The adoption of enhanced heat transfer techniques enhances the performance of the heat exchangers thereby enabling energy saving.

Can heat exchangers reduce energy consumption?

In this regard, researchers are focusing on designing and developing compact and efficient thermal systems to decrease overall energy consumption. Among thermal systems, heat exchangers (HEXs) find extensive applications in various domains, including domestic, industrial, and commercial purposes [7, 8].

Can heat exchangers improve convective heat transfer rates?

The growing demand for energy and the necessity to enhance the efficiency of heat exchangers have triggered numerous studies aimed at improving convective heat transfer rates while simultaneously reducing the size and investment costs of industrial devices.

Do enhanced heat transfer techniques improve the performance of heat exchangers?

The adoption of enhanced heat transfer techniques enhances the performanceof the heat exchangers thereby enabling energy saving. The review paper is organized as follows: Section 2 explains the designs and constructions of double pipe,plate heat exchangers,and extended surface heat exchangers.

How does a heat exchanger work?

Internal fins are positioned inside the heat exchanger tubes, thereby increasing the surface area available for heat transfer within the fluid. These fins are in direct contact with the fluid flowing inside the tubes, promoting efficient heat exchange as displayed in Fig. 8, Fig. 9.

How are heat exchangers classified?

Heat exchangers are classified based on flow types and component arrangementsas displayed in Fig. 1. Common types include tubular and plate heat exchangers . Double pipe and shell-and-tube are the commonly employed tubular heat exchangers in industries due to their operational flexibility and cost-effectiveness.

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