

**JH Solar**

# **Pressure energy storage power generation device**



## Overview

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What is natural gas residual pressure power generation technology?

The basic principle of natural gas residual pressure power generation technology is to replace the traditional pressure regulating valve with an expander and use the mechanical energy generated when the high-pressure natural gas is expanded and depressurized to directly drive the generator to generate electricity.

What is natural gas differential pressure power generation?

Natural gas differential pressure power generation is a technology that utilizes pressure difference to generate power and drive a generator to generate electricity, and the output power of the generator can be adjusted according to the size of the pressure difference, the flow rate of the incoming gas, and the temperature .

What are the advantages of natural gas power generation technology?

The advantage of this power generation technology is that it not only recycles the pressure energy of natural gas to generate power, but also utilizes the cold energy produced by the depressurization process of natural gas, which improves the utilization rate of energy, produces by-product CNG, and improves the economic benefits of the product.

Can a double expansion differential pressure power generation technology recycle natural gas?

Therefore, under the current operating conditions, it is recommended to use the double expansion differential pressure power generation technology to recycle the pressure energy of natural gas.

What is primary expansion differential pressure power generation technology?

Primary expansion differential pressure power generation technology is the basic technology in the field of natural gas pressure difference power

generation.

What is expander in power generation?

According to the above analysis, the expander is the weak energy consumption equipment in the whole power generation process, which can be improved pertinently. 3.2.3. Expansion and compression differential pressure power generation technology

## Pressure energy storage power generation device

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### Differential pressure power generation in UGS: Operational

...

The results show that the UGSIDPPGS optimization model, not only effectively utilizes the pressure energy, generates up to  $56.908 \times 10^6$  kW h per month, and reduces the ...

### Dual-mode MPPT Algorithm of Natural Gas Differential Pressure ...

Dual-mode MPPT Algorithm of Natural Gas Differential Pressure Power Generation System  
Published in: 2023 IEEE 14th International Symposium on Power Electronics for Distributed ...



### A review of energy storage types, applications and recent

...

Recent research on new energy storage types as well as important advances and developments in energy storage, are also included throughout.



## Compressed Air Energy Storage

2 Overview of compressed air energy storage  
Compressed air energy storage (CAES) is the use of compressed air to store energy for use at a

later time when required [41-45]. Excess energy ...

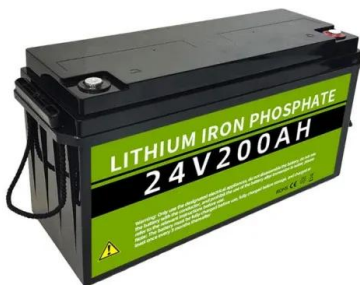


## Intermittent wave energy generation system with hydraulic energy

In this paper, we introduced an intermittent wave energy generator (IWEG) system with hydraulic power take-off (PTO) including accumulator storage parts. To convert ...

## Evaluation Indicator System of Natural Gas Pressure Power ...

Abstract. The natural gas pipeline network contains a large amount of pressure energy, and the technology of using natural gas residual pressure for power generation is of great significance ...



## Implementation and optimization of hydraulic wave energy generation

During the generation of wave energy, there is a problem of prolonged power interruption when wave conditions are unfavorable, which hinders continuous power ...

## Hydrovoltaic-piezoelectric hybridized device for microdroplet-pressure

However, most existing droplet-based devices (DEDs) can only produce transient outputs that require additional capacitors for energy storage, thus increasing system ...



## Compressed air energy storage power generation device

The power generation using renewable energy such as wind power or sunlight produces output varying depending on weather. Therefore, a power plant using renewable energy such as a ...

## Experimental exploration of isochoric compressed air energy storage

Regulation characteristics are crucial in effectively utilizing compressed air energy storage (CAES) technology for stabilizing renewable energy generation and emerging ...

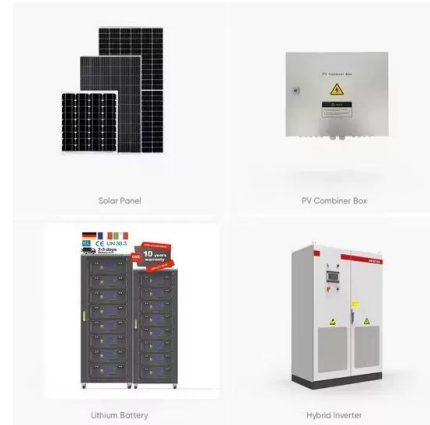


## A small residual pressure energy power generation device

The duct total head is 30m and the residual pressure energy power generation device is set at the duct import. The residual pressure T energy generation piping system is shown as Figure 1.

## A review of energy storage technologies in hydraulic wind turbines

This paper discusses the functions of the energy storage system in terms of the stabilizing speed, optimal power tracking and power smoothing when generating power from ...



## A small residual pressure energy power generation device

Abstract. The author designed a program for utilizing residual pressure of water pipeline, by which theoretical analysis and calculation were performed and the small residual pressure energy ...

## 3D printed energy devices: generation, conversion, and storage

The energy devices for generation, conversion, and storage of electricity are widely used across diverse aspects of human life and various industry. Three-dimensional (3D) ...



## US20180171832A1

A compressed air energy storage power generation device 2 includes a compressor, a pressure accumulator tank, and an expander. The compressor compresses air by being driven with ...



## Top 10: Energy Storage Technologies , Energy ...

Supercapacitors, also known as ultracapacitors, are energy storage devices that bridge the gap between traditional capacitors and rechargeable batteries. They store energy through a combination of ...



### [US20240263621A1](#)

This application provides an integrated power generation system with thermal energy and pressure storage cycles comprising a heat and pressure storage unit connected to a heat ...

