

Liquid Cooling UPS Uninterruptible Power Supply





Overview

This paper presents a new liquid-cooling technology for uninterruptible power supply (UPS) units in which an air-cooling system is combined with an indirect water-cooling system based on direct-chip cooling.

What is liquid-cooling technology for uninterruptible power supply (UPS) units?

This paper presents a new liquid-cooling technology for uninterruptible power supply (UPS) units in which an air-cooling system is combined with an indirect water-cooling system based on direct-chip cooling. This cooling architecture provides more opportunities to use free cooling as the main or only cooling system for optimal data centres (DCs).

Can a liquid cooled ups save energy in a data centre?

A mechanical cooling (MC) system with chillers, as required with air-cooled UPS units, and an indirect free-cooling system that could be used with liquid-cooled UPS units were deployed. The comparison highlights the impact of the autonomous liquid-cooled UPS on the energy savings for a data centre.

What is an uninterruptible power supply (UPS)?

When the main DC electrical supply sources fail or are subject to a change that adversely affects the target load, uninterruptible power supply (UPS) units are used to provide backup power (Aamir et al., 2016). UPS units connected to the target load immediately oversupply electricity without interrupting the system (Borkowski and Piłat, 2022).

Does a liquid cooled ups reduce energy consumption?

A decrease in water flow rate from 20 l/min to 13 l/min resulted in a decrease of 7.7% in the UPS thermal efficiency. The liquid-cooled UPS reduced the yearly energy consumption of the cooling system by at least 14% compared to the air-cooled one at UPS level.



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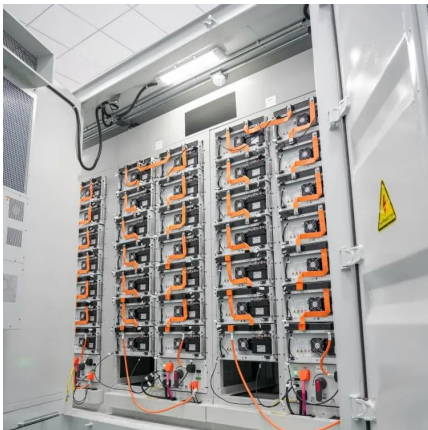


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