Energy saving hydraulic system accumulator

The hydraulic scissor lift is a widely used special lifting equipment. In its repeated ascent and descent, the gravitational potential energy of its platform is wasted. To address this problem, a new energy-saving system based on hydraulic accumulator is proposed in this paper. A simulation model of the system is established.

An estimated 41% of the total potential energy could be regenerated at the lowering of the boom in accumulator-motor-generator system while the recovery efficiency in the motor-generator system is ...

A new energy regenerative swing system with a hydraulic accumulator, variable hydraulic motor and proportional flow control valve for realizing highly energy efficient construction machine and a novel control algorithm for the reduction of vibration of upper frame of excavator as well as high energy regeneration and reuse are proposed. In order to solve the environmental pollution and ...

The accumulator works as a hydraulic energy storage device, whereas the flywheel is used for mechanical energy storage. ... Do HT and Ahn KK. A study of energy saving hydraulic system by a pressure coupling hydrostatic transmission. J Drive Control 2012; 9: 10-17. Yang H, Sun W and Xu B. New investigation in energy regeneration of hydraulic ...

A hydraulic accumulator, the key component of the energy regenerative modality, can be decoupled from or coupled to the HST circuit to improve the efficiency of the system in low-speed, high-torque situations. ... K. K. Ahn and B. S. Oh, An Experimental Investigation of Energy Saving Hydraulic Control System using Switching Type Closed Loop ...

An innovative hydraulic hybrid excavator is proposed in this paper to save energy. An electrical hydraulic continually variable powertrain is proposed to drive the main ...

Different strategies for improving the energy efficiency of a power hydraulic system have been reviewed in this article. The energy-saving scheme is classified into three ...

hydraulic accumulators as energy storage devices. In the ... 1.3 Applications of energy efficient systems . The Sixth International Conference on Fluid Power Transmission and Control (ICFP" 2005 ...

Lin and Wang [28] utilized hydraulic and electric accumulators and presented a compound energy-recovery system to reduce the energy dissipation of forging hydraulic equipment. The results showed ...

In this paper we propose a new energy regenerative swing system with a hydraulic accumulator, variable hydraulic motor and proportional flow control valve for realizing ...

Energy saving hydraulic system accumulator

Hydraulic Energy. Accumulators are devices that are great at storing hydraulic energy and dampening pulsations within the hydraulic system. Not all hydraulic systems will require an accumulator, but if your particular system is noisy or has vibrations, making it hard to read gauges and sensors, or if you need to maintain pressure while the pump ...

This paper proposes a Three-Chamber Accumulator (TCA) with a pressurization function to address the aforementioned issue, and designs an energy-saving system for excavators based on TCA, which is suitable for medium and large excavators and ...

Using a hydraulic system accumulator provides benefits like energy storage, shock absorption, reduced pump cycling, and more efficient system operation. What is a hydraulic power unit tank? A hydraulic power unit tank is a container that holds the hydraulic fluid used in a ...

At present, increased attention has been given to energy efficiency promotion and energy saving of manufacturing equipment and systems. Hydraulic system is widely used in engineering machinery industries; however, the high energy consumption and low energy efficiency of which limit its development and application. On the basis of previous research on ...

Keywords Hydraulic controllable accumulator · Hydraulic neblanking press · Energy-saving · Hydraulic system Abbreviations FC Fast-closing aget s AD Anomaly detection stage ... hydraulic systems, the hydraulic accumulator is the most prevalent due to its ease of integration and lower energy dissipation during the utilization phase [22]. For ...

The hydraulic accumulator is widely used for storing energy in hydraulic system, but it is a passive device; the flowrate and volume of hydraulic oil adjusted by the accumulator are not well ...

The proposed system has advanced characteristics in both energy saving and high specific power by using a hydraulic accumulator. The energy saving potential of the system is obtained by recovering energy as well not using throttle valves. The hydraulic accumulator is used to store the recovery energy in the charging phase and to boost the pump ...

A high-pressure accumulator in the system acts as an energy storage device that recovers hydraulic energy during braking. In contrast, a low-pressure accumulator supplies a high flow rate during the recovery period in the system. ... Do, H.T.; Ahn, K.K.: A study of energy saving hydraulic system by a pressure coupling hydrostatic transmission ...

Though the traditional energy regeneration system(ERS) which used a hydraulic motor and a generator in hybrid excavators can regenerate part of the energy, the power of the motor and the generator should be larger and the time for regenerating energy is so short. At first, the structure of new ERS that combines the

advantages of an electric and hydraulic ...

In order to solve the environmental pollution and the depletion of petroleum energy, construction machine with high efficiency needs to be urgently developed. In this paper we propose a new energy regenerative swing system with a hydraulic accumulator, variable hydraulic motor and proportional flow control valve for realizing highly energy efficient ...

This review article deals with hydro-pneumatic accumulators (HPAs) charged with nitrogen. The focus is on HPA models used in the study of the energy efficiency of hydraulic systems. Hydraulic circuits with HPA are presented along with their various applications for delivering the required volume of fluid, maintaining the required pressure, ensuring safe ...

1 Department of Mechanical Engineering, Federal Institute of Science and Technology of the State of Pernambuco, Recife, Brazil; 2 Department of Mechanical Engineering, University of Manitoba, Winnipeg, Manitoba, Canada; Hydraulic accumulators have long been used in hydraulic circuits. Applications vary from keeping the pressure within a circuit branch ...

To meet the demanding requirements of hydraulic accumulator and achieve the energy saving, this ... which is similar with load sensing system for saving energy. 286 . 16. 2) ...