### CN102748226A

The purpose of this invention is to provide a kind of adjustable energy storage of atmospheric pressure electricity generating device, the power source utilization ratio of this



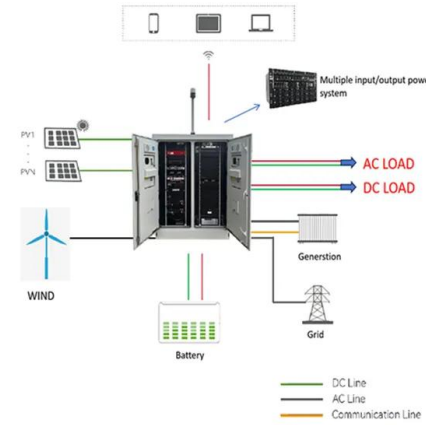
### A pressure driven electric energy generator exploiting a micro

Table 1 Performance comparison of the power generation device with other mechanical energy harvesting devices regarding principle, material (only for the "water ...



## Electric power generation technology of natural gas pressure ...

Based on the "three box" exergy analysis model, a black box-gray box hierarchical exergy analysis and evaluation method is put forward in this paper, which is ...



### INTEGRATED DESIGN

EASY TO TRANSPORT AND INSTALL,  
FLEXIBLE DEPLOYMENT



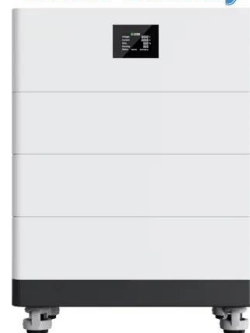
## Compressed-air energy storage

A pressurized air tank used to start a diesel generator set in Paris Metro Compressed-air-energy storage (CAES) is a way to store energy for later use using compressed air. At a utility scale, energy generated during periods ...

## Dual-mode MPPT Algorithm of Natural Gas Differential Pressure Power

The natural gas differential pressure power generation system can convert the pressure energy into electric energy in the process of natural gas pressure regulation, which is of great ...

### High Voltage Solar Battery



## Research on characteristics of natural gas differential pressure power

He has participated in the R& D of multiple natural gas pressure difference power generation systems and the construction of compressed air energy storage systems.

## Comprehensive review of energy storage systems technologies, ...

Energy storage is one of the hot points of research in electrical power engineering as it is essential in power systems. It can improve power system stability, shorten energy ...

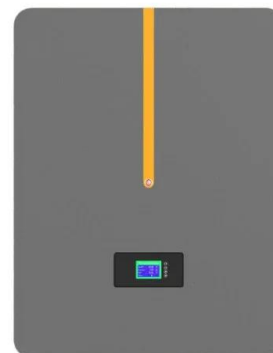


## Hydro-Pump/Generator-based Hydrogen-Pressure Energy ...

This paper presents a method to design water-compressed hydrogen energy storage system (WCH-ESS) and its active regulation function for the power grid. First, i

## COMPRESSED AIR ENERGY STORAGE POWER GENERATION DEVICE ...

Abstract A compressed air energy storage power generation device 2 includes a compressor, a pressure accumulator tank, and an expander. The compressor compresses air by being driven ...

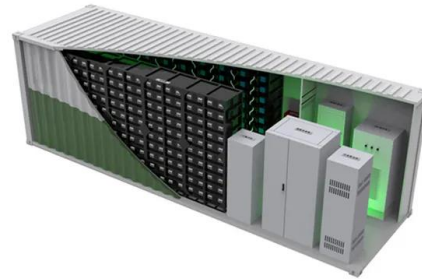


## A Novel Micro-Pressure Power Generation System Based on ...

A novel micro-pressure power generation system (PPG) is proposed. It mainly consists of two parts: a piezoelectric ceramic power generation device and a super capacitor energy storage ...

## Deep Sea Pumped Storage

Share this article "Storing Energy at Sea (StEnSea)" is a novel pumped storage concept for storing large amounts of electrical energy offshore. In contrast to well-known conventional pumped-hydro power ...



## **Current status of thermodynamic electricity storage: Principle**

Thermodynamic electricity storage adopts the thermal processes such as compression, expansion, heating and cooling to convert electrical energy into pressure energy, ...

## **Hydro-Pump/Generator-based Hydrogen-Pressure Energy Storage for Power**

This paper presents a method to design water-compressed hydrogen energy storage system (WCH-ESS) and its active regulation function for the power grid. First, it proposed the system ...



## **of Pressure Power Generation in Gas Pressure Regulating ...**

Abstract: Turboexpander, placed parallel to the regulator in natural gas pressure regulating station (PRS), was proposed to utilize the residual pressure by engineers and researchers. However, ...

## RESEARCH ON THE PROCESS FLOW OF NATURAL GAS ...

During the transmission of natural gas in the pipe-line network, the high pressure natural gas needs to be depressurized by the regulator station and enter the low pressure pipe-line, and ...

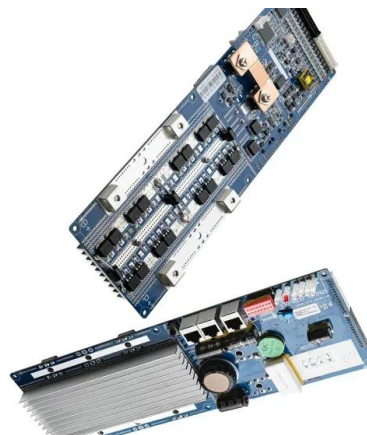


### US10344628B2

A compressed air energy storage power generation device 2 includes a compressor, a pressure accumulator tank, and an expander. The compressor compresses air by being driven with ...

## Research On Wave Energy Generation Technology

This paper summarizes the application trend of wave power generation devices on ships: wave power generation should be used as auxiliary and domestic electricity for ships and wave ...



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