Liquid cooling energy storage dehumidification

How can a cooled dehumidification unit improve the performance of a system?
Two liquid desiccants can also be mixed in suitable proportions to obtain a more cost-effective and efficient liquid desiccant. Internally cooled dehumidification units help to reduce the heat discharge and allow lower flow rates,which can improve the performance of the system.

How can liquid desiccant dehumidification and air conditioning systems improve performance?
Many studies have been conducted to improve the overall performance of the DAC system, improve system configuration and optimization by integrating various energy technologies system design and control. This article introduces a literature review of the latest research progress on liquid desiccant dehumidification and air conditioning systems.

How is dehumidified air cooled?
After dehumidification,if further sensible cooling is needed,it is obtained by passing the dehumidified air through evaporative cooling,vapor-compression,or any other cooling system. TABLE 3. Vapor pressure for different LD at a different temperature 27 Desiccants are primarily of two types: solid and liquid.

Does the LD dehumidification system integrate with an evaporative cooling technology?
The focus of this research is to address recent studies on the LD dehumidification system integrated with an evaporative cooling technology, which is outlined below. The DEC is used with the dehumidifier for improving the performance of the dehumidification system.

What is deep dehumidification technology?
The review focuses on the deep dehumidification technology,which encompasses air compression dehumidification,liquid desiccant dehumidification,solid desiccant dehumidification,membrane dehumidification,and coupled dehumidification,with an emphasis on materials,components,and systems flow.

Can a solar cooling system dehumidify air using a liquid desiccant?
The system dehumidifies air using a liquid desiccantand can store solar energy. The Queen's University Solar Liquid Desiccant Cooling Demonstration Project was evaluated,which provides 9.2-17.2 kW of cooling power with a thermal Coefficient of Performance (COP) of 0.40 and an electrical COP of 2.40.

Therefore, to make full use of the indoor waste cooling, stably generate the phase change latent heat of the water vapor, and reduce the volume of the combined system of the IEC and LD, a novel integrated device called indirect evaporative cooling combined with liquid dehumidification (IECL) was developed and improved in this paper.

The cooling water supply captures the exothermic heat released by the desiccant during dehumidification and

offers a twofold advantage over other types of dehumidifiers. ... sorption chillers, atmospheric water harvesters, indoor humidity control, and energy storage. Its application will span across a wide range of industries, including but not ...

The use of liquid cooling systems for energy storage is increasing rapidly, and the risk of condensation in battery compartments must be given due consideration. Traditional dehumidification air conditioners require a lot of space, and semiconductor dehumidification equipment has poor dehumidification effects, making it difficult to completely ...

Space cooling and dehumidification of ambient air in buildings account for 20%-40% of total energy consumption in the traditional air conditioning system in hot and humid regions [1, 2] can be much higher when 100% of fresh air ventilation is required for better indoor environment [3, 4].ASHRAE standard 55-2017 [5] states that 40%-60% of relative humidity ...

Henning et al. [12] conducted an experimental study of a combined solar aided liquid desiccant cooling system with a 20 m 2 flat-plate solar collector and a 2 m 3 hot water storage tank and claimed the primary energy savings up to 50% with a low overall cost. 54% of collector efficiency, 76% solar fraction between the solar heat and auxiliary ...

However, its application in hot humid climates is limited due to the high energy demands associated with dehumidifying and cooling outdoor air. Thus, a novel energy-efficient assistive system is proposed integrating a chimney-driven ventilation with liquid desiccant dehumidification membrane loop and indirect evaporative cooling.

A survey of liquid desiccant cooling systems is presented, along with references to recent work and an assessment of the potential and future research necessary for successful large-scale applications. Details of component and system design are presented, and...