

# Condensate water energy storage patent

As shown in Figure 1, this condensate-recycling system comprises boiler 8, low level softened water tank 1, high-order softened water tank 5, Condensate recovery device 11 and steam water heater 12, low level softened water tank 1 is connected with high-order softened water tank 5 by elevated tank feed pump 2, and the pipeline that low level softened water tank 1 is connected ...

higher water quality, lower temperature and considerable water volume. The advantages of the two condensate recovery technologies of open recovery and closed recovery are dialectically analyzed. Disadvantages, the primary utilization method of condensate water "as a water resource" is systematically explained. A particular scientific outlook

A latent energy and water harvesting system and method are disclosed that may be used to harvest energy in air conditioning systems in buildings and vehicles. ... 2022-09-30 Priority to AU2022357553A priority patent ... and collect the condensate for reuse or storage. the adsorbent coating on the heat exchanging contactors may alternatively ...

1990-09-18 Publication of US4956977A publication Critical patent/US4956977A/en 2007-09-18 Anticipated expiration legal-status Critical ... heating said water in a hot water storage using said condensation heat, and wherein step (d) comprises using a water-steam system to discharge the heat liberated from said adsorption substance, for heating ...

Patent: Thermal energy storage by means of reversible heat ... hot water is drawn from a hot water storage means and cooled by flashing it at successively lower pressures. The cold condensate is sent to a cold water storage means while the various flash vapors are fed to appropriate stages of a steam compressor driven by excess power drawn from ...

The condensate from heating, ventilation and air-conditioning (HVAC) systems has been identified as potential source of clean water, which is typically removed and disposed of in a sanitary drain. The condensate can be beneficially used for water sustainability and building energy recovery.

Future research is needed to determine the quality of condensate suitability subjected to the level of treatment for the use of water resources. The evaluation of the thermal quality of AC condensate is recognized as a prerequisite for energy recovery applications.

Latent heat storage systems, which have a higher energy storage density than sensible energy storage systems, can be a better option for storing the energy content in condensate [85], [86]. TES systems with phase-change materials (PCMs) are a promising technology for storing and recovering chilled condensates from HVAC units.

HVAC condensate water can be beneficially used for water sustainability and building energy recover.

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Condensate related parameters are presented with the nature of approach, quantity, quality and factors that influence condensate water collection.

The author addresses the various challenges related to condensate energy recovery and proposes the use of a thermal energy storage system as a solution to sustain the ...

Application number is that 201220089783.1 Chinese patent discloses a kind of steam condensed water waste heat retracting device, jet chimney connects steam water heat exchanger through steam pneumatic control valve, the condensed water that steam water heat exchanger produces connects hot water storage tank through condensing water conduit, hot water storage tank ...

wherein in a first step (1) the thermal energy of the source is stored by means of a condensation reaction with the formation of poly inorganic oxoacid compounds (polymers) and the release of ...

Air-conditioning condensate holds potential as a water and energy substitute. Treatment is required to ensure condensate quality before use as a water source. Thermal quality of condensate determines its suitability for energy recovery. Condensate-assisted thermal energy storage systems offer energy-saving.

Moreover, the study was extended with a thermal energy storage system utilizing polyethylene glycol 600 as the energy storage material, resulting in a 20-minute prolongation of thermal comfort through stored latent heat. ... The TES system utilizes the chilled energy from condensate water to facilitate the charging (solidification) process of ...

the present invention provides the use of inorganic oxoacid compounds and/or its salts and water in a method to store and/or increase the thermal energy from a heat source, characterized in that; - the thermal energy of the heat source is stored by means an condensation reaction with the removal of water from the reaction solution and the formation of poly inorganic oxoacid ...

Latent heat storage systems use the reversible enthalpy change  $Dh_{pc}$  of a material (the phase change material = PCM) that undergoes a phase change to store or release energy. Fundamental to latent heat storage is the high energy density near the phase change temperature  $t_{pc}$  of the storage material. This makes PCM systems an attractive solution for ...

The invention uses the low-grade heat energy of offshore platform to solve the problems of heat source and energy consumption in the process of natural gas hydrate ...

1. A system, comprising: a tank; a water condensation unit having a fan and an evaporator coil assembly; a continuous heat transfer fluid system having a fan, an evaporator coil assembly, and a condenser unit, the fan configured to draw air across the evaporator coil assembly and to generate condensate water on the evaporator coil assembly that falls and ...

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FIG. 1 is a diagram depicting a condensate drainage tube 2 adapted to drain condensates generated from a water heater 10. The water heater relies on the combustion of a hydrocarbon fuel to generate heat. Condensate generation is one of the hallmarks of a high efficiency (e.g., greater than 90% efficiency) condensing combustion system.

An energy storage system according to claim 33, further comprising a thermostatic blending valve operable to blend inlet cold water with the potable water heated by the energy storage system to control outlet temperature of potable hot water; and optionally wherein the thermostatic valve is configurable to regulate outlet water temperature, and ...

a proposed LAES system may comprise in combination: a compressor unit consuming off-peak power and providing compression of charging air up to pressure above a critical pressure, a hot thermal energy storage unit adapted to capture, storing and recovery of compression heat for superheating and reheating a discharged air, regenerable adsorber unit providing physical ...

1. air conditioner condensate water vertical planting irrigation system, it is characterized in that being provided with modular three-dimensional cultivation unit (5), at air-conditioner outdoor unit (7) air outlet cellular grid (9) is set, cellular grid (9) is provided with windmill (8), windmill (8) is connected with the bearing transmission ...

In line with the waste-to-energy conservation strategies, the present study focuses on the design and analysis of a Compact Cooler Unit (CCU) that can efficiently make use of cold condensate generated from air-conditioning plants. Condensate from air conditioners with cooling capabilities of 115 kW and 175 kW, respectively, producing 23 Lh-1 and 35 Lh-1 at ...

patents on recycling condensate water generated by air-conditioning. Over time, the technical means have become more mature, and two recycling technologies of open recovery and closed recovery of

Utilization of the HVAC condensate to water plant has been considered as one of the best irrigation approaches because the condensate water is clean, energy-efficient, and cost-effective [35]. As ...

The drops in basin water levels due to these evaporation and blow-down losses require addition of make-up water to maintain the water levels. If condensate is used as make-up water, tremendous savings in energy and water can be realized (Peng, Jun, Hui-min, Zhen-zhen, & Xiao, 2012; Siriwardhena and Ranathunga, 2011).

Applications with respect to quality of condensate water are addressed in term of water sustainability and energy recovery. Issues and challenges associated with the design and use of the condensate water collection systems are addressed and a scope for future research is provided.

The invention aims to provide an air conditioner condensate water recycling system, which mainly solves the problem that the existing air conditioner condensate water recycling effect is poor. The air conditioner

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condensate water recycling system comprises a reverse osmosis water treatment device connected with a condensate water receiving groove of an air conditioner, wherein the ...

To provide a condensate storage facility provided a common use condensate tank (CST) and an emergency CST separately as condensate storage tanks or condensate storage tubs, and having a function of deep protection that the common use water can be used as emergency water in emergency.SOLUTION: In a condensate storage facility provided a common use CST 101 and ...

